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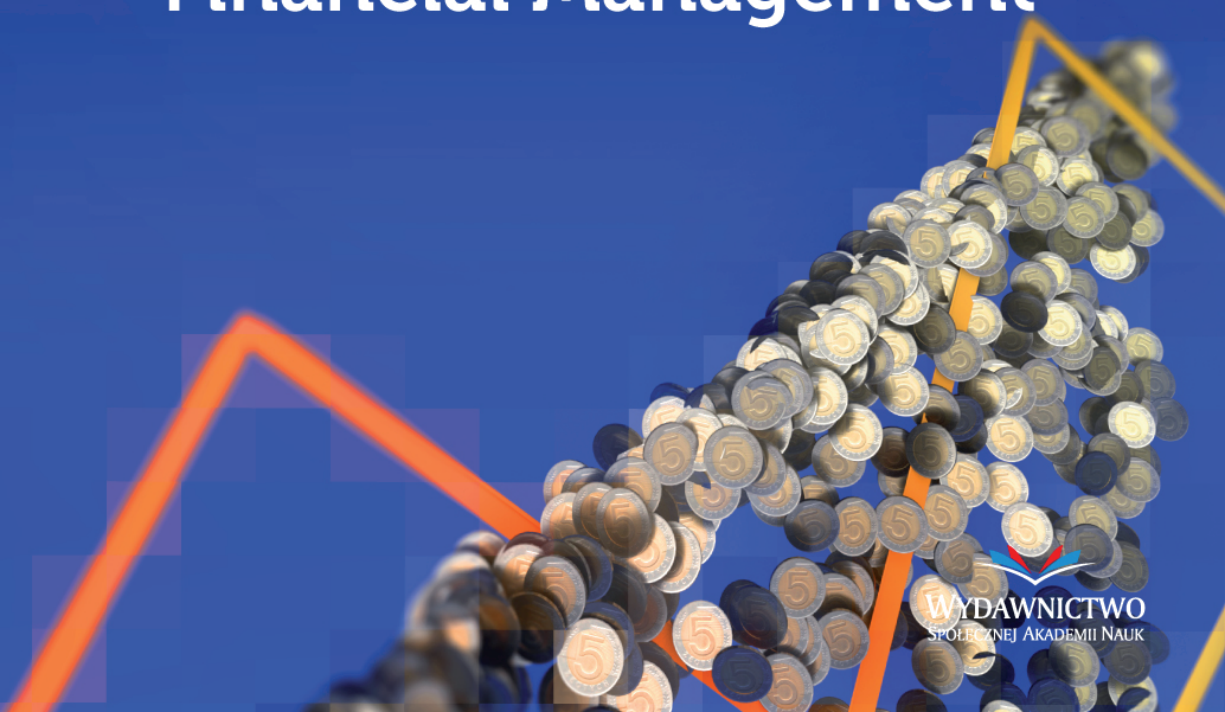
EDITORS

Mirośław Wypych

Iwona Gawryś

Paweł Trippner

Practical and Theoretical Issues in Contemporary Financial Management



WYDAWNICTWO
SPOŁECZNEJ AKADEMII NAUK



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Preface

It is our great pleasure to give into the hands of readers the first issue of the journal 'Entrepreneurship and Management' in the year 2017.

University of Social Sciences' Publishing House is annually planning to issue publication of two numbers in English language in the coming years.

The great advantage of the publication in the journal 'Entrepreneurship and Management' is a very attractive number of points (14 points according to the list B of academic journals of the Ministry of Science and Higher Education – state as of 31 December 2015).

In the modern economy, finances are the link between all the symptoms of human activity, being a consequence of various decisions. This applies both to households, commercial entities and organizations representing the area of services and public sector institutions.

On the one hand any action or decision – making conditions can be explained in financial terms, on the other hand – every decision should not be taken without considering any financial aspects, associated with them. It is difficult, therefore, to imagine the management of households' budgets, the enterprises, institutions or even the states, without considering any financial aspects of the management.

The current issue of the 'Entrepreneurship and Management', entitled 'Practical and theoretical issues in contemporary financial management' contains both theoretical considerations and practical analyses is based on the assumption that every managerial decision has got a financial dimension.

Finance covering different areas of issues that a lesser or greater extent determines the modern management of organizations considered in micro- and macroeconomic terms. In this book, special attention has been paid to the following aspects:

- the use of accounting tools in management in companies,
- taxes analysis,
- monetary and capital market,
- banking sector,
- corporate finances.

The analysis of the articles shows that the notion of finances can be considered depending on the place where they are or the object to which they relate. Looking at finances from the side of cash resources managing company, the importance of accounting has to be appreciated.

This scientific book contains 27 articles whose authors are mainly University of Lodz (fifteen people) and University of Social Sciences' academics (six people). The rest of the papers come from the following centers: The University of Dąbrowa Górnicza, University of Science and Technology in Bydgoszcz, Maria Curie-Skłodowska University in Lublin, Nicolaus Copernicus University, University of Białystok, Częstochowa University of Technology, Lodz University of Technology and Ministry of Finance Republic of Poland.

Encouraging you to get acquainted with this book, we deeply hope that their content will prove to be a valuable source of inspiration for further scientific inquiries and researches, which will be included in forthcoming publications.

It is worth mentioning that all the articles passed through the complete reviewing process. After complimentary remarks applied by the reviewers, the articles have received the permission to be published in the 'Entrepreneurship and Management' issue.

It means that all the articles have got distinctive features of appropriate level of scientific maturity and depth of the research and are valuable source for science and didactic process. We invite you to read the content of the issue.

The authors, scientific editors and University of Social Sciences Publishing House would like to thank to the reviewers, whose valuable comments in the process of reviewing contributed significantly towards the definitive form of this issue.

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The Current State of the MSME Sector Lending by Banks in Poland

Abstract: The purpose of this paper is to investigate the level of supply of bank loans and related issues in MSME sector in Poland in 2014-2016. At the beginning the position and the role of MSMEs in the Polish economy was described. Then an overview of the literature on the relationship lending between banks and MSME has been outlined. Next, the importance of MSME lending by banks was analyzed. The crucial part of the article is an analysis of level of loans for MSME, lending standards and conditions in recent years.

Key words: micro, small and medium-sized enterprises in Poland, bank lending, loans supply

Introduction

Access to finance appears to be the largest challenge for entrepreneurial firms from the micro, small to medium-sized enterprises (MSME) sector in Poland. The access to bank finance is necessary to create an economic environment that enables enterprises to grow and prosper.

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The purpose of this paper is to investigate the level of supply of bank loans and related issues in MSME sector in Poland in 2014-2016. Methods: the study focuses on the analysis of secondary data of National Bank of Poland (NBP), Polish Financial Supervision Authority (KNF), Central Statistical Office of Poland (GUS), The Polish Agency for Enterprise Development (PARP), European Commission (EC), European Central Bank (ECB) and the analysis of literature.

The position and the role of MSMEs in the Polish economy

Micro, small and medium enterprises constitute an important part of the whole sector of enterprises, not only due to their number, but also to their crucial role in the economy in many aspects. This group of entities is regarded as important for entrepreneurship, playing a significant role in the creation of new jobs, quickly reacting to changes in the socio-economic environment, adjusting their activities to the current market situation and the market needs. On the other hand, the entities belonging to this sector conduct business activities on a smaller scale and do not have such financial resources as large companies. Therefore, they are more vulnerable to the adverse effect of the barriers encountered on the market and the occurring crisis situations, leading, in many cases, to bankruptcy and liquidation of an enterprise [Walkowska (ed.) 2015, p. 9].

According to the European Union standard definition (2003/361/EC), in a micro-enterprise there are fewer than 10 employees, annual net turnover or the balance sheets (the assets and liabilities of a company) of less than EUR 2 million. A small enterprise employs up to 49 people and has annual net turnover of less than EUR 10 million or total balance sheet assets not higher than EUR 10 million. The medium-sized classification criteria are as follows: enterprise with fewer than 250 employees, annual net turnover of less than EUR 50 million or total balance sheet assets not higher than EUR 43 million [Eur-Lex 2016; OECD 2006]. NBP defines SME as an entity where the number of employees at the end of the last financial year was fewer than 250 or a natural person, who runs a business on one's own account, if the number of employees at the end of the last financial year was more than 9 people, but fewer than 250. This category also includes micro enterprises (i.e. natural persons, who run a business on their own account with the number of employees at the end of the last financial year fewer than 9 people are included in the category of individual entrepreneur (as a part of households) [NBP 2016b, p. 10].

The significant role of the MSME sector in the entire Polish economy is proven not only by the share of their number (99,9%) in the whole sector of non-financial enterprises. On 30 June 2016, there were more than 4,2 mln entities of the national economy registered in the REGON register. The total number of micro-entities accounted for 95,69%, small – 3,50%, medium – 0,70% and large – 0,11% [GUS 2016, pp. 29–30], and approx. 70% of employees found jobs therein. They obtained almost half of revenues and added value, and the expenses on fixed assets sustained by them constituted nearly half of total expenditures of all non-financial enterprises. Among the small and medium entities, the dominant group was microenterprises, which employed the greatest number of people (39%). On the other hand, the small scale of activities resulted in the fact that the revenues earned by this group constituted 20% of total revenues of all non-financial enterprises, the generated value added – 25%, and the investments – 17% of expenses of all enterprises. The whole MSME sector was dominated by natural persons. The two remaining classes consisted mostly of companies being the property of legal persons [Walkowska (ed.) 2015, pp. 116–117]. Their share in constituting national income shows a rising trend and approaches 50% of GNP (Gross National Product) [Wrońska-Bukalska (ed.) 2015]. The large share of MSMEs in GDP and jobs, rising incomes, relatively low debt and extended period of survival all lead to the conclusion that the conditions for the functioning and success of MSMEs in Poland are improving, and in addition there are opportunities for further development [Masiukiewicz, Dec 2014, p. 76].

The meaning of MSME is of significant importance not only because it is the main creator of jobs and a source of innovation, but also owing to their condition, which notably influences the country's economic development. Proper functioning and development of an economic entity in market economy requires suitable methods of financing. Likewise, good relations with institutions providing external funding are of major significance. Accessibility of financing sources as well as the method of financing current economical and investment activity affects not only decisions made by a company but also its existence [Stelter 2016, p. 175].

Relationship lending between banks and MSME – in literature

The economic and banking importance of SME sector is well recognized in academic and policy literature [UN/ECE 2007; Biggs 2008]. It is also acknowledged that these

economic actors may be under-served, especially in terms of finance [OECD-APEC 2008]. The availability of finance has been highlighted as a major factor in the development, growth and successfulness of SMEs [Ou, Haynes 2006, pp. 157–168; Cook 2001, p. 17]. A large body of the existing literature has documented that banks are the main external capital provider for SMEs sector in both developed and developing countries [Vera, Onji 2010, pp. 293–308; Ono, Uesugi 2009, pp. 935–960; Zhou 2009, pp. 787–799; Wu, Song, Zeng 2008, pp. 959–975; Carey, Flynn, 2005, 712; Cole, Wolken 1995, p. 629]. De Bettignies and Brander [2007, pp. 808–832] assume that bank loans are available for SMEs on competitive and fair basis.

In order to optimize their capital structure, Moro, Lucas, Grimm, Grassi [2010] suggested that SMEs should only focus on bank financing. Keasey and McGuinness [1990, pp. 213–222] argued that in spite of the fact that bank financing is more expensive in comparison to other sources of finance, it generates a higher rate of return for SMEs. They further conclude that bank finance can help SMEs accomplish better performance levels than other financing sources can [Abdulaziz, Abdul, Worthington 2013, p. 44].

From the perspective of banks, SMEs segment represents a strategic profitable part of bank business. In this regard, de la Torre, Martinez and Schmukler [2009] described the relationship between SMEs and banks as integral. They explained that banks not only provide the necessary capital for entrepreneurs to establish new SMEs or expand the existing ones, but they also offer a variety of services and financial products. The findings of Beck, Demirgüç-Kunt, Martinez [2008] have highlighted a number of factors perceived by banks as drivers to finance SMEs. The most important factor is the great potential of profitability associated with the involvement with SMEs as banks perceive this sector as unsaturated with good prospects. Another factor is the possibility to seek SMEs clients through their relations with their large clients. Banks involvement with SMEs is also driven by the intense competition in other sectors such as the large business and retail customers [Abdulaziz, Abdul, Worthington 2013, p.44]. The empirical literature on bank financing to SMEs emphasizes some mechanisms, techniques and models developed and adopted by banks to lend to SMEs such as relationship lending [Petersen, Rajan 1994, pp. 3–37], factoring [Soufani 2002, pp. 239–252] and scoring [Frame, Srinivasan, Woosley 2001, pp. 813–825] just to mention some.

Relationship lending is a powerful mechanism used to reduce problems related to opaqueness in firms especially SMEs. Under relationship lending, “soft” information

is gathered by a financial institution (usually a small local bank) through continuous contact with the firm (usually SME) in the provision of financial services [Berger, Udell 1998, p. 645]. The information will be then used to evaluate the creditworthiness of the entrepreneur as a part of the loan process to ensure that the potential loan will be repaid.

The loans are some of the most complex banking products, especially because of the diversity of financial needs of the companies, but also because of the approval process. European Commission conducted a survey revealing that SMEs are highly dependent on bank loans for financing current activity and fulfilling their development ambitions [Silivestru 2012, pp. 178–188]. The link between finance and growth has been examined in a numerous empirical studies. After Levine [2005, pp. 866–934], Aghion [2007] surveyed these studies and highlights two results:

- most of them conclude that financial development has a positive and significant influence on economic growth;
- this influence may be explained by the fact that financial development reduces the external financing constraints on firms [Couppey-Soubeyran, Hericourt 2011, p. 2].

The importance of SMEs in the world economy was also observed by financial institutions. In that respect, many of the banking institutions recognized the SME sector as a strategic sector for increasing banks' profit margins [Beck et al. 2008; de la Torre et al. 2009]. According to the European Central Bank SME's access to finance survey for 2016, bank-related products remained the most relevant financing source for SMEs vis-à-vis market-based instruments and other sources of finance. Short-term bank finance (credit line, bank overdraft, credit card), followed by leasing and long-term bank loans are the most often used financing instruments across all size classes [ECB 2016, pp. 12–13]. In addition, de la Torre et al. [2010, pp. 2280–2293] find that, in order to serve SMEs, banks are developing new business models, technologies, and risk management systems to provide a holistic approach to SMEs through a wide range of products and services, with fee-based products rising in importance. SME banking appears to be growing fastest in emerging markets (low and middle-income countries) where this gap has been the widest. More and more emerging market banks are developing strategies and creating SME units [Kozarevic, Kokorovic, Jukan, Softic 2015, pp. 109–110]. On the other hand, after the last crisis, MSME is the sector most reliant on bank financing and creditworthy market segments are likely to be the most affected by the tightened credit conditions [Rădulescu 2009, p. 174].

In the early 2000s several researches discussed the demand side of SME lending [Schiffer, Weder 2001; IADB 2004; Beck, Demirgüç-Kunt, Maksimovic 2005; Beck, Demirgüç-Kunt, Laeven, Maksimovic 2006, pp. 932–952], while no comprehensive research existed on the supply side of bank financing to SMEs across countries. The first worldwide comprehensive study on SME banking was conducted by Beck, Demirgüç-Kunt and Martínez Pería [2008]. The intention of this survey was to investigate bank financing to SMEs around the world, focusing on three main areas: banks' perception of the SME segment, drivers and obstacles to SME financing, and banks' perception of the role of government programs to support SME finance and of banking prudential regulations. Beck et al. [2008] found significant differences in exposure, lending practices, business models, as well as drivers and obstacles of SME finance for banks operating in developed vis-à-vis developing countries. The differences between developed and developing countries are likely to reflect deficiencies in the contractual and informational frameworks in developing countries and less stable macroeconomic environment [Kozarevic, Kokorovic Jukan, Softic 2015, p. 111].

A key factor in the strength and success of small and medium companies is their access to financial resources. Research shows that MSMEs face greater difficulties in access to financing sources than larger companies. Financing their activities, especially the development of MSMEs, involves fewer financial resources of external origin, especially banks [Krasucka 2016, p. 83]. For the last few years, the main focus of the financial system (mostly banking sector) towards the real sector has been expanding. Being observed by the financial institutions as too complex for risk management, the MSME sector became the strategic goal for institutions around the world [Kozarevic, Kokorovic Jukan, Softic 2015, p. 108]. Small and medium enterprises' financing constraints are an important reason for its development in national policy in recent years.

The importance of MSME lending by banks in Poland

EU28 SMEs most often report using a credit line or overdraft, leasing and hire purchase, trade credit and bank loans as the most relevant sources of external financing. The same four types of external financing were most relevant in both 2016 and 2015 [EC 2016, p. 7].

In recent years, two-thirds of Polish MSME investment outlays was financed from their own resources, nearly one-fifth from domestic and one-twentieth from foreign

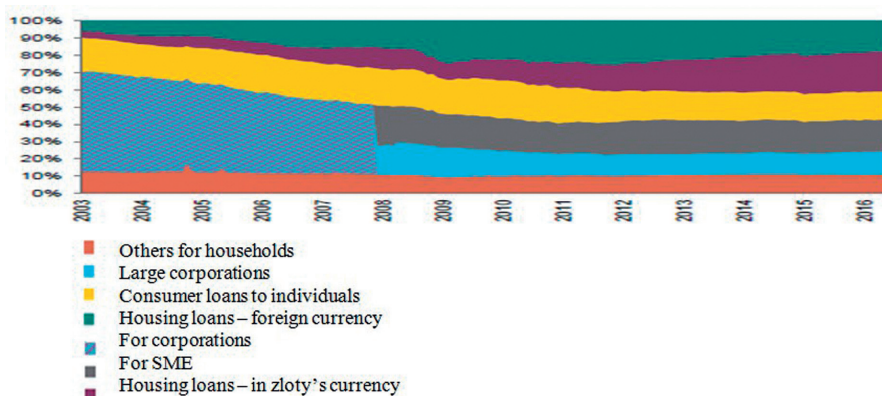
loans and credits. The bigger the enterprise, the greater the involvement of its own resources in financing investments, which relationship is determined by their economic potential [Brussa, Tarnawa (ed.) 2011, p. 28]. The most popular sources of financing the activity of MSMEs are their own equities, mostly in form of capital contributions of owners (partners) and retained profits as well as asset and equity transformations [Tarnawa, Zadura-Lichota (ed.) 2015, pp. 25–26].

Several studies on MSME banking development, focusing on transition economies in Europe, showed that, in case of Poland, there are noticeable patterns of change in how the banks regard the MSME sector through changes in policies and strategies of commercial banks for increased interaction with medium-sized firms. This clearly indicates that there are specific responses in the commercial banking sector to the specific circumstances of transition [Feakins 2004, pp. 51–70].

Level of loans for MSME, lending standards and conditions in 2014–2016

From the perspective of sustainable economic development a systematic increase in the share of SME's loans should be positively evaluated (graph 1) [NBP 2016d, p. 112].

Graph 1. Structure of loans to non-financial sector in the years 2003–VI 2016



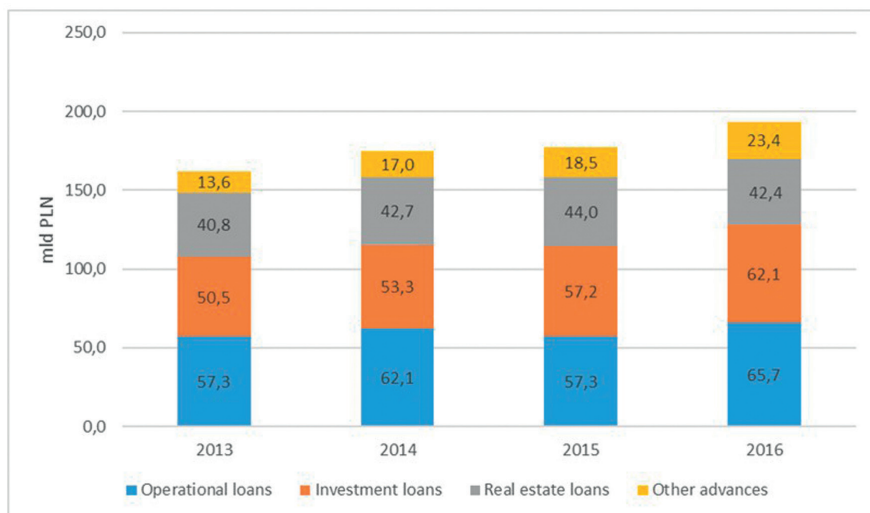
Source: NBP [2016c], p. 14.

The use of different types of loans by the MSME sector is presented in the graph 2. In 2014–2016 there was a significant acceleration of loans growth to MSMEs in the

Polish banking sector. The constant recovery of the economy improvement in economic conditions and historically low interest rates had a positive effect on the current and investment activities of MSME. Consequently, the sustained and significant increase in the value of various loans to these enterprises was observed, and with the exception of a stagnation in the total value of loans to the sector in 2013, in the following years they increased in value by 7%, 2%, 8%.

The structure of MSME loans shows that the largest share of loans by type were operational loans (38% in 2016). The second largest group of loans to enterprises were loans for investments, representing approx. 31% of loans. Real estate loans were very popular too (share of approx. 19%). It should also be noted that the structure of loans does not fully define the objectives on which companies allocate the raised capital (including some of the entrepreneurs financed investments under the overdraft facility).

Graph 2. Monetary Financial Institutions loans to SME and to individual entrepreneurs in years 2013–2016



Source: own elaboration on the base: NBP [2017a], NBP [2017b].

In 2014, the improvement of the economic situation resulted in a significant increase of lending activity to MSMEs. The quality of the loan portfolio stabilized, which favors the increase in loan demand and the supply. The recovery was also driven by low interest rates and some loosening of the credit policy of banks (including the

decrease of applied margins and collateral required), however that concerned short-term loans for MSME to the greatest extent [Kotowicz (ed.) (2015), pp. 7, 44].

According to the survey addressed to the chairpersons of banks' credit committees, the banks eased the standards of granting corporate loans at the end of 2014. The largest number of banks reported easing of lending policy for short-term loans to MSMEs. The standards of granting long-term loans to MSMEs were eased to the smallest extent [NBP 2015, p. 1].

In 2015, the maintenance of a significant recovery was observed in the area of corporate loans, which recorded growth in loans, which was higher than in 2014. In the context of corporate loans one has to take into account the systematic development of alternative forms of financing their business, the scale of which is comparable with the financing obtained from the domestic banking sector. Particularly, attention should be paid to the development of issuance markets of debt securities, leasing and factoring. In the case of MSMEs, the state of impaired loans has slightly increased, but due to the growth in lending activity, their share in the portfolio decreased [Kotowicz (ed.) 2016, pp. 8, 69].

In 2015 the lending standards were slightly tightened in the segment of loans. For the first time since the beginning of 2014, the banks increased also non-interest loan costs. The lending policy was tightened mainly due to the current or expected capital position of the bank. The increased financing needs for fixed investment were a factor supporting loan demand [NBP 2016d, p. 1].

In 2016, the value of MSME's loans increased. As for the purpose of granting loans, the growth in lending was observed mainly in the area of current activity loans and investment loans. In subsequent periods, there is opportunity for further growth in lending, which is supported by: sustained economic recovery, record-low interest rates and the stabilization of the loan portfolio. However, the NBP survey indicates a steady decline in interest in corporate loans, partly due to the generally good financial standing, as well as the development of alternative forms of financing [KNF 2016, pp. 21–22].

In 2016 there was a slight tightening of lending policy (except for long-term loans to SME, where the policy was not changed). A likely increase in credit spreads and tightening of other credit terms could make enterprises apply for loans with more caution, particularly in the case of enterprises lacking capacity to provide sufficient collateral [Osiński (ed.) 2016, p. 40]. An important condition of lending to the enterprise sector may be the fact that enterprises more often identify uncertainty in the economic envi-

ronment (both national and external) as a barrier to growth, which may also transform into lower demand for bank loan [NBP 2016f]. The banks' expectations regarding changes in demand for loans from large enterprises were more closely aligned with actually observed demand than in the case of loans to SMEs. An increase in demand will be noticeable only in the segment of short-term loans to SMEs. The banks tightened their standards in the segment of long-term loans to SMEs. On the other hand, the standards of granting short-term loans remained unchanged [NBP (2016e), pp. 1–5].

According to *A World Bank Group Flagship Report Doing Business 2017* [World Bank 2017, p. 15], which compares business regulation for domestic firms in 190 economies, Poland holds 24th position in "ease of doing business ranking" (it is one place higher than in the previous ranking). In getting credit Poland ranks 20th.

Conclusions

The MSME sector has been and remains the main development generator in Poland. In this context, MSMEs play an important role in increasing competitiveness and economic development. They are rightly considered as the main source of employment in general and the self-employment in particular.

Bank loans constitute important sources of external financing for MSMEs. Lending to the Polish economy in recent years has been characterized by an increase, which was most beneficial for MSME. Using borrowed capital is one of the main ways of developing business and insurance costs are the major factor in the profitability and competitiveness of entrepreneurship.

On the basis of statistical data and the literature review regarding lending to the Polish MSMEs, the paper presents, that this sector has better access to debt finance, which results in easing criteria for the evaluation of the current and future support measures of the bank sector for stimulating and attracting domestic and foreign investments. The MSME sector is becoming a strategic one for banks, which are willing to increase their involvement with these clients. Potential creditors could hinder long-term growth and innovation. On the other hand, the implementation of a more restrictive credit policy by banks after the last crisis included restrictions on granting loans, which affected enterprises.

Currently, terms and conditions for bank loans for MSMEs have improved and the willingness of banks to provide loans to these entities has increased. Declining inte-

rest rates have continued to reflect improvements in terms and conditions of bank loans. The general economic outlook has continued to have a positive impact on the MSMEs' financing conditions. Thanks to all these factors one can remain optimistic about the future availability of external financing.

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Operating Lease Capitalization – Reasons and its Impact on Financial Ratios of WIG30 and sWIG80 Companies

Abstract: According to current accounting regulations leases are classified as finance lease or operating lease. Assets under operating leases are not recognized on balance-sheet, hence they do not influence different financial ratios used to evaluate financial situation and performance of entities. In the literature there has been debate over the need, methods and consequences of operating lease capitalization since many years. This issue seems to be more and more important nowadays, because due to changes of accounting regulations (publishing new standard – IFRS 16), from the beginning of 2019 almost all leases will be treated as finance lease. This means that underlying assets (and corresponding liabilities) will be recognized on balance sheet, what may change financial situation (assessed on the basis of financial ratios) of many companies. The article is an attempt to assess potential impact of operating lease capitalization on chosen financial metrics and ratios of Polish companies. The study performed by the authors of this paper covers 20 companies of sWIG80 index and 11 companies of WIG30 index that disclosed information about operating lease in their consolidated financial statements for year 2015. The result of the empirical study showed that capitalization of operating lease will have a moderate effect on financial ratios.

Key words: leasing, capitalization, financial situation, financial statement

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Introduction

In January 2016, IASB published new accounting standard – IFRS 16 *Leases*, that radically changes accounting rules for lease agreement as compared to IAS 17 that is still in force or to Polish Accounting Regulations (i.e. Polish Accounting Act and Polish Accounting Standard no. 5) – consistent with IAS 17 in the area under consideration. According to IFRS 16 almost all assets used due to lease agreement are to be recognized on balance sheet (with corresponding liabilities), whereas currently operating leases are off one.

The idea of including (for purpose of financial analysis) all assets used due to operating lease had been under discussion for a long time, especially on the ground of financial statements analysis. Although the impact of accounting rules on financial ratios is recognized, there is a need for ensuring comparability of accounting rules with regard to accounting regulations and individual accounting policies so that one could compare financial situation of different companies. The problem of comparability refers to definitions of financial ratios. That makes analysts convert financial reports to ensure their comparability. However, the impact of operating lease capitalization should not be overestimated as it is dependent on the significance of such agreements.

This paper presents the general reason for operating leases capitalization and its methods, summary of prior researches and the results of the study performed on companies belonging to Warsaw Stock Exchange indices – sWIG80 and WIG30. The objective of the study was to assess the impact of operating lease capitalization on financial results of companies (that use assets on the basis of operating lease) as well as to find if that change is more significant for big companies (WIG30) than small companies (sWIG80).

Overview of accounting rules

Currently, according to IAS 17, as well as with Polish Accounting Regulations, lease agreements are divided into financial lease and operating lease due to several crucial aspects of those agreements¹. If a lease is classified as finance lease than the lessee recognize a leased asset as its own with corresponding financial liability. The asset is depreciated by the lessee and each lease payment is divided into repayment

¹ Specific terms of a lease agreement that are crucial for lease classification are outlined in proper regulations (IAS 17.10-17.12 and point 3.4. of Polish Accounting Act).

of liability and finance cost (interest) with the use of effective interest rate. In case of operating lease, the lessee does not recognize a leased asset (hence, the asset is off-balance sheet and it is not depreciated by the lessee) and the whole payment is recognized as an expense of a period². Although assets used due to operating lease are not recognized, there is obligation to disclose information which is helpful for financial statements' users to assess the significance of operating lease – i.e. lease payments recognized as an expense in the period or the total of future minimum lease payments for the following periods: not later than 1 year, 1–5 years, later than 5 years.

In January 2016 IASB published a new accounting standard – IFRS 16 that changes accounting treatment of leases. According to the new regulations almost all leases are to be treated as finance lease, apart from short term lease (shorter than 12 months) or lease of low value assets³. A lessee will be required to recognize a so called "right-of-use asset" (in a separate line of balance sheet or in the same line as a given fixed asset or intangible asset is presented) and a corresponding lease liability that represents obligation of a lessor to make payments. The initial value of this liability should be equal to the present value of the future lease payments, discounted with the interest rate of the lease or with the incremental borrowing rate. Each lease payment will be divided into amount that reduces liability and amount that is recognized as finance cost.

In result of the new accounting regulations for lease financial statements of companies that are prepared according to IFRS will present almost all assets used by companies, regardless they are their own assets or used due to different leases.

Reasons for operating lease capitalization

The conception of operating lease capitalization is not a new one. There were many studies performed and many papers published that explained pros and cons of that solution. It is worth to mention that this idea was then developed by IASB and FASB and as a result it was published new accounting standard (IFRS 16 Leases by IASB

² It is worth mentioning that tax regulations in Poland allow in many circumstances to treat lease agreements as operating lease. Such treatment is perceived as favorable for companies, because then all operating lease expenses are taxable costs.

³ It is important that due to IFRS 16 low value assets are assessed on an absolute value of an asset, regardless whether it is material to the lessee or not [IFRS 16.B3-B8, 2016].

and ASU 2016-02 Leases {Topic 842} by FASB). The Boards agreed that leases are so popular forms of getting access to use assets by many companies that financial statements cannot be perceived as faithful and transparent if they do not present those assets on balance sheet. Especially, the US Securities and Exchange Commission (SEC) estimated in 2005, that the value of assets, used by US public companies, that are off balance sheet due to operating lease, amounts to 1,25 trillion US dollar.

Attempts to recognize all leases on balance sheet began earlier, as in 1996 [McGregor, 1996] and in 2000 [Nailor, Lennard 2000] the group G4+1 published papers that advocates capitalization of operating lease in financial statements and presented proposals for new accounting regulations. In the opinion of G4+1 allowed for not recognizing material assets and liabilities arising from operating leases.

To sum up, it may be confirmed that the main reason for operating lease capitalization is to provide more faithful financial statements of companies using operating lease. However, due to opinions of different authors, investors seem not to have difficulties with taking into account the impact of operating leases when evaluating financial situation of companies [Imhoff 1993; Finnerty 1980]⁴ and this is why they are not misled by operating lease [Beattie, Goodacre, Thomson 2000]. Moreover, rating agencies, such as Standard & Poor's [2013] or Moody's [2015] translate official financial statements of companies to reflect operating lease when calculating financial ratios.

On the other hand, there are studies proving that investors do not adjust financial statements to reflect the effects of operating lease capitalization [El-Gazzar 1993; Garrod 1989].

Regardless of the fact whether investor are able to assess the impact of operating lease on financial ratios, it should be obvious that there is such an impact. But the question is if the strength of this impact is of great importance. In other words, one should ask: does capitalization of operating lease may change financial situation of a company, when it is assessed with financial ratios? The answer for this question seems to be of high importance now, because it is not only the matter of possible wrong assessment of any company but due to IFRS 16, beginning from 2019, financial statements prepared under IFRS will present almost all leases on balance sheet. It means that if investors were not capitalizing operating lease under IAS 17, their assessment of any company may change radically. This is also important for companies that today make use of operating lease, as their financial situation assessed by banks may also change.

⁴ However, some authors thinks that capitalization of operating lease is not very easy for investors or investors may not know that there is necessity to make such translations of financial statements [Altman 1977].

Prior research

Many studies are being performed to assess the effects of operating lease capitalization⁵. They focus mainly on the influence of financial ratios or profitability of companies that are of a given stock index [Fülbier, Silva, Pferdehirt 2008] or of a given industry sector [Goodacre 2003]. Although possible effects are easy to deduct, but the real effects are subject to many factors. Some factors deal with the significance of leased assets (as compared with assets presented on balance sheet) and size of a company, others – with the methods of lease capitalization. That is why some studies focus also on different methods of lease capitalization.

As far as methods of lease capitalization are concerned, there are generally two methods – one is known as the factor method, second – as the constructive capitalization. The factor method is a simple method that involves multiplying annual lease expense by a given factor (factor equal to 8 is used in many cases) to estimate the value of assets and operating lease liabilities. The constructive capitalization involves more complex calculations to estimate present value of future minimum operating lease payments (discounted with a proper interest rate) as the value of assets.

Regardless of the method of capitalization, different studies showed that operating lease capitalization increases profitability measured by EBIT, EBITDA or Net Income [Lee, Paik, Yoon 2014; Fülbier, Silva, Pferdehirt 2008]. There were observed also increases in leverage ratios and decreases in case of debt ratios, liquidity ratios and in ROA [Fito, Moya, Orgaz 2013]. In general, almost all studies revealed that operating lease capitalization has significant impact on ratios based on balance sheet and relatively less significant impact on profitability ratios.

There are also some studies that summarize other studies, and that is why the results of other studies were not presented fully in this paper. For example, very extensive studies on lease capitalization were performed by Lipe [2001], Barone, Bird and Moya [2014], as well as by Spencer and Webb [2015].

Very extensive world-wide study was performed by IASB [Effects Analysis, 2016], which was based on 1022 companies listed all over the world and its result was similar to those mentioned above. However, IASB compared also the effects of lease capitalization when using IASB's method of capitalization (close to the constructive

⁵ Studies on capitalization of lease have been performed for more than 50 years. As an example, Nelson [1963] investigated the effects of the off-balance sheet leases capitalization on financial ratios of 11 American companies.

capitalization) with so called "common market practice". It appeared that due to common market practice the value of operation lease (equal to annual operating lease expense x 8) is usually overestimated.

There are also some studies based on companies listed on Warsaw Stock Exchange in Poland [Pielaszek 2007; Czajor, Michalak 2016] that showed similar (as in other studies) relations between operating lease and changes of different financial ratios.

Results of study

This section of the paper presents the results of the study performed by the authors. The aim of the study was to find the importance of operating lease capitalization on financial results and financial situation of public companies. It is worth to be mentioned that consolidated financial statements of companies listed on Warsaw Stock Exchange (WES) are prepared under IFRS. It means that after implementing IFRS 16 majority of operating leases (due to IAS 17) will be treated as financial lease. That is why financial situation of the public companies will be close to financial situation with capitalization of operating lease.

That is why the authors also performed the study on the consolidated financial statements for year 2015 of public companies that comprise indices: WIG30 and sWIG80 at Warsaw Stock Exchange. The objective of this choice was to find, if there is a difference in the use of operating lease (and its influence on financial ratios) on big companies (WIG30)⁶ and relatively small companies (sWIG80). There were 22 available financial statements of WIG30 companies (other than banks or insurance companies) and 78 of sWIG80. Information about the use operating lease was disclosed by 11 companies of WIG30 and 24 companies of sWIG80 (but 4 of them were not sufficient to be included for the study). Finally, the study was performed on the sample of 31 companies. Assets that were used by the companies under operating lease was mainly transport vehicles and buildings.

It should be stressed that only about 25% of sWIG80 companies and 50% of WIG30 companies use operating leases and disclose proper information. This is rela-

⁶The initial study on the use of operating lease on the sample of WIG30 companies was performed by authors [Czajor, Michalak 2016] but now there were more ratios included and the effects of operating lease capitalization on WIG30 companies were compared with its effects on sWIG80 companies.

tively less than in extensive IASB's study where 14.000 out of 30.000 companies disclosed information about operating leases. On the other hand, this result is similar to those presented by Pielaszek [2007], where only 27% (of 199 listed companies) disclosed information about operating leases. This may suggest that bigger companies (index WIG30) are more engaged in operating leases or just disclose better information.

The companies under survey were classified⁷ according to the stock index (WIG30 and sWIG80), significance of operating lease (measured by ratio of future minimum lease payments (MLP) to total assets (TA) and credit rating (measured by Z"-score).

According to the significance of operating lease, companies were classified within following range: ratio MLP/TA lower than 1% (14 companies), 1%–5% (12 companies), more than 5% (5 companies).

According to the credit rating, companies were classified⁸ as high grade (21 companies), medium grade (6 companies) and low grade (4 companies). This may suggest that high grade companies are more eager to use operating lease or to disclose information about operating lease.

The use of model transformation of financial statements in order to capitalize operating lease allowed to check its importance for performance and financial situation of companies included in WIG30 index and sWIG80 index. The importance of operating lease capitalization was measured by comparing several ratios, which are prone to the treatment of operating lease and which are usually used in different studies that deal with operating lease. There were also measured the increase of total assets and nonfinancial fixed assets. To sum up, in the study there were included changes (with operating lease presented off-balance sheet and with capitalization of operating lease) of following measures:

1. Total assets and nonfinancial fixed assets,
2. EBIT and EBITDA,
3. EBIT margin and EBITDA margin,
4. Long Term Debt to Equity,
5. Total Liabilities to Equity,
6. EBITDA interest coverage and EBIT interest coverage,
7. ROCE.

⁷ There were not used industry sector as a criterion of classification because companies under study represented 10 or more different industry sectors.

⁸ The level of credit ranking is based on Z"-score presented at: www.stockwatch.pl/gpw/indeks/gpw,sklad.aspx (10.02.2017)

EBIT and EBITDA are not defined by IFRS, hence these metrics were calculated as: EBIT is equal to operating profit, and EBITDA is equal to EBIT increased by depreciation and amortization. The other measures were calculated according to the methodology outlined in table 1.

Table 1. Definitions of ratios

Ratio	Definition
EBIT margin	EBIT / Sales revenue
EBITDA margin	EBITDA / Sales revenue
Long Term Debt to Equity	Long Term Debt ⁹ / Equity
Total Liabilities to Equity	Total Liabilities ¹⁰ / Equity
EBIT interest coverage	EBIT / Interest
EBITDA interest coverage	EBITDA / Interest
ROCE	EBIT / (Equity + Long Term Debt + Short Term Debt)

Source: own calculations.

Capitalization of operating lease, as mentioned before, has impact on categories used to calculate various financial ratios. For simplification it was assumed that there is no impact on equity – such simplification is also made in different studies. Other changes are in line with the method adopted by the authors of the paper, which is simplified and close to that used by Moody's [2015] before 2015. The value of leases assets and value of liability was equal to undiscounted future minimum payments on operating lease. Depreciation of assets held under operating lease was equal to two thirds of annual lease expense and one third of annual lease expense stands for interest. To summarize, the changes of above categories estimated in this paper that are the effects of operating lease capitalization, are as follows.

⁹ Debt was defined by authors as interest bearing financial liabilities. It means that there were included loans and credits, finance lease liabilities and debt instruments issued by companies.

¹⁰ As Total Liabilities that were included all short-term and long-term liabilities, including provisions and deferred revenues.

Table 2. Changes of financial measures due to operating lease capitalization

Before operating lease capitalization	After operating lease capitalization
EBIT	EBIT + 1/3 of annual lease expense
EBITDA	EBIT + annual lease expense
Long Term Debt	Long Term Debt + minimum lease payments after 1 year
Short Term Debt	Short Term Debt + minimum lease payments not later than 1 year
Total Liabilities	Total Liabilities + all minimum lease payments
Interest	Interest + 1/3 of annual lease expense
Capital Employed	Capital Employed + all minimum lease payments

Source: own calculations.

The study performed by the authors on companies that comprise indices WIG30 and sWIG80 revealed following information (all the changes are expressed in percentage¹¹, as a relative measure that illustrate the significance).

According to the study, capitalization of operating lease increases the amount of assets (as well as nonfinancial assets) of all 31 companies by 6,45 billion PLN (5,19 billion PLN in case of WIG30 and 1,26 billion PLN in case of sWIG80) what is 2,65% of total assets (2,4% - WIG30 and 5% - sWIG80) and 4,46% of nonfinancial fixed assets (3,9% – WIG30 and 10,9% – sWIG80). When comparing the influence of operating lease capitalization from the perspective of individual companies, then the increase amounted from 0,07% to 41,28% for total assets, and from 0,16% to 172,32% for nonfinancial fixed assets. It is worth mentioning that relatively high increase of TA (more than 5%) was in only 3 companies (3 – sWIG80, 3 – WIG30) and high increase of NFA (more than 10%) was in only 6 companies (4 – sWIG80, 2 – WIG30). Median of the estimated increase was 1,64% for TA and 3,00% for NFA (respectively 1,57% and 2,53% in case of WIG30 companies, 2,05% and 3,60% in case of sWIG80 companies).

Summary of the results of the study – the influence of operating lease capitalization on financial ratios are presented in tables 3 and 4. Additionally there was me-

¹¹ Change expressed in terms of percentage was calculated as: (ratio after capitalization – ratio before capitalization) divided by ratio before capitalization. It means that if for example any ratio (or value) equaled to 10% (0,10) before capitalization and it went up to 12% (0,12) the change amounted to 20%, calculated as (0,12 – 0,10) / 0,10.

assured the correlation between median¹² of ratios before and after operating lease capitalization (for all companies under study) by conducting nonparametric test – Spearman Rank Correlation Coefficient (table 3).

Table 3. Changes in median of financial ratios as a result of operating lease capitalization (31 companies)

	before operating lease capitalization	after operating lease capitalization	change	relative change	Spearman correlation
EBIT margin	5,44%	5,88%	+0,44%	+8,07%	0,987**
EBITDA margin	10,70%	12,28%	+1,58%	+14,73%	0,979**
LTD / Equity	24,66%	31,42%	+6,96%	+28,44%	0,748**
TL / Equity	80,78%	88,30%	7,52%	+9,30%	0,945**
EBIT Interest coverage	7,43	6,25	-1,18	-15,87%	0,946**
EBITDA Interest coverage	11,85	10,72	-1,12	-9,50%	0,914**
ROCE	9,89%	9,46%	-0,43%	-4,35%	0,994**

**Correlation was significant at the 0,01 level (2-tailed)

Source: own calculations with IBM SPSS Statistics 24.

Above observations revealed that there are changes of financial ratios which are affected by operating lease capitalization. The changes are in line with assumption that can be derived from theory, as the impact of operating lease capitalization on different financial statements categories is concerned. It should be assumed that companies with higher use of operating lease (which was measured as MLP/TA) should experience more significant changes of financial ratios. Table 4 outlines the relative changes in median of financial ratios for companies included in this study but classified into different groups, which were described before.

¹²There were used median (not mean) of ratios in order to reduce the impact of outlier observations. Due to this assumptions were also conducted other studies performed by other authors [e.g. Goodacre, 2003; Fuelbier, Silva, Pferdehirt, 2008].

Table 4. Relative changes in median of financial ratios as a result of operating lease capitalization (under different criteria of classification of companies)

	n	EBIT margin	EBIT-DA margin	LTD / Equity	TL / Equity	EBIT Interest coverage	EBITDA Interest coverage	ROCE
WIG30	11	2,36%	17,76%	8,38%	0,55%	-37,06%	-5,04%	-1,71%
sWIG80	20	2,16%	11,13%	58,99%	18,47%	-32,85%	-31,31%	-0,09%
low-grade	4	9,04%	78,21%	118,38%	18,98%	-5,46%	1,68%	-3,65%
medium-grade	6	19,71%	1,93%	24,74%	8,53%	18,77%	-13,02%	-0,42%
high grade	21	3,57%	16,44%	15,62%	32,05%	-22,93%	-29,39%	2,85%
MLP/TA <1%	14	1,73%	4,50%	2,70%	2,23%	-2,49%	1,17%	0,36%
MLP/TA >1% & <5%	12	2,12%	16,49%	15,74%	6,43%	-14,14%	13,89%	-4,13%
MPL/TA >5%	5	176,99%	7,34%	435,08%	88,34%	-6,80%	-59,89%	-1,71%

Source: own calculations with IBM SPSS Statistics 24

Due to the number of observations (companies included in the groups), which is not significant for some groups, it is not possible to generalize the effects of the study. Despite this fact, the most significant changes of the most of financial ratios, as the effects of operating lease capitalization, have been observed for companies with the highest use of operating lease (MLP/TA > 5%).

In general, there have been also a bit higher relative changes in median of EBIT/EBITDA margin in case of big companies (WIG30), than it was observed for small companies (sWIG80). However, the changes in debt ratios was more significant for small companies (sWIG80), what may be the result of lower value of debt (and total liabilities) of this companies.

As far as credit ranking is concerned, low-grade companies are especially exposed to the changes of debt ratios. On the other hand, high-grade companies are one of the two groups, for which there was an increase of ROCE. The second group with positive changes of ROCE was companies with low significance of operating lease.

Conclusion and limitations

The results of the empirical study are consistent to those achieved in other studies mentioned in the paper. Although the capitalization method adopted by the authors was simplified, operating lease capitalization will have a moderate effect on profitability and financial ratios of companies. The changes are higher for those companies that use operating on a large scale. Capitalization of operating lease improves profitability measured by EBIT or EBITDA, although its impact on profitability ratios (e.g. ROCE) is not straightforward. On the other hand, debt ratios seem to be worse when including the effects of operating lease capitalization. This fact may be the reason, why companies with lower credit ranking may not be eager to disclose full information about operating lease. According to the accounting regulations, operating lease is off balance sheet today, what may be also an incentive for low-grade companies to use this form of financing on a bigger scale than other companies (with better credit ranking). Such assumption seems to be justified, especially that it is also possible, that not all investors or creditors perform analysis to include operating lease. That is why low-grade companies should consider implementing of IFRS 16 as important, as its effects should be very close to the effects of operating lease capitalization (and due to this, credit ranking of low-grade companies may decline).

There are several limitations of the study presented in this paper. The authors plan to compare the changes on financial ratios when applying constructive method of capitalization. It would be useful also to compare the effects of operating capitalization between industries. This paper is neither very complex study, nor its results are ultimate. On the other hand, the paper expands the knowledge in the area of operating lease capitalization and may be inspiration for further, more complex studies. The analysis of the effects of operating lease capitalization is useful also for companies, who prepare financial statements according to Polish Accounting Regulations and are authorized to make choice between presenting lease as finance or operating. The choice of accounting policy should be perceived in their case not only as a simplification of accounting procedures, but also from the perspective of its influence on financial ratios assessed by potential investors and creditors.

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The Banking Sector in the Context of Financialisation

Abstract: The article presents and evaluates changes taking place in the Polish banking sector in the context of financialisation. It consists of three parts, the first of which provides an insight into the special features of a financial system, the second one reviews studies investigating linkages between the financial system and the economy and the issue of financialisation, and the third one provides numbers illustrating the expansion of the Polish banking system in relation to the country's economic growth measured with its GDP. The analysis has not shown that the banking system and the banking sector have grown to a level where financialisation becomes a problem. Even so, the rate at which the financial system, particularly the banking sector, changes gives rise to concerns about excessive expansion of the banking sector, misallocation of financial capital, and a risk of financial crisis.

Key words: financialisation, financial system, banking sector

JEL classification: O10, G20, G21.

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Introduction

The consequences of the financial crisis have stimulated interest in the mechanisms of a financial system and its functions, particularly in its enabling function in the economy. The relations between a financial system and economic development have been investigated by many authors. They have been found to be positive in the long term and it has been argued that a well-functioning financial systems support economic growth and increases the efficiency of other sectors, as well as that effective financial intermediation improves allocation of capital and contributes to GDP growth. These conclusions have been thrown into doubt by the turmoil caused by the financial crisis, though. Studies that are more recent indicate that a financial system expanding beyond a certain point may have a dampening effect on the real sphere of the economy. Considering the changeability of the setting, these cognitively vital issues are worth being analysed more closely.

This article has been designed to identify and evaluate changes occurring in the Polish banking system. It tests a hypothesis that the system's expansion in the years 2007–2013 may pose a problem to the real sphere of the economy, as the concept of financialisation maintains. The article has three parts. The first part discusses the special features of a financial system and presents the pertinent definitions, functions, and the models of financial systems. The second part reviews studies investigating linkages between a financial system and the economy and introduces the issue of financialisation. In the third part, numbers are provided to illustrate the expansion of the Polish financial system with respect to economic growth measured by the country's GDP.

1. The Special Features of a Financial System

A financial system that is generally defined as a set of linkages between supply and demand through which capital and other financial services are delivered [Schmidt & Tyrell 2003, p. 3] is a part of the economic system that constitutes a component of the wider social system [Polański, Pietrzak and Woźniak 2008, p. 15]. The financial system and the real sphere together make up the economy. A financial sector is understood more narrowly than a financial system is. Its purpose is to make available and deliver financial services to other sectors in the economy. A financial sector consists

of the central bank, other monetary institutions, non-banking financial institutions, formal financial markets and regulatory and supervisory institutions. Economics, law, and finance operate various definitions of the financial system that reflect a wide range of perspectives. The subject matter of the financial system is wide-ranging and multifaceted [Czechowska, 2009; Matysek-Jędrych 2007]. The definitions of a financial system that are usually adopted in the literature, can be broadly summarised as legal [Krasowska-Walczak 1996, p. 21], dynamic (a financial system as a mechanism enabling money and purchasing power to flow between market players in the economy), functional (a financial system as a mechanism stimulating money circulation, ensuring liquidity in the economy, and enabling intermediation in financial flows, transformation of savings into investments, and control and monitoring over non-financial entities [Pietrzak, Polański and Woźniak 2004, pp. 329–334], proprietary (the focus of this approach is on the market financial system and the public financial system [Pietrzak, Polański and Woźniak 2004, p. 19 and 44], structural (a financial system as a combination of markets, instruments, institutions and operational rules) [Pietrzak, Polański and Woźniak 2008, p. 20]. Following an extensive review of the main approaches used in studies on the financial system, Anna Matysek-Jędrych has identified four of them that are the most important [Matysek-Jędrych 2007, pp. 39–41]:

- The institutional approach,
- The intermediation-based approach,
- The functional approach,
- The systemic approach,

The institutional approach

The institutional approach is a descriptive approach that draws on institutionalism or neo-institutionalism [Furubotn & Richter 2008]. It refers to the institutional framework, i.e. the legal, social and economic norms and standards, and describes and studies financial institutions (banks, insurance companies, pension funds and investment funds, financial markets, and the central bank), structures and changes in time, evaluates competition and openness to foreign capital, the protection of investors and the quality of the regulatory and supervisory environment. The research methods include description, classification and statistical and empirical analysis. The institutional approach uses the term of a financial institution [Schmidt & Tyrell 2003, p. 6].

The intermediation-based approach

This approach concentrates on the monetary function of the financial system (supplying the economy with money), mechanisms stimulating the circulation of purchasing power, and on the co-creation and stimulation of monetary flows mainly by the central bank and the commercial banking system [Matysek-Jędrych 2007, p. 40; Karkowska 2012, p. 100]. Its analytical component focuses on intermediation and transformation (of amounts, deadlines and risk), giving special attention to intermediation functions and problems related to asymmetry of information [Matysek-Jędrych 2007, p. 40]. The intermediation-based approach studies also the sector of non-financial institutions and maintains that a financial system is the better the more intermediation services it provides [Schmidt & Tyrell, p. 12].

The functional approach

The functional approach gives stress to financial system's functions rather than its institutions, because „functions are more stable than financial institutions are, and institutional solutions are a direct consequence of the functions delivered by a financial system” [Matysek-Jędrych 2007, p. 41]. The approach maintains that a financial system should primarily ensure the efficient allocation of resources via a banking system or a financial market [Levine 1996, p. 6]. Based on money flows related to direct financing by the financial market and to indirect financing provided by financial intermediaries, two models of a financial system can be indicated: the market-oriented, Anglo-Saxon model, and the continental model with the key role of the banking system [Kozłowski 2007]. The financial system in Poland, likewise in Italy, Spain, Portugal and France, has been formed after the continental model that it is also known as the German-Japanese model. The Anglo-Saxon model gives a special role to various types of funds and specialised investment banks [Jaworski & Zawadzka 2006, pp. 30–31].

The systemic approach

The systemic approach to a financial system defines it as “a structured set of complementary (strengthening each other) elements that are coherent to the possible extent” [Matysek-Jędrych 2007, p. 41]. The approach focuses on analysing how the

financial system's components are related to each other and how the relationships between them influence the system as a whole.

Anna Matysek has synthesized the above approaches into two major perspectives accentuating the structural and institutional dimensions of a financial system (the institutional approach, and the systemic approach) and its functions (the monetary approach, the intermediation-based approach and the functional approach). Based on her analysis, a holistic definition of a financial system has been created, which identifies it as an entirety consisting of interrelated financial institutions, financial markets, the elements of infrastructure through which the real sphere obtains funds, invests savings and satisfies other financial needs [Matysek-Jędrych 2007, p. 41]. The question of the functions of a financial system emerged, when analyses were extended to the financial market's imperfections, such as asymmetry of information [Levine 1996, p. 2; Levine 2003, pp. 31–46] and transaction costs [Williamson & Masten 1999]. Table 1 shows the functions of a financial system as proposed by various authors.

Despite the wide diversity of the financial system's functions presented in table 1, their list is not complete. It is anyway sufficient to see that authors tend to identify the monetary, distributive, allocation and control functions of the financial system. Among the many functions of a financial system, its influence on the economy and economic development is stressed as important.

Table 1. The functions of the financial system

Author	The functions performed by the financial system
Merton Bodie (1995)	– to provide ways to transfer economic resources across time and space. – to provide effective ways of managing risk (methods and procedures). – to provide ways of clearing and settling payments. – to provide a mechanism for the pooling of resources and for the subdividing of shares in enterprises – to provide price information to enable the coordination of a decentralised decision-making process. – to provide incentives in the face of asymmetry of information.
Levine (1996)	The main function: allocation of resources in time and space in an uncertain setting. Other functions include: – risk diversification and sharing, hedging of risk; – allocation of resources. – monitoring of managers and exerting corporate control – mobilisation of savings. – facilitating the exchange of goods and services.
Wypych (2001)	– allocation – redistribution – lending – stabilisation
Polański, Pietrzak, Woźniak (2004)	– monetary (creation of money flows). – capital and redistributive (ensuring liquidity in the economy, intermediation in financial flows, transformation of savings into investments). – control (control and monitoring of non-financial entities).
European Commission (2014)	– financial intermediation between fund providers and fund users. – risk transformation and delivery of safe services. – organization of the system of payments and the delivery of payment and transaction services. – the creation of markets where financial instruments can be traded and priced.

Source: Merton and Bodie et al. 1995, pp. 7–10. Levine 1996, pp. 5–25. Wypych 2001, p. 29. Polański, Pietrzak and Woźniak 2008, pp. 17–20. European Commission 2014, pp. 23–24.

2. The Significance of a Financial System for the Economy in the Context of Financialisation

The common belief that a financial system is important for the functioning of the economy is well illustrated by a saying describing it as the lifeblood of the economy or the engine of economic growth [Flejterski 2009, p.1]. Accordingly, the quality of its structure must be vital to the course of real processes. Economists differ in their opinions on how a financial system and economic growth are related to each other and on the nature of the interactions between them. Some hold that a financial system

and the economy are independent of each other, others argue that it is the real economy that influences the financial system, and still others believe that the opposite is true [Balcerowicz 2005, p. 125]. It is indicated that the relationship between the development of an economic system and economic growth is positive in the long term [Levine 1996, p. 55; Lopez & Spiegel 2002, p. 22, 41], and that the role and significance of financial systems increase because they contribute to economic growth by stimulating productivity, etc. (Caprio & Honohan 2001, p. 22, 41).

The financial crisis of 2008 placed a question mark on the positive influence of the financial system on the economy and sent a signal that changes were necessary. The issue of the financial system has been raised in the European Union's documents. The proposed programme of reforms recommended a financial system that would serve the economy and support sustainable economic growth [European Commission 2014, p. 22]. This recommendation was based on theoretical assumptions and the results of empirical studies [Levine 1997; Bijlsma & Dubovik 2014]. An efficient financial system should enable the exchange of values, intermediation, risk sharing, and liquidity [European Commission 2014, pp. 23–24, Pietrzak, Polański, and Woźniak 2008, pp. 17–20].

The awareness of the role financial systems play in the economy caused researchers to direct their attention to the issue of financialisation. This neologism came into regular use in early 1990s (Vercelli, 2013, p.19–46), so it is relatively new in the literature [Ratajczak 2012, p. 3]. Its Polish equivalent is 'finansjalizacja', but other terms are also used in the Polish literature to describe this phenomenon, for instance 'finansyzacja' [Ratajczak 2012, p. 282], 'ufinansowanie', 'kapitalizm finansowy' (finance capitalism) [Małecki 2014, p. 462], 'bankokracja' (bankocracy) [Flejterski 2009], or 'giełdyzacja' or 'kapitalizm kasyna' (casino capitalism) [Kowalik 2009, pp. 9–12]. The definitions of financialisation focus on the special (and increasing) role of the financial sphere and financial criteria in the functioning of economies [Epstein 2001, pp. 2–3]. Financialisation is described as a long-term trend changing the position of the financial system in relation to the rest of the economy [Ratajczak 2012, p. 282], or dramatically increasing the importance of the financial sector for economic activities [Małecki 2014, p. 468]. In the literature, financialisation is used in its broad as well as narrow sense. In the narrow sense, financialisation means that the non-financial entities increase their engagement in financial activity, which changes the structure of their income and increases its amount coming from financial transactions (financial investments) [Krippner 2005, p. 174]. In the broad sense, financialisation is meant as „the growing autonomy

of the financial sphere from the real sphere” or even its superiority over the latter. This concept holds that financial markets and financial elites have influence on the economic policy and economic results on the micro and macro scale [Ratajczak 2012, p. 283. Marszałek 2013, p. 236]. Financialisation means that financial institutions seek short-term profits, boosting demand for financial instruments such as derivatives and financial engineering. With rising preference for short-term investments, quick profits rather than the stability of development are pursued. Interestingly, financialisation affects not only economic processes but also social processes, because it is associated with a peculiar, utilitarian, financial culture that combines economic activity with rentier attitudes and leads people to accumulating wealth through risky financial transactions rather than by starting a business or taking a job [Ratajczak 2012, p. 283, 298].

Part of the discussions about financialisation is the question about the evaluation of the role of an expanding financial sector for job and wealth creation when the role of the real sphere and traditional manufacturing is limited. How financialisation is perceived frequently depends on the economic views one holds, as in the case of economic theories explaining the financial crisis. The positions towards financialisation can be generally divided into two groups [Krasiuk 2011, pp. 356–360]. The supporters of heterodox economy (accepting interventionism and holding views similar to those of Keynes) evaluate financialisation negatively and consider it a serious problem [Vercelli 2013, pp. 19–46]. They argue that financialisation can lead to significantly larger amounts of capital being allocated to financial activity than to the manufacture of goods and delivery of services. This may decelerate the general economic growth while increasing the possibility of social inequalities growing larger [Tomaskovic-Devey & Lin 2015]. A concern is also expressed about „the central role of finances in the modern economy... and about a gap between finances and the real industrial production” [Hardt & Negri 2011, p. 130]. Viewed from this perspective, financialisation changes the form of government from democratic into plutocratic and gives the „parasitic” representatives of the financial sphere the power to exert pressure on legislation processes and government [Hardt & Negri 2011, p. 130]. In the analyses of financialisation, the issue of information asymmetry and of complex financial instruments leading to risk assessment problems is also raised. Other problems include the growing ownership of the real sphere by financial institutions and the financialisation of assets, including human capital [Wigan 2009, pp. 157–172].

The supporters of the dynamic growth of the financial system are economists with neo-liberal, free-market views, who represent the neoclassical school of econo-

mics. They consider financialisation to be a natural process in a market economy, in contrast with state's activity (regulatory and supervisory measures, macroeconomic policy: fiscal and monetary) that exacerbates crises and diminishes the market's capacity for self-regulation [Ratajczak 2012, p. 286]. There are many signs of financialisation taking place in the economy, some of which are a rising proportion of income from financial activity and increasing debt of non-financial entities, enterprises, households, and the government. The causes of financialisation and its effect on economic growth have been studied by Marianna Księżyk [2013, pp. 5–24]. According to Paweł Marszałek, financialisation carries the following consequences that intensify in severity in time [Marszałek 2013, p. 239]:

- restraining effect on economic growth,
- a different shape of the economic cycle
- economies at greater risk of financial crisis.

An indication of financialisation is the role that financial institutions, especially banks, play in the economy. Some measures of the roles are the share of publicly listed banks in stock exchange capitalisation, or the ratio between the banking sector's assets and GDP. Because of the limited space of this article, only several aspects of financialisation relating to the banking sector will be discussed.

The development of the banking sector and its influence on the real economy were studied by many authors. They indicated that the financial market developed as a result of institutional reforms (the liberalisation of the banking sector, protection for creditors and shareholders). Analyses were made to establish the effect of the reform-driven increase in bank lending and expansion of securities markets on economic development. According to research results, the growth of the real economy was stimulated, inter alia, by improved access to corporate loans that made it easier for firms to start and expand their business, as well as enabling better allocation of capital [Pagano 2014, p. 27]. In considering the relation between the development of the financial market and economic growth, authors tried to identify the cause and the result of their interaction by analysing data at country, industry and firm levels [King & Levine 1993a; King & Levine 1993b; Porta et al 1996; Thorsten, Degryse and Kneer 2014; Guiso, Sapienza, and Zingales 2003].

Quite recently (2012), it has been observed that the expansion of the financial market influences economic growth until some specific value of the loan-to-GDP ratio is reached. Beyond that point, the influence is not positive and even turns into

negative [Pagano 2014, p. 29]. Having analysed the 1970–2003 UNIDO data on annual value added in 28 industries and 63 countries, Pagano and Pica have found evidence that the expansion of the financial market contributed to non-OECD countries' growth by making funds more available [2012, pp. 5–55]. Arcand, Berkes and Panizza have demonstrated that the correlation between banking credit and GDP becomes negative when their ratio exceeds 100% (2012). Explaining the negative effect of the dimensions of the banking system on the real sphere of the economy, Marco Pagano has stated that [2014, p. 32]:

- an 'oversized' banking sector contributes to the misallocation of financial and human capital. The volume of housing loans, better secured and easier to assess, increases in relation to corporate loans.
- bigger banking systems are more prone to major financial crises.

3. The Expansion of the Banking Sector in Poland

The consequences of the financial crisis were not harsh on Poland. Some of the reasons for this, it is believed, were the relatively weakly developed financial system that launched complex financial products relatively recently, as well as fairly limited use of banking and financial services in the country [Marszałek 2013, p. 235]. An indication of the financial system's tendency for gradual expansion is an increasing ratio between its assets and GDP. In Poland, the ratio is lower than in the Czech R., Hungary and the euro area, but the rate of its growth is the fastest among the analysed countries. For instance, between 2003 and 2015 it increased by 162%, whereas the Czech, Hungarian and euro area rates grew by 124%, 137% and 132% respectively (see table 2).

Table 2. The financial system's assets to GDP ratio in selected Central and Eastern European countries and the Euro area, years 2003–2013 (%)

Specification	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	* %
Poland	75.9	78.6	85.0	96.5	103.2	110.3	111.0	116.2	116.4	121.2	125.9	121.4	122.8	162
Czech R.	124.4	119.3	126.7	125.6	134.3	137.3	138.4	140.7	147.0	153.3	165.0	164.4	154.4	124
Hungary	93.0	100.0	114.9	128.4	140.5	152.3	165.0	168.8	150.7	135.1	132.9	133.3	127.0	137
Euro area	351.2	365.7	419.8	442.7	465.3	461.2	481.7	493.6	493.8	487.1	470.6	493.8	463.6	132

* The rate of growth between 2015 and the baseline year of 2003 (%).

Source: NBP 2007, p. 13, NBP 2008, p. 13, NBP 2009, p. 15, NBP 2012, p. 7, NBP 2014, p. 22, and author's calculations.

One of the key players in the financial system is the banking sector. In Poland, as well in other countries of the region (Czech R., Hungary, Slovakia), the sector has a dominant position. From 2011 to 2013, its assets accounted for more than 80% of GDP (NBP 2014, 24) and in the period 2012–2013, the banks' share of the asset structure of the Polish financial system exceeded 67%. In spite of the banking sector being the centrepiece of Poland's financial system, it seems relatively small (in terms of assets and loans in relation to GDP) in comparison with banking sectors in other EU member states [NBP 2014, 120]. Its expansion was triggered in the late 1980s by political transition that brought a wave of deregulation, liberalisation and ownership changes. In the next years, stabilisation processes and a growing role of banks in the economy were observed. The expansion of the Polish banking sector, although noticeable, was moderate compared with that in other countries. The cause of delays was its previous functioning in the centrally planned regime (see tables 2 and 3). The data in table 3 show that while the Polish deposits-to-GDP ratio was lower than the loans-to-GDP ratio, in 2015 the volume of bank deposits grew more or less the same as loans.

Table 3. The degree of development of the banking sector in selected countries in Central and Eastern Europe and the Euro area, years 2007–2015 (%)

	Assets/GDP										Loans/GDP									
	2007	2008*	2009	2010	2011	2012	2013	2014	2015	2007	2008	2009	2010	2011	2012	2013	2014	2015		
Poland	67.4	81.5	78.9	81.8	83.3	83.5	85.9	88.5	88.7	35.9	45.9	46.2	49.2	51.4	50.0	48.7	48.8	51.6		
Czech R.	105.4	109.1	112.9	114.2	117.1	120.5	132.4	131.8	122.9	50.3	55.2	56.5	54.7	54.9	55.9	64.4	66.4	63.4		
Hungary	95.9	109.1	111.1	103.7	104.2	93.8	85.5	84.7	82.6	47.7	54.7	52.5	52.0	50.7	43.8	39.3	36.7	30.3		
Euro area	316.7	330.6	333.6	338.6	355.8	344.8	308.3	309.9	296.0	134.7	137.4	141.5	120.5	105.7	103.2	97.0	94.2	92.0		

* The data are not fully comparable with the previous years' data because of different sources and coverage.

Source: NBP 2011, p. 10. NBP, p. 12. NBP 2014, p. 24, NBP 2015, p. 15 and author's calculations.

Table 4. The degree of development of the banking sector in selected countries in Central and Eastern Europe and the Euro area, years 2003–2015 (deposits/GDP, %)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	D *	L *
Poland	36	34	33.5	35.4	35.9	38.7	41.5	43.6	44.8	44.8	46.6	48.4	51.2	1.4	1.4
Czech R.	61	58	58.6	60.0	62.8	59.1	63.9	65.8	73.6	78.6	79.8	79.2	76.3	1.2	1.3
Hungary	40	40	34.0	35.2	34.5	36.5	37.2	34.8	36.0	35.4	32.4	31.7	32.8	0.9	0.6
Euro area	97	b. d.	102.0	106.0	112.1	116.6	122.7	85.4	80.4	83.1	82.4	83.4	83.4	0.7	0.7

D* The growth rate of deposits between 2015 and the baseline year of 2007 (%).

L* The growth rate of loans between 2015 and the baseline year of 2007 (%); based on data in table 2.

Source: NBP 2005, p. 15, NBP 2008, p. 16, NBP 2011, p. 10, NBP 2014, p. 24, NBP 2015, p. 15 and author's calculations.

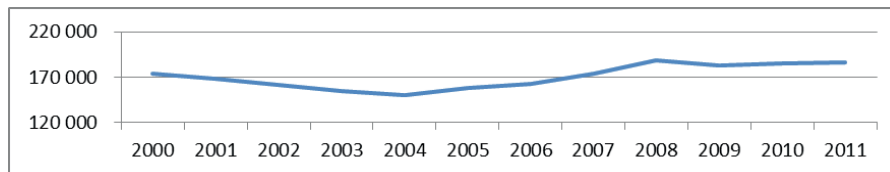
The impacts of the financial crisis, considerable elsewhere, did not have significantly change the condition of the Polish banking sector that remained relatively good. Its net profit recorded in the years 2007–2015 was high, above PLN 15 billion year in, year out. Profitability measured by the profit-to-assets ratio and the profits-to-equity ratio was gradually declining as the volume of business expanded, but it was still higher than in the sector of non-financial enterprises [NBP 2015, 123–124]. One must be aware, though, that it is a dynamic process rather than a permanent state. Because of decelerating economic growth, falling interest rates, political instability and growing competition it is very important for banks (as publicly trusted institutions) to establish and maintain solid relations with their customers, if they want to pursue strategy of growth. Good relations with customers are particularly important for maintaining the level of deposits. The notion of a bank as a publicly trusted institution, widely used in the doctrine and judicature, is not embedded in the Polish law. The Supreme Court's resolution of 1999 that laid out the key features of a publicly trusted institution stressed its connection with public good that is given special protection under the law (the Resolution of the Civil Chamber of 1999, item 201). According to Dorota Czarnota, banks are publicly trusted institutions because they are subjected to „specific regulations and control by state bodies” [2014, p. 156]. In the years under consideration, 2007–2015, bank deposits constituted the largest, and rising, share of households' financial assets. Its value peaked in 2008 and 2011–2012 and 2015, when the financial crisis discredited other financial instruments (see table 5).

Table 5. The structure and growth rate (YoY) of selected financial assets held by households in the years 2007–2013, as at the end of particular years

Specification	2007	2008	2009	2010	2011	2012	2013	2014	2015
As a share of households' assets (%)									
Bank deposits	36.2	45.6	45.4	44.1	61.4	61.8	60.3	61.2	61.7
Open Pension Funds (OPF)	18.9	18.7	20.9	22.9	22.7	n/a	n/a.	n/a	n/a
Units of investment funds	14.8	6.9	7.3	7.8	8.2	8.9	10.2	10.7	10.6
Units of unit-linked funds and life insurance saving premiums	8.5	9.2	8.0	7.7	9.2	9.6	9.0	8.5	7.8
Shares listed on the WSE	8.3	3.8	4.9	5.3	5.1	4.6	5.0	4.2	3.8
Treasury securities	1.4	1.8	1.5	1.0	1.2	1.0	1.0	1.0	1.0
Other securities	0.5	0.4	0.3	0.2	0.3	0.2	0.1	0.1	0.2
Deposits at credit unions	0.9	1.2	1.3	1.3	1.9	1.9	2.0	1.3	1.8
Cash in circulation (excluding bank vault cash)	10.4	12.3	10.5	9.6	12.7	12.0	12.3	13.0	13.8
Increase in households' assets (YoY, %)									
Bank deposits	12.7	26.0	15.1	9.9	13.2	7.8	6.4	10.4	9.9
OPF	20.1	-1.2	29.1	23.9	1.6	n/a.	n/a.	n/a.	n/a.
Units of investment funds	34.0	-53.3	22.5	20.8	-15.4	16.2	24.7	14.2	8.3
Units of unit-linked funds and life insurance saving premiums	18.9	7.5	0.2	9.1	-5.7	11.4	2.7	3.2	0
Exchange-listed stock	33.7	-54.1	48.1	22.6	-24.3	-3.9	19.9	-9.2	-1.7
Treasury securities	-16.8	26.3	-7.2	-19.5	-12.9	-3.4	9.4	0	15.1
Other securities	29.6	-8.6	-9.4	-17.2	-8.3	6.8	-27.8	0	38.5
Deposits at credit unions	20.7	28.3	26.0	20.2	11.4	0.8	12.1	-27.8	-6.3
Cash in circulation (excluding bank vault cash)	12.2	17.7	-1.1	3.3	11.6	7.1	12.4	14.6	15.5

Source: NBP 2012, p. 22, NBP 2014, p. 36, NBP 2015, 25 and author's calculations.

Growing employment in the Polish banking sector is another indication of its expansion. The employment fell in the years 2000–2004 but then rose between 2004 and 2008 after Poland became an EU member (see fig. 1). A rising trend, however somewhat less distinct than before, was also observed in the period 2009–2012. It is probable that the banking sector still has the capacity to increase its employment, considering that bank-account penetration in Poland is still relatively small (in 2012, 77% of Poles had personal accounts with a bank or a SKOK) [Kozłiński 2013, p. 22].

Figure 1. Employment in the Polish banking sector, years 2000–2012

Source: EBF Banking Sector Statistics Database 2012 last accessed on 6 Nov. 2015.

Because of the limited space of this article, it is not possible to discuss other relevant information pointing to the expansion of the banking sector as part of the financial system. An analysis of financialisation would certainly benefit from investigating the ratio between the sector's employment and total employment, the average level of wages in the financial (banking) sector vis-à-vis other branches of the economy, the evaluation of the development of innovative financial products, as well as from a comparison of the level of development between the banking sector and the securities market.

Conclusions

This article provides a review of approaches that are used to analyse financial systems within the framework of financial theory and presents the linkages between the financial system and the economy. The opinions that a financial system stimulates economic development are evolving today under the influence of the turmoil in financial markets. The concept of financialisation has been developed, according to which an oversized financial system, particularly a banking sector, may put the real sphere of the economy risk. The above analysis of the level of development of the financial and banking systems in Poland, which investigated the volumes of assets, deposits and loans in relation to GDP, has showed that the systems are expanding and that the rate at which they expand is relatively higher than in the Czech R., Hungary and the euro area. It has not been found, however, that financialisation in Poland has reached a level at which it could be a problem. This said, it must be noted that while the present level of financialisation in Poland is relatively low vis-à-vis other countries, especially those in the euro area, the rate of change in the financial system (particularly in the banking sector) must raise concerns about whether continued expansion of the banking sector will not result in the misallocation of financial and human capital, and

whether the 'oversized' banks will not be more prone to financial crises. In this situation, researchers should give more attention to the financial dimension of economy, the size of the financial or banking system and its effect on the real processes in the economy, and measures improving the stability and security of the financial system should be promoted and highlighted.

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Key Performance Indicators for HEI's Measurement as an Important Element of Their Accountability

Abstract: The increasing importance and complexity of Higher Education Institutions (HEIs) result in the need for transparent and accountable explanation of their activities, the justification of the strategies implemented and the disclosure of their performance. The main purpose of this study is to present a conceptual framework for the evaluation of universities' performance based on the key performance indicators (KPIs). The thesis of this work is that KPIs measurement and reporting may be one of the important approaches to better strategic management of universities as well as to the increase in the transparency and accountability of these institutions. The study is based on three main research methods: descriptive and deductive as well as the literature review. The rationale of this paper is based on the principal-agent theory that is a foundation of accountability concept.

Key words: Higher Education Institutions, Key Performance Indicators, measurement, accountability

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Introduction

Many of the Higher Education Institutions' (HEIs) worldwide undergo the processes of intensive transformation in order to meet the challenges of the economic and social requirements. To make universities more competitive and sustainable over time it is necessary to introduce and develop strategic management models to govern the internal outcomes as well as strengthen the external relationships. HEIs are forced to operate in a demanding and competitive environment. Universities have to adapt to fast changing environment but still maintain their values, high quality of teaching and research, that are the mission and principal role of these institutions. Moreover, the wide circle of HEI's stakeholders pretends they are efficient and effective as well as to be transparent and accountable. Universities are subject to quality assessment procedures valuating the academic, research as well as business criteria of their operations. However, the public practically has no access to the detailed information concerning HEI's performance outcomes. The many universities do not disclose their financial reports on their websites, the majority of them do not share publicly any information on their performance. The needs concerning transparency and accountability are not met. Random and incomplete information published by universities does not give bases for the evaluation and comparability. The same, its use in the decision-making process is also limited. Therefore, universities must apply the management tools, originally used by the private sector.

The main purpose of this study is to present a conceptual framework for the evaluation of the universities' performance based on the key performance indicators (KPIs). The thesis of this work is that KPIs measurement and reporting may be one of the important approaches to better strategic management of universities as well as to the increase in the transparency and accountability of these institutions. This study highlights the necessity of higher transparency and accountability of universities and indicates sets of KPIs that should be adopted and reported by HEI. This paper is a continuation of a discussion in the literature and practice on the analyzed topic. The author tries to systematize the approaches to KPIs and proposes a conceptual framework that should be implemented by universities. The study is based on three main research methods: descriptive and deductive as well as the literature review. The rationale of this paper is based on the principal-agent theory that is a foundation of accountability concept.

Accountability of universities

During the last two decades the reforms of Higher Education Institutions' (HEIs) systems has become a priority for individual countries all over the world (e.g. the initiative of the Global University Network for Innovation). It became also a clue issue in the policy agendas of many international institutions and organizations, e.g. it is strongly underlined in the European policy agenda [European Commission 2000, 2006a, 2006b, 2009]. Changes in the funding modes of universities [OECD 2007; CHINC Project 2006], increasing levels of institutional autonomy [Amaral et al. 2003; Pechar 2003], and new social demands for greater transparency and accountability [Shupe 2008; Geuna and Martin 2003] have intensified the debate about how universities should be managed (Elena-Perez et al, 2011, s. 32). Universities struggle for the resources that in their context may be understood as fundings, students, teaching staff, researchers. There is a pressure for universities to adopt business-like approach to their activities, even though such a tendency has been considered problematic by some scholars [Richards 1996, p. 21]. Elena-Perez [2011, p. 33] underlines that "in the realm of practice, universities face serious difficulties when trying to implement "business" thinking to steer the organization towards a successful future. They are complex organizations dealing with a multi mission approach, task complexity, professionalism and administrative values, and environmental vulnerability [Sporn 1999]. There are also important external constraints, such as the changing role of the state, public budget pressures and new societal demands. In addition, the governing modes of universities and HEIs, often based on managerial models, hinder the implementation of new managerial decision making processes and tools [Elena 2007]".

"Public accountability" has been a key theme in public management reforms around the globe [Christensen and Lægreid 2011, p. 12]. Accountability refers to the obligation to provide an account to, usually, a superior or at least someone with a legitimate stake [Boven et al 2014, p. 3]. Accountability means the obligation to give an account, it is "the requirement of one party to account to another party for its performance over a given period [Perks 1993, p. 24]. Accountability is about the "exchange of reasons for conduct" and aims to "verbally bridge the gap between action and expectation" [Messner 2009]. Auel [2007, p. 495], developing Schedler's [1999] idea indicates: "Accountability in its fundamental sense means being answerable for one's actions to some authority and having to suffer sanctions for those actions". Accountability is for public institutions a continuous reliability and clarity

of settlements [Sułkowski 2016, p. 11]. In higher education there are time-honored traditions relating to performance measurement that nowadays are boosted by the need of external accountability requirements and should implement into a system of financial accounting and reporting (Fijałkowska, 2016, p. 97). As Stensaker and Harvey [2011, p. 1] underline “one of the most profound changes in higher education during the last couple of decades is the increasing interest in accountability”. The improvement of accountability systems and the growth of management information systems within HEIs become crucial. Accountability is about demonstrating that the resources available to institutions yield presumed education gains [Eaton 2009, p. 1]. Leville [2005, p. 10] underlines that accountability is a systematic method to assure those inside and outside the higher education system that colleges and universities – and students – are moving towards desired goals, whereas accountability system for higher education are the systematic collections of input, process, and outcome data, their analysis and information dissemination, contributing to internal and external decision making by policy maker, educational leaders, and other stakeholders in the higher education institution. One of the ways to measure and report these inputs, processes and outcomes is the application of KPIs that should be implemented by universities; prepared, analyzed, introduced to the management processes and disclosed. This could really and significantly improve the accountability and transparency of HEIs.

Key Performance Indicators in universities

“Indicators arise from values (we measure what we care about), and they create values (we care about what we measure)” [Meadows 1998]. The main feature of indicators is their ability to summarise, focus and condense the enormous complexity of our dynamic environment to a manageable amount of meaningful information [Godfrey and Todd 2001]. By visualizing phenomena and highlighting trends, indicators simplify, quantify, analyse and communicate otherwise complex and complicated information [Warhurst 2002]. Indicators are based on the past however if there is no understanding of the past events, there are no chances to introduce significant change and improvement in the future. Azma [2010, p. 5408] underlines “without the evaluation of performance based on key factors and indicators, there will be no permanent change and improvement in the enhancement of the quality of the univer-

sities. (...) The recognition of key performance indicators is one of the principal steps to performance evaluation". KPIs evaluate the qualitative and quantitative performance of organizations or institutions. The need for an integral systematic approach to indicators definition and measurement is recognized [Bossel 1999] in order to give well-structured methodologies, easy to reproduce and to assure that all important aspects are included in the measurement. KPI should not be treated as whatever that is easily measured [Elton 1987]. Cuenin [1987] states that the minimum requirements for a performance indicator is numerical values which provide a measurement for assessing the quantitative performance of a system. Dochy and Segers [1990] add three requirements concerning KPI:

1. KPIs should be clearly related to the defined functions of the institution,
2. KPIs are only what their name states, indicators of the extent to which institutional goals are achieved,
3. KPIs should be a valid operationalization of what they intend to indicate and that they can be measured and interpreted in a reliable and correct way.

There are 5 principle purposes of indicators in HEI indicated by Martin and Sauvageot [2011, p. 28]:

1. to determine the state of an education system,
2. to monitor its development progress over time (compared to, for example pre-defined objectives with numbers attached to them)
3. to measure its strengths and weaknesses,
4. to assess the degree of inequality in the provision of services,
5. to inform policy – makers on the functioning and efficacy of the education system, but also to report its condition to the entire education community, and indeed to the whole country.

Examples of KPI for HEIs

In 1985 the UK Government published its Green Paper entitled "The Development of Higher Education in the 1990's". This paper advocated for the development of the right set of indicators for the HEIs performance evaluation and the appropriate resource allocation. As the answer the list of 39 indicators, presented in table number 1, has been published.

Table 1. Example list of performance indicators of universities

Lp.	Performance indicator
1.	Expenditure per FTE student
2.	Expenditure per FTE academic staff
3.	Expenditure on support staff per FTE academic staff
4.	Expenditure on equipment per FTE academic staff
5.	Research income per FTE academic staff
6.	Research postgraduates as a % of FTE students
7.	Taught postgraduate as a % of FTE students
8.	All postgraduate as a % of FTE students
9.	Ratio of FTE students to FTE academic staff
10.	Central administration expenditures as a % of grand total expenditure
11.	Central administration pay expenditures as a % of central administration expenditure
12.	Central administration expenditures per FTE student
13.	Central administration expenditures per FTE academic staff
14.	Library expenditure as a % of general expenditure
15.	Publications expenditure as a % of library expenditure
16.	Library pay expenditure as a % of library expenditure
17.	Library expenditure per FTE student
18.	Library expenditure per FTE academic staff
19.	Book expenditure per FTE student
20.	Periodicals expenditure per FTE student
21.	Computer services expenditure as a % of general expenditure
22.	Computer services expenditure as a % of computer service expenditure
23.	Computer services expenditure per FTE student
24.	Computer services expenditure per FTE academic staff
25.	Total premises expenditure as a % of total general expenditure
26.	Premises pay expenditure as a % of premises expenditure
27.	Heat, water and electricity expenditure as a % of total general expenditure
28.	Cleaning and custodial services expenditure as a % of total general expenditure
29.	Repairs and maintenance as a % of total general expenditure
30.	Telephone expenditure as a % of total general expenditure
31.	Total premises expenditure per FTE student
32.	Premises pay expenditure per FTE student
33.	Heat, water and electricity expenditure per FTE student
34.	Cleaning and custodial services per FTE student
35.	Repairs and maintenance expenditure per FTE student
36.	Telephone expenditure per FTE student
37.	Career services expenditure per FTE student
38.	Student unions and societies expenditure per FTE student
39.	Occupations of graduates after 6 month

Source: CVCP/UGC [1986] from Ball and Wilkinson [1994].

A set of indicators was also presented within U-Multirank – the first global ranking allowing users to easily compare universities' performance. It provides a set of indicators grouped in the fields of teaching and learning, research, knowledge transfer, international orientation and regional engagement and is fully accessible online. As Van Vught and Ziegler (2013, p. 246) underline "the U-Multirank project encompassed the design and testing of a new

transparency tool for higher education and research. More specifically, the focus was on a transparency tool to enhance understanding of the multiple performances of different higher education and research institutions across the diverse range of activities they are involved in". The latest version of U-Multirank provided a multi-dimensional overview of over 1,300 universities from more than 90 countries. The dimensions and indicators used in U-Multirank evaluation are listed in table number 2.

Table 2. U-Multirank dimensions and indicators

Teaching and learning	
Focused Institutional ranking	Expenditure on teaching
	Graduation rate
	Interdisciplinarity of programmes
	Relative rate of graduate (un)employment
	Time to degree
Field-based ranking	Student–staff ratio
	Graduation rate
	Percentage graduating within norm period
	Qualification of academic Staff
	Relative rate of graduate (un)employment
	Interdisciplinarity of programmes
	Gender balance
Field-based ranking: student satisfaction indicators	Inclusion of work experience
	Student satisfaction: overall judgment
	Student satisfaction: evaluation of teaching
	Student satisfaction: inclusion of work experience
	Student satisfaction: organization of programme
	Student satisfaction: libraries
	Student satisfaction: laboratories
	Student satisfaction: quality of courses
	Student satisfaction: social climate
	Student satisfaction: support by teachers
	Student satisfaction: computer facilities
Research	
Focused institutional ranking	Percentage of expenditure on research
	Percentage of research income from competitive sources
	Total publication output
	Post-docs per FTE academic staff
	Interdisciplinary research activities
	Field-normalized citation rate
	Highly cited research publications
	Art-related outputs per FTE academic staff

Research	
Field-based ranking	Highly cited research publications
	Field-normalized citation rate
	External research income
	Total publication output
	Doctorate productivity
	Student satisfaction: research orientation of programme
	Post-docs per PhD completed
Knowledge transfer	
Focused institutional ranking	Incentives for knowledge transfer
	Percentage of income from third-party funding
	University-industry joint research publications
	Patents awarded
	Technology transfer office staff per FTE academic staff
	CPD courses offered per FTE academic staff
	Co-patenting
Fieldbased ranking	Start-ups per FTE academic staff
	Academic staff with work experience outside higher education
	Joint research contracts with private sector
University-industry joint research publications	
International orientation	
Focused institutional ranking	Percentage of programmes in foreign language
	Percentage of international academic staff
	International doctorate graduation rate
	International joint research publications
	Percentage of students in international joint degrees
	Percentage foreign degree-seeking students
	Percentage students coming in on exchanges
Field-based ranking	Percentage students sent out on exchanges
	Incoming and outgoing students
	International orientation of programmes
	International academic Staff
	International research grants
	International joint research publications
	Percentage of international students
Field-based ranking	International doctorate graduation rate
	Student satisfaction: opportunities to study abroad
Regional engagement	
Focused institutional ranking	Percentage of graduates working in the region
	Percentage of income from regional sources
	Regional joint research publications
	Research contracts with regional partners
	Percentage of students in internships in local enterprises
Field-based ranking	Degree theses in cooperation with regional enterprises
	Graduates working in the region
	Student internships in local enterprises
	Regional joint research publications

Source: Van Vught and Ziegler 2013, p. 266.

U-Multirank is an independent ranking, with financial support in its initial years from the European Union. U-Multirank, based on a set of KPIs, is more comprehensive and user-driven than any existing ranking, showing more clearly the performances of a much wider range of universities and their potential to contribute to growth and jobs. It includes much-needed information for policymakers, for students and for institutions themselves [EC 2016].

KPI are commonly used in HEIs' rankings. Hazelkorn [2011, p. 60] presents indicators grouped in 7 main dimensions used in rankings and describes what are their advantages and disadvantages. The results are showed in table number 3.

Table 3. Dimension of indicators and their advantages and disadvantages

Indicator	Teaching and learning	Disadvantage
Students' entry levels	Strong correlation between academic test and future achievement, especially for literacy and mathematics	• No statistically significant relationship between learning and cognitive growth' and admissions selectivity
Faculty/student ratio	• Assesses 'commitment to teaching' • Smaller ratio creates better learning environment	• Quality depends on interaction among factors (e.g. faculty, pedagogy, laboratories and other facilities)
Resources	• Correlation between budget and quality of learning environment, programme choice and services	• No direct correlation between budget and usage, or between value, cost and efficiency
Student satisfaction	• Used to understand the quality of learning environment,	• Useful to help improve performance, but difficult to use for comparisons or ranking
Education outputs	• Completion, graduation and employability measures educational success and failure • Links education with careers, salaries and lifestyle	• Lower social-economic and ethnically disadvantaged groups or mature students can have different study patterns • Employability and salary are linked to market forces
Research	• Measures research and scholarly activity, impact and faculty productivity	• Bibliometric and citation practices are inaccurate measures of research activity
Reputation	• Value and regard as measured by academic peers or key stakeholders	• Subject to rater bias, halo effect and 'gaming'

Source: Hazelkorn [2011, p. 60].

As it can be seen in the table above, all the dimensions of indicators are concerned with some disadvantages or difficulties in their computation or analysis. However, there are also associated with an important set of information that they present. That is why in the valuation of HEIs performance the analysis must be multi-dimensional, wide and the results obtained should be critically and carefully interpreted. Ball and Wilkinson [1994, p. 426] state; "it is essential that an institution gives considerable thought to its mission and objectives, how to measure performance and which performance indicators are most appropriate or this purpose". The ranking houses itself,

even though they are based on set of indicators, recognize that “no matter how much they expand the base of indicators considered in their methodologies, they can never exhaustively cover the full range of the universities’ functions and activities. By their very nature indicators are selective and not exhaustive” [UNESCO 2013, p. 13]. As Liu (2013) underlines: “none of the current global ranking systems can provide a complete view of universities; taking any single ranking as a standard to judge a university’s overall performance is improper”. In judging the performance of universities based on the comparison of KPIs one should be careful and do not use them in the uncritical way: “the numbers will not and never can speak for themselves” [CVCP/UGC, 1986]. Another fact to consider is that the abuse of indicators may destroy the diversity of universities. However, the sets of indicators may be a very useful tool of performance measurement and of making universities more transparent and accountable.

Summary

Universities must respond to the governmental, social and market demand of being more accountable and transparent. They should measure and report on their institutional position and performance. Accountability is demonstrated by the transparency of the decision-making processes that govern the universities (their campuses, medical centers, laboratories) and by the manner in which key performance indicators are disclosed to and discussed with the broader public. Without the measurement, evaluation, profound analysis, benchmarking and communicating of HEI’s key performance indicators there will be no accountability and transparency of universities. As for now the accessibility of information on the HEI’s performance is very limited. In Poland, as in many other countries, the main sources of information on universities’ performance are financial statements (information not easily accessible, blocked data hard to interpret) and ranking of different, usually commercial institutions (that usually focus on some selective fields of HEIs’ activities). If universities want to follow the best examples of most prominent world universities in the field of being accountable and transparent, it is advisable to implement KEI’s to their decision-making process and communication with the public. In this paper the conceptual framework concerning KEIs for universities has been presented. It may be a practical example for universities to follow. The future research should focus on its development and improvement. One common universal set of indicators could be a useful tool of comparison

in the global scale. This is a very difficult challenge as the measurements should take an account of different missions and goals of particular HEI as well as their cultural, economic, historical and even linguistic context. The future analysis should also analyze the interactions between the applications of KPI's in universities and the success of their activities. Surely, KPIs of universities should be used in complementarity with other management tools, for example those suggested by UNESCO e.g. evidence of value addition to learners, quality assurance and universities' evidence based self-reporting on their quality [UNESCO 2013]. Together with these tools, KPIs are the important way of strengthening the transparency and accountability of universities so much requested nowadays.

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Assessment of Profitability of an Economic Entity on the Example of a Private University

Abstract: Higher education is one of the most important areas in the development of each country, both in terms of human capital development and in economic terms (e.g. GDP growth).

The article focuses on the problems faced by managers of private universities. The theoretical part presents the nature of economic activity and methods of assessing the level of profitability in the activities of economic entities.

The empirical part of the work focuses on the analyses conducted by the Department of Financial Controlling of a private university in the area of the level of its profitability.

The results of analyses clearly show that a key source of funding of the studied institution is the revenue from tuition fees, brought by part-time students in particular, which makes it possible to fund and implement the mission and vision of the University, cover the deficit activity of full time programs of study and develop financial surplus which is the source for investment and development of the institution.

Key words: financial statement, financial ratios, profitability, private university.

JEL Codes: G 11, G 21, G 23.

Introduction

The functioning of higher education in Poland should be divided into two areas: state universities that receive budget subsidies for students studying in full-time mode and private universities that do not benefit from such subsidies, whose primary source of income, are various forms of student fees, mainly in the form of tuition.

In the case of the latter group of institutions, their managers are facing a major challenge of such financial management of their institution that will allow the generation of revenue from part time students at a level which will enable the financing of full-time studies which are not profitable and generate positive net income for the University.

The paper can be considered a pioneer in the assessment of the functioning of a private university in terms of revenues, expenses and rate of profitability.

The aim of the study is to present the nature of commercial activity, sources of funding, with particular emphasis on the specific nature of private universities, measures used to assess the level of profitability and to carry out the analysis of the profitability of the institution in the academic year 2015–2016.

Research hypothesis was formulated for the objective defined in this way, according to which full-time studies at the analyzed University are scarce and it is by revenue from part-time student fees it was possible to work out a low level of profitability of sales in the academic year 2015–2016.

Nature of economic activity

Doing business in Poland is based on a number of legal forms governing these issues, mainly:

- Civil Code (civil law partnership, sole trader)¹,
- Code of Commercial Companies (capital partnerships of commercial law)²,
- Law on freedom of economic activity (sole proprietorships)³,
- Cooperative law (for cooperatives)⁴.

Business activity can be discussed in organizational, legal and economic categories.

¹ Law of 15 September 2000 Code of Commercial Companies (Dz. U. nr 94, poz. 1037 z późn. zm.).

² Law of 23 April 1964 Civil Code (Dz.U.nr16, poz. 93 z późn. zm.).

³ Law of 2 July 2004 Law on freedom of economic activity (Dz.U.z 2004 r. nr 173, poz. 1807 z późn. zm.).

⁴ Law of 16 September 1982 Cooperative law (Dz.U. z 1982r. nr 30, poz. 210 z późn. zm.).

In the organizational category, economic activity developed in the period of capitalism when there was a complete separation of work in the household and paid employment. In this respect, the company is defined as a group of people engaged in regular activity to make profit [Lichtarski 2007, p. 47]. In the legal aspect, to talk about economic activity it is essential to possess technical production, organizational separation and distinct records of inputs and outputs in monetary units. It is the so-called legal personality, which enables the company act as the subject of civil law, with the right to conclude agreements and obligations. Legal personality is not the only requirement to operate as an economic activity. The core of the problem is the relationship between the functions of the entrepreneur and the functions of the holder of the means of production.

In the economic terms, economic entity, as a business, is in close connection with entrepreneur category formed in the capitalist economy, that is, the one who possesses the resources necessary to carry out the activities that should be conducted with the help of employees for his own account and at his risk.

In the capitalist system entrepreneurs were often inventors and engineers, who were involved in all aspects of the company by themselves. The examples could be Thomas Edison in the telephone industry or Adam Opel the automotive sector.

According to R.W. Griffin [Griffin 2003, p. 730] an entrepreneur is not the owner of the company that assigns the authority to a selected person possessing appropriate qualifications and suitability. This person assumes all rights and obligations of the entrepreneur depriving them of the owner at the same time. In this way, it is the manager who conditionally becomes an active entrepreneur. Then, the owner does not drive the production, nor does he determine the goals of the business.

In case when the property rights apply to state institutions, the characteristics of an entrepreneur is not clearly defined.

Along with the economic development, there was a development of enterprises and their growth, which brought the managerial revolution. Companies grew to form joint-stock businesses, in which the issue of the entrepreneur also changes its position. Large dispersion of ownership has led to the separation of ownership from management. Power was transferred into the hands of professional managers, and owners-shareholders retained the rights to profits and sell their shares. In such companies it is difficult to determine a clear entrepreneur. There are many opinions and views on this subject. New type entrepreneurs, i.e. the managers are often talked

about. They perform the function of a collective entrepreneur who takes care of all aspects of the company.

The reason was that, with time, the management of the company began to require large abilities, experience and cleverness from managers. Therefore, the owners who did not have these qualities left it to the professionals.

However, there are also opinions in favour of the fact that only the owner should be considered as an entrepreneur. There is a number of arguments supporting this view:

Only the owner is committed to increasing the value of the company and profit from the investment in its development,

It is the owner who bears the greatest risk of loss in case of failure,

- Even small owners have an indirect impact on the management of the company (discharge decisions, decisions on the distribution of profits, possible capital increase, the choice of the supervisory board).

The law imposes on an entity rights as well as obligations that result from the willingness to undertake entrepreneurial activities. When starting economic activity one can individually select organizational and legal form of the company, subject to separate regulations, which may optionally exclude a particular legal form for one's business.

Doing business in Poland can be divided in terms of economic entities into [Podstawka 2010, p. 572]:

- Natural persons (individual entrepreneurs as well as civil partners),
- Legal persons (limited liability company, joint stock company, cooperatives and other entities with legal personality),
- Organizational units without legal personality (partner company, partnership, partnership, limited partnership, limited joint-stock company).

To further understand the essence of things various economic entities would have to be explained in detail starting from the foundation, i.e. a natural person.

A natural person is any person who is the subject of rights and responsibilities of civil law. For economic activities, a natural person is an individual entrepreneur conducting such activities signing them with their own name and for their own account. The law also says that an entrepreneur can be a natural person, legal entity and company without legal personality, or a commercial company that professionally, independently under its own name starts, maintains and carries on the activity. Entrepreneurs can also be civil code partners in the field of their busi-

ness⁵. Legal aspects for running economic activity are the same for everyone. All are equal before the law.

A legal person has a maximum legal capacity (also process and judicial ability). The activities of the legal entity based on its bodies. Ways of their operation are regulated by the Law and its statute. Bodies of a legal person are fully responsible for their actions in terms of specific regulations [www.firmy-24.pl, accessed on 10.02.2017]. Specific legal entities are among others State Treasury, municipalities, counties, regional governments or churches as well as religious associations.

Organizational entities without legal personality are units of limited capacity of taking legal actions. Using its bodies, it can function as a representative of natural or legal persons, which manages their property, but as a separate resource. Such a unit is treated as a subject of rights and obligations in trade.

While considering the essence of economic activity it is necessary to discuss the intentional aspect. The intention is the point of destination that the company strives to achieve. It is a future state of affairs which the company wants to achieve. 'The goal of the company is the economic variable (or economic variables) relating to its operations, which is the main subject of interest in its management and thus constitutes the main criterion for selection of the type and direction of the activity' [Sudoł 2006, p. 64]. One of the basic objectives of the company, especially in times of crisis, is considered its very survival, the condition of which is the continuity of the profitability and financial liquidity of the company. Another goal of the company may be its continuous development of in quantitative as well as qualitative terms.

A dynamic and competitive economy with the enormity of the newly established and rapidly growing companies leads to the situation where development becomes an essential element of survival, which is the primary purpose. Lack of competition in the market causes stagnation and inertia. For most entrepreneurs the only primary goal is not just survival, but more importantly to generate the highest profit by acquiring the surplus of revenues over costs, losses and burdens, i.e. the taxes to the state. The pursuit of profit at all costs, leaving aside the welfare and comfort of employees, users and consumers may cause deterioration of the company.

The company, regardless of the nature of its activities (economic, social, political etc.) sees as its objective the impact of interest within the company and its environment factors [Lichtarski 2007, p.54]. This is where the concept of an organization's

⁵ Regarding to Law of 23 April 1964 Civil Code (Dz.U. 1964 nr 16 poz. 93 z późn. zm.)

environment and its influence on business performance should be presented. The environment of the organization means generally the conditions and impacts of various organizations and institutions that affect the behaviour of individual companies [Borowiecki, Siuta-Tokarska 2008, p. 72]. The environment are also those factors that are independent of the given economic entity. It is the external environment, the overall processes and phenomena or development opportunities. It is also all the elements that are not part of the organizational system, although they affect this system.

The environment of the organization are then all the factors lying inside and outside the organization, that influence this organization.

Sources of data for financial analysis

The legal act governing the system of accounting and reporting in Poland is the Accounting Law, in force since 1 January 1995⁶.

According to the regulations of the Law, the annual financial report consists of the following documents [Bednarski 2007, p. 33]:

- Balance statement,
- Profit and loss account,
- Additional information,
- Statement of cash flows,
- Statement of changes in equity.
- Statement of comprehensive income of the entity

Balance statement is a part of the entity's financial statement. This document summarizes the assets of the company and its financing sources on a certain day [Pomykalska, Pomykalski 2008, p. 36]. 'It is a summary of all economic resources owned by the company – the assets and sources of financing – liabilities, drawn up at the given moment, called the balance sheet date' [Walczak 2001, p. 26].

In other words, the balance sheet is a summary of the different resources related to the financial reflection of the assets of the business as well as the summary of the sources of its funding or liabilities to creditors or shareholders. It can also be defined 'as a structured list, in terms of value, resources owned by the company, i.e. assets and sources of their financing and liabilities, prepared for a certain day called balance

⁶ According to Accounting Law of 29 September 2004, Dz. U. z 1994 r. nr. 129 poz. 559 z późn. zm.

sheet date' [Walczak 2008, p. 34]. Usually the balance sheet date is the final balance of a particular year, while it is at the same time the opening balance of the beginning financial year. The balance is also prepared, when it comes to the sale or liquidation as well as the insolvency proceedings of the company and at the closing of business or on the day preceding the change of the legal form of the company.

Balance sheet is an essential element of the financial statement, as well as it is a static report, despite the fact that the data contained in the balance sheets prepared for a few consecutive years are often the subject of both dynamic analysis and structural changes. 'The amounts presented in the balance sheet are aggregated data, reflecting the effects of investment, operational, financial decisions made in the company, which exemplified the past financial year' [Dębski 1997, p. 42].

The main element of the financial statement is always prepared with the balance sheet method, and therefore a balance between the components – the property of the organization, which is called assets and sources of funding, or liabilities is applied. The balance implements golden rule of balance sheet, or otherwise $\text{Assets} = \text{Liabilities}$.

The balance of business entity is an accounting document, serving the internal needs of business management, as well as the main element of the financial statement, containing the largest amount of information among all the components of the financial statement.

The method of recognition of elements of the assets and liabilities significantly affects the analytical value of the balance sheet. In structural terms the balance must be drafted in a transparent manner. Individual elements of the assets and sources of funding must also be assigned both to the appropriate groups and subgroups, as well as to the relevant balance sheet items 'based on such criteria as generic similarity of assets and sources of funding, their nature, purpose and functions performed' [Kopczyńska 2008, p. 53].

Assets are company-controlled property resources of a reliably determined value, developed as a result of past events and from which in the future will bring economic benefits, while the source of financing assets are liabilities [Żyznowski 2002, p. 17].

In the balance sheet assets are placed according to the degree of liquidity of their given elements. Liabilities are sorted by the growing requirement of equity and obligations. Liquidity of the assets defines the exchange of individual elements of the assets for cash. That is why the assets in the balance sheet are

arranged from the components, which it is very difficult to convert into cash to the ones whose exchange is the simplest. In the liabilities, however, the growing maturity of liabilities means the urgency of their recovery, therefore in the first place in the balance sheet equity is recognized, which in principle does not require repayment during the operation of the organization [Walczak 2008 p. 37]. The above-specified classification, as well as the order of showing individual components of the balance sheet carries information value as well as analytical value. It should be emphasized here that the analytical value has a big impact, because it helps to define the extent to which the assets are financed with equity, and with what commitments.

Profit and loss account

Following the balance sheet, profit and loss account, or income statement, is the most important part of the financial statement of the company. 'It presents a way to develop financial result (profit or loss) of the business activity in the enterprise' [Dębski 1997, p. 22]. It informs what the effectiveness of each activity is and what the overall financial performance of the company is.

According to the Accounting Law, the following types of activities can be distinguished as part of the profit and loss account:

1. primary (operational) activity,
2. other operating activities,
3. financial activities,
4. Income tax.

Primary (operational) activity of the organization is associated with revenues and the corresponding costs of production of products or services. Other, that is remaining, operational activities refer indirectly to the income and expenses that are associated with e.g. getting rid of a useless asset, with a copy of payables and overdue receivables. Financial activities refer to income and expenses related to financial activities of the organization, in particular in respect of dividends received and share in profits, interest paid and received, profits and losses on sale of investments, revaluation of investments and foreign exchange differences.

The main sources of income of private universities are primarily fees paid by students. Thus, the basis for the development of private universities is to achieve a po-

sitive financial result by them. In consequence, the quality of education in a private university is determined by the amount of own income and incurred costs. In this context, private universities can be considered as specific companies operating in the market of educational services. This is a basic difference distinguishing these institutions as private actors [Geryk 2007, p. 4].

The financial result of each economic organization is decided when its income and expenses are compared. Through these two basic categories, a number of other factors, such as: volume and prices of sales, capital consumption, workload of core business, quality, age of resources, structure of their financing, height of tax rates, and many, many others influence profit or loss of an establishment [Gorczyński 2003, p. 48]. Therefore, cost management is essential also for the private higher education institutions. With proper identification of costs, their records, and then the appropriate data processing, management should make rational decisions for improving the efficiency of any economic process taking place in the university.

Measures applied in profitability assessment

According to the literature on the subject a financial ratio is the indicator created on the basis of the information contained in the financial statement of the company. Its design is usually the relationship of two phenomena, describing the financial, assets or capital situation of the business [Jerzemowska 2013, pp. 117–120].

Ratio analysis of the company's financial situation is usually done using one of three methods [Sierpińska, Jachna 2006, p. 24]:

- Analysis in time – based on comparing financial ratios of a company with historical values, which allows to observe the prevailing trends of the examined phenomenon.
- Analysis in space – based on comparing financial ratios of the examined company with competitors in the industry, which enables the assessment of the position of the business in the market.
- Analysis in relation to the reference values – is to check whether the values of the ratios are within the proper ranges. The range limits are most often recommended in the professional literature of the subject.

The authors of the literature of the subject include the following to the most important groups of financial ratios [Waśniewski, Skoczylas 2004, pp. 72–74]:

- Ratios of financial liquidity,
- Profitability ratios,
- Ratios of the efficiency of actions,
- Debt ratios,
- Position ratios on the capital market.

Profitability is defined as the financial condition of the company expressed with the financial result achieved from the economic activity [Czekaj, Dresler 2006, p. 117].

The level of profit alone is not the objective information, and therefore its level refers to items from the financial statements, describing the size of operations conducted by the company (sales revenue, asset levels, the level of equity).

Profitability ratios are considered to be the most synthetic measures of assessing business activity. Their level is affected by the overall economic phenomena and processes in the company.

The group of profitability ratios includes:

- Return On Sales ratio (ROS),
- Return On Equity ratio (ROE),
- Return On Assets ratio (ROA),

Return On Equity (ROE) – allows to determine the return on equity, or rate of return [Iwanicz-Drozdowska 2010, 72].

$$\bullet \text{ ROE} = \frac{\text{ZN}}{\text{KW}} \times 100\% \quad (1)$$

- Where:
- **ZN** – Net profit,
- **KW** – Equity.
- The higher the ratio, the greater the possibility of the company to pay dividends and of an increase in the level of solvency, as well as greater opportunities for the company development.

Return On Assets (ROA) – This ratio shows the rate of return on assets, which is a measure of operational efficiency, which enables the assessment of the income potential from the assets held by the insurance company [Marcinkowska 2007, p. 323].

$$\bullet \text{ ROA} = \frac{\text{ZN}}{\text{A}} \times 100\% \quad (2)$$

- Where:
- **A** – Assets.

Return On Sales (ROS) – This ratio allows to specify what part of gross premiums written remains in the company in the form of net profit. The higher this ratio, the better the level of management to identify the level of risk and the calculate contributions in the insurance company [Orechwa-Maliszewska, Worobie] 2008, p. 85].

$$\bullet \text{ ROS} = \frac{ZN}{A} \times 100\% \quad (3)$$

Methodology of profitability assessment of a university

According to the Law on Higher Education in Poland, there are two possible modes of higher education: full time and part time, at the undergraduate level (first degree), complementary graduate level (second degree) and for selected courses of study at a single master studies .

The main sources of income for the state universities are subsidies from the state budget for full-time students, the amount of which is specified in the Regulation of the Minister of Science and Higher Education . The second source of income for universities is the tuition paid by part-time students

Private universities have the right to use the budget subsidies for full-time students, but the institution analyzed in the study does not use this form of financing, which means that the only source of its income on the operational level are all fees paid by full time and part time students to the university, mostly in the form of tuition.

The costs of the functioning of the studied University are divided into direct and indirect costs. Direct costs for the given teaching unit (faculty, department, mode) are the costs associated with teaching hours realized in the unit. All other costs are treated as indirect (university-wide) ones. They are credited by special algorithms to each teaching unit, in proportion to the number of hours it implemented in relation to the total teaching hours, carried out in the whole university.

Assessment of profitability of a private university in the academic year 2015–2016

Option I – Revenues include only payments in the form of tuition fees paid by students to the University.

Table 1. Value of ROS, ROE and ROA ratios in the academic year 2015–2016

Academic year / ratio	ROS	ROE	ROA
2015–2016	1,18 %	0,82 %	0,71 %

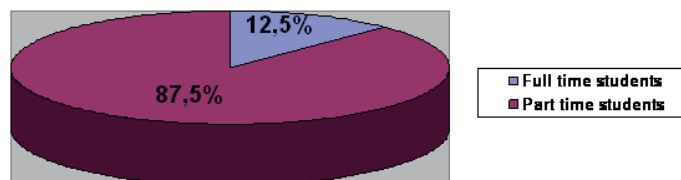
Source: authors' calculations based on the data from the cost optimization program for Higher Education and the financial statements of the University.

The data in the table show very clearly a very low level of profitability, if only revenues from tuition are taken into account. In this variant, the profitability ratios are at the level of about 1%, which in the case of ROS ratio means that costs are almost 99% in 1 zloty of revenues.

Table 2. Value of ROS ratio in the academic year 2015–2016 with division into full time and part time programs

Academic year / ROS	Full time	Part time
2015–2016	-127,06 %	24,11 %

Source: authors' calculations based on the data from the cost optimization program for Higher Education and the financial statements of the University.

Figure 1. Structure of the University students in the academic year 2015–2016

Source: authors' calculations based on the data from the cost optimization program for Higher Education.

The above data clearly indicate what the source of funding for a private university is, which does not benefit from the budget subsidies. To every PLN of revenue from tuition from full time students the university adds 1.27 PLN of its revenue from tuition fees from part-time students, in order to finance the cost of education in full time mode. In the case of part-time studies from every PLN of revenue from tuition there is more than 0.24 PLN of net profit for the University, which allows to cover the deficit for the full-time studies and the development of minimum profitability. It is only possible only thanks to the favourable structure of the students, where nearly 90% of them are taught in part time mode.

Option II – All incomes from the operational activity of the University are included.**Table 1. Value of ROS, ROE and ROA ratios in the academic year 2015–2016**

Academic year / ratio	ROS	ROE	ROA
2015–2016	6,45 %	4,77 %	4,13 %

Source: authors' calculations based on the data from the cost optimization program for Higher Education and the financial statements of the University.

Table 2. Value of ROS ratio in the academic year 2015–2016 with division into full time and part time programs

Academic year / ROS	Full time	Part time
2015-2016	-114,94 %	28,15 %

Source: authors' calculations based on the data from the cost optimization program for Higher Education and the financial statements of the University.

The results of the analyses in the option II are more optimistic. Taking into account all fees paid by students to the university, level of profitability is significantly higher, the value of the ratios in the academic year 2015-2016 ranged from 4%-7%. In this variant, costs accounted for less than 94% of revenue, which allowed to keep more than 0.06 PLN from 1 PLN revenues in the form of a net profit.

This does not change the fact that full-time studies are still scarce at the University, but the level of losses, as shown by the ROS ratio decreased by more than 12 p.p. The level of profitability for part-time studies in the analyzed variant increased by more than 4 p.p. which allowed to develop a higher financial surplus for the analyzed institution.

Summary

The objective set in the introduction has been fully realized, the nature of economic activity, forms of financing, the indicators used to assess the level of profitability were presented and in the empirical part the analysis was carried out in terms of the profitability of a private university in the academic year 2015–2016.

The formulated research hypothesis has been verified. The assumption that full-time programs without budget subsidies are scarce and the primary source of revenue, which allows to cover the deficit and develop a financial surplus for the University are all fees paid by part-time students (mainly in the form of tuition).

Tuition paid by full time students is not able to cover the costs of these studies for the University, however, full time programs are an added value for the studied institution as it is eligible to apply for funds from the EU budget, in programs supporting full-time students in diverse ways.

Most EU programs are intended to include, and is addressed to students studying in full time mode, so despite being scarce at the level of operating income, this form of education brings benefits for the University in other areas of income, and also has a fairly significant impact on the final level of net financial result of the studied institution.

This article is the first part of the project, aimed at regular analysis of the financial condition of non-public university, which will in future be carried out for longer time series (the further academic years).

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The Problem of Selecting Funding Sources for Local Regeneration Projects on the Example of Lodz and Sopot

Abstract: The article concerns the problems of regeneration in the context of funding for regeneration activities. The aim of the study is to present the classification of funding sources and financial instruments for regeneration projects in Poland and to analyse the involvement of EU funds and private capital in the financing of regeneration projects implemented in Lodz and Sopot. The article presents two regeneration projects funded on the basis of financial engineering taking into account the JESSICA initiative and the public-private partnership model. The analysis has clearly revealed that the European Union funds are one of the main funding sources for regeneration projects.

Key words: regeneration, funding sources, city, the European funds, public-private partnership

Introduction

Regeneration and development of degraded areas have been recognized as one of the key issues related to land use planning, sustainable development and environmental protection. The systemic changes that occurred in Poland in the last quarter of the century have revealed a lot of socio-economic neglect. Some neglect cases concern urban

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areas. The Institute of Urban Development indicates that a degradation of the urban fabric and erosion of social and economic relations can be observed in many cities. This situation is accompanied by adverse demographic and spatial processes relating to the dispersion of urban development, depopulation of city centres and general population loss in cities. The Institute estimates that more than 21% of Polish cities have been affected by degradation processes, which relate to 2.4 million of their inhabitants [Ziobrowski, Jarczewski 2010, p. 63]. In recent years, the issue of regeneration has become very important, as evidenced by the completed legislative process concerning the National Urban Policy 2023 [Ministry of Infrastructure and Development, 2015] and the Act on Urban Renewal [Journal of Laws of 2015, item 1777].

The scale of implementation of regeneration projects will be strongly correlated with the financial capacity of local governments. Local authorities will have to decide which funding model to choose for the regeneration process. To answer this question, it is necessary to analyse all the options available.

The aim of the study is to present the classification of funding sources and financial instruments for regeneration projects in Poland and to analyse the involvement of EU funds and private capital in the financing of regeneration projects implemented in Lodz and Sopot.

Two cities, Lodz and Sopot, were selected for the analysis. Lodz was selected due to the fact that it was granted eligibility by the Ministry of Development for a pilot regeneration project. The Ministry of Development recognized that it required special support in this area despite the experience that it already gained in the course of implementation of regeneration projects [Księży Młyn, Mia100 Kamienic]. Sopot boasts a completed project funded by JESSICA financial engineering and public-private partnerships.

A research hypothesis was formed, according to which EU funds are the main funding source for regeneration projects in Poland.

The research methods used in the study are based on literature studies, analysis of legal regulations and case studies of selected urban regeneration projects implemented in Lodz and Sopot.

1. Essence and scope of regeneration

The concept of regeneration is relatively complex and represents a coordinated process led by local government authorities and carried out jointly by the local com-

munity and other participants, which constitutes an element of regional policy. Regeneration refers to processes related to the healing of the urban fabric. They may involve numerous measures of varying intensity, scope and diversity, and thus no single universal definition of regeneration has been established yet. This concept is subject to constant evolution [Grzymała 2013, p. 89]. Past experience clearly shows that the approach to regeneration activities in Poland was characterized by insufficient efficacy resulting from the lack of complexity, poor territorial concentration of interventions, inadequacy of the implemented solutions to the identified negative phenomena. All too often, regeneration was identified only and exclusively with such actions as modernization or renovation, while, as noted by A. Majer [2010, p. 285], the scope and importance of regeneration should be reflected in a process of "a sequence of actions aimed at revival of degraded areas". On the other hand, even where attempts were made to ensure integrated and holistic regeneration, the regeneration processes were often hindered by formal, organizational or financial barriers, as a result of which only a small part of the completed projects can be regarded as regeneration in the full sense of the word. Meanwhile, since the mid-1980s in Europe and in the world, regeneration is no longer understood in this way [Kłosowski, p. 2]. Nowadays, the processes of regeneration are approached in an integrated manner taking into account economic, social and environmental aspects.

In the literature, there are many definitions of the term "regeneration". English-language literature refers to this phenomenon as "urban regeneration", while in Poland the term "urban renewal" is used. Most of them distinguish characteristic aspects of regeneration: process, sustainable development, the role of local authorities, the scale of community involvement and responses to crises. There is a general tendency to move away from perceiving regeneration processes as efforts to improve the infrastructure through repairs, renovation, and instead to take a multi-dimensional look involving multiple stakeholders: local authorities, residents, businesses and non-governmental organisations.

Regeneration or urban renewal is understood as a process of pulling degraded areas from the state of crisis, carried out in a comprehensive manner, through integrated, territorially concentrated, activities for the local community, space and economy, conducted by stakeholders of regeneration based on a municipal regeneration programme [Kopeć, 2010, p. 97].

According to A. Billert [2004, p. 6] regeneration is "a comprehensive process of renewal of an urban area, the space, functions and substance of which have under-

gone a process of structural degradation inducing a state of crisis, which prevents or significantly hinders normal economic and social development of the area, and sustainable development of the entire city”.

K. Skalski defines regeneration as “a system of organizational, legal and financial activities, which binds the State housing policy and the housing policy of local governments, and is the source and determinant of improving the housing situation of the society” [Skalski, 2004, p. 10].

According to E. Farelnik [2015, p. 139], regeneration is a process of “planned activities initiated and undertaken by local authorities, based on a comprehensive diagnosis and assessment of the resources available (socio-cultural and economic capital, including financial, spatial and environmental capital) and the needs of the local business entities in terms of their development as well as the conditions and opportunities arising from the operation in a local, regional, national and global environment involving stimulation of existing functions of the city area identified as a crisis area, or assigning new functions to such area for the purpose of its activation, and thus widely understood development of the whole city (local development)”.

The Institute of Urban Development defines regeneration as “a coordinated process, conducted jointly by local authorities, local community and other stakeholders, which is a part of the development policy and which is aimed at counteracting the degradation of the urban space, phenomena of crisis, stimulating the development and qualitative changes through the increase of social and economic activity, improvement of the living environment and protection of national heritage, while respecting the principles of sustainable development” [Ziobrowski, Jarczewski 2010, p. 13].

The Act on Urban Renewal [Journal of Laws of 2015, item 1777] defines regeneration as “a process of pulling degraded areas from the state of crisis, carried out in a comprehensive manner, through integrated, territorially concentrated, activities for the local community, space and economy, conducted by regeneration stakeholders based on a municipal regeneration programme”.

The foregoing definitions clearly indicate that regeneration is:

1. a process of renewal addressed to urbanized areas. This concept is used with reference to activities carried out in areas within city limits, rezoned industrial land and former military areas, and not to, for example, village centres;
2. conducted in areas where degradation, i.e. the state of crisis, can be observed. This means that regeneration is not conducted in areas that cannot be defined as degraded areas or areas in crisis;

3. an action that is to involve the space, function and substance. This means that we can talk about a degraded area if the state of crisis in the area pertains not only to the architectural and urban planning (substance) or spatial sphere of the area, but is also associated with the economic and social (function) sphere of land. It should be emphasized that regeneration is aimed at solving the problems of the area related to all spheres, and not only one of them [Regeneration Forum Association];
4. a continuous and long-term process. A short period enables only small physical (urban) changes implemented under a single investment project. In the case of public sector projects, the preparation of the project itself is a long process (includes the development of relevant resolutions of the city council, settlement of property rights to the land, tender procedures, guaranteeing the funds in the budget). Implementation of regeneration projects depends on budget capabilities. In this area, faster results are achieved if the public sector cooperates with the private sector, because the latter has more resources and is not limited by procedures and law as is the case of the public sector [Petruzzellis 2003, p. 5].

Considering the above aspects, if an undertaking planned to be implemented is limited to the renovation of dilapidated town tenement houses or construction of water and sewage infrastructure, while disregarding actions directly affecting the economic and social development of the given area, it cannot be considered as regeneration. Infrastructure operations should be a tool for achieving economic and social objectives and should be subordinated to these goals. Other essential features of regeneration include: cooperation of stakeholders representing all sectors of socio-economic life (public entities, local entrepreneurs, individuals, non-governmental organizations, churches or religious associations) and the comprehensive nature involving a series of diversified, complementary and reinforcement activities intended to produce positive qualitative changes in the identified area. Certainly, comprehensive renovation of one, even the most damaged, building, cannot be considered regeneration.

Regeneration processes may include: regeneration of the Old Town buildings, regeneration of housing projects, restructuring brownfield and transformation of former military areas. Activities undertaken under these processes focus on four groups of objectives: economic (increase in companies' income, tax revenues of municipalities, decline in unemployment, expansion of municipal infrastructure), social

(increased quality of life of the inhabitants, development of public services, heritage conservation), ecological (elimination of the negative impact of post-industrial remains, larger green areas), spatial (development of spatial governance, changing the image of degraded areas through the introduction of new architectural elements). The hierarchy of objectives depends on the individual characteristics of the degraded area. There is a different scale of importance for post-industrial areas and for historically degraded areas.

2. Funding sources for regeneration projects

The process of regeneration requires considerable financial expenditure, particularly in the case of urban areas with a high degree of degradation. Local authorities have to deal not only with poor technical condition of facilities, but also economic decline and social problems. With the current budgetary structure of municipalities, local authorities must answer the question of how to fund a regeneration project? Funds for regeneration projects, just as for other development projects, may come from different sources. In the literature [Kopeć 2011; Jadach-Sepiolo, 2010, Wytyczne.. 2016], we can find a lot of different classifications and divisions of urban regeneration instruments. One of the most commonly used is the division of the instruments depending on the role of local (government) authorities in the process. Most frequently, local authorities use two approaches to fund and implement regeneration activities [Polko 2008, p. 25]. The first approach concerns the activities taken by public authorities, their direct involvement in the financing and implementation of regeneration projects. The second one assumes that the role of local authorities is limited to that of the organizer of the project. Their task is to create the right climate for private entities, which would induce them to invest in the project.

Such an approach to funding sources for regeneration determines the division into [Ryszko 2012, p. 130]:

- public funds. These include both financial instruments created by the local authorities in a manner characteristic for the area (e.g. local taxes, rents, credit and loan facilities, bonds, etc.), as well as external instruments, including domestic and foreign funds, which enable preparation of financial engineering in order to use EU funds to co-finance regeneration projects;

- private funds, obtaining of which is connected with the involvement of public authorities in creating a climate for investment, encouraging cooperation between the public and private sectors (PPP).

The classification of available funding sources and financial instruments for regeneration in Poland are presented in Table 1.

Table 1. Funding sources for regeneration projects

Own revenues of local government units	Subsidies	Repayable instruments	Equity instruments
Local taxes	Government subsidies (general subsidy)	Loans from the National Fund for Environmental Protection and Water Management	contribution to regeneration companies (e.g. Rewitalizacja Sp. z o.o. – Radom)
Local fees	General subsidies	Credit and loan facilities with commercial banks	Public-private partnerships
Income from property and property rights	Targeted subsidies	Lease	
	Subsidies from the National Fund for Environmental Protection and Water Management	Municipal bonds	
	Regional Operational Programmes (ROP)	JESSICA	

Source: own study based on *EkoMiasto#Zarządzanie. Zrównoważony, inteligentny i partycypacyjny rozwój miasta* (2016), Z. Przygodzki (red.), Wydawnictwo Uniwersytetu Łódzkiego, Łódź.

Traditional funding sources and financial instruments do not require extensive discussion. It should, however, be mentioned that the basic and most popular funding sources include: funds from local budgets, municipal bonds and bank loans.

After Poland's accession to the EU, EU structural funds have become a significant funding source, especially for large and complex regeneration projects. Due to their importance in the urban regeneration projects analysed in the article, they will be presented in greater detail.

In 2007–2013, regeneration projects were financed by the European Regional Development Fund (ERDF) and the European Social Fund (ESF).

In the European Union's programming period 2007–2013, 16 regional operational programs (ROP) were implemented, the funds of which were managed entirely at the regional level. The main objectives of the ROP were: increasing regional competitiveness, promoting sustainable development and improving social, economic and spa-

tial cohesion of areas. Specific objectives included: improvement of the technical and social infrastructure of the region, improvement of the natural environment, better use of its resources and values in the socio-economic development, construction of the information society, creation of conditions for increasing competitiveness of the economy and the rehabilitation and socio-economic recovery of cities and degraded areas. For the purpose of accomplishing the last of the above-mentioned objectives, the regional operational programs included priority axes and activities related to regeneration, for which the boards of 15 provinces (except for Podlasie), acting as the managing authorities, decided to allocate a total of over PLN 8.1 billion. This made it possible to execute a total of 1 250 projects. Regeneration activities mainly involved restoration of some old, often historic buildings and humanisation of housing projects constructed of concrete slabs. Their goal was also to preserve historical values (mainly urban and architectural) and to highlight their unique character and local colour [Kucharczyk 2015, p. 6].

In the next, 2014-2020, financial perspective, a pool of PLN 25 billion is guaranteed for the regeneration programmes. PLN 22 billion will come from the European Union funds – PLN 15 billion from regional programmes and PLN 7 billion from national funds, and PLN 3 billion from the state budget and local governments [PAP]. Principles of regeneration activities will be based on the National Urban Policy 2023, the Guidelines on the regeneration under the operational programs for 2014–2020 of the Ministry of Infrastructure and Development (now the Ministry of Development) and the Act on Urban Renewal. In the ongoing perspective, it will be possible to conduct regeneration activities in Poland with the use of the European Regional Development Fund and European Social Fund, because regeneration is included in thematic objective 9 (TO 9) arising from the Europe 2020 Strategy. It includes a wide range of activities that will help to launch regeneration programmes taking into account extensive socio-economic and environmental changes in degraded areas.

JESSICA (Joint European Support for Sustainable Investment in City Areas) is of great significance for funding for regeneration projects with EU funds. The premise of the program is a collaboration of the European Commission, the European Investment Bank and the Council of Europe Development Bank aimed at supporting investments in sustainable development of urban areas in the European Union. Therefore, it is a kind of a regeneration mechanism aimed at the implementation of urban projects, in particular those that will contribute to the economic and social development

of the area. JESSICA allows the use of the European Union structural funds on a repayable basis by providing recyclable and recoverable financial mechanisms (loans, guarantees), giving the opportunity to make better use of the structural funds and to encourage participation of financial institutions, banks and entrepreneurs, for example through public-private partnership. An important stipulation is that projects implemented under this Initiative should generate income. The aim of such combination of commercial and non-commercial components within the projects is to facilitate bridging the gap in the market between grants and loans or other banking instruments. In Poland JESSICA is implemented under the regional operational programmes. At the stage of preparation of the programmes, the boards of provinces decided whether to access the JESSICA initiative. To the vast majority of ROPs provisions allowing the implementation of the initiative apply, but so far, such a decision has been taken by 5 provinces: Greater Poland, West Pomerania, Silesia, Pomerania and Mazovia province. Funds allocated for the implementation of the JESSICA initiative in Poland amount to more than EUR 256 million.

JESSICA itself is not a source of funding, but it offers a modern approach to the support for the investment of non-public funds in regeneration, as well as to the increase of the efficiency of the use of local government units' funds. The use of repayable instruments and support for public-private partnership under JESSICA can result in more efficient use of available funds for the regeneration in comparison to previously used methods of financial engineering [Jadach-Sepiolo 2010, p. 177].

In the regeneration funding processes, local government units should cooperate with the private sector. In the case of regeneration projects, funds of property owners and managers (including residents, external investors) are an important funding source. They enable the realization of the idea of public-private partnership, make up shortages in the feasibility statement for the program and reduce the involvement of public funds. In practice, property owners and managers are, however, generally a financially weak group, which usually gets involved in the last phase of a regeneration process. Therefore, in order to activate this group, local authorities should prepare a package of incentive and support measures [Gralak, 2010, s. 14].

The second option may be the use of public-private partnership (PPP) formula. Public-private partnership is understood as "the formula of financing public tasks based on cooperation between two sectors, public and private, on the implementation of investment projects and provision of services, resulting from a concurrence of wills in terms of expected benefits (value for money) of the project and the ra-

tional allocation of risks associated with it, which is related to responding to expectations and needs expressed by users, based on the legal regulations concerning PPP [Hajdys, 2013, p. 44].

In Poland, the issue of cooperation between the public and private sector under the PPP formula is regulated by two legal acts directly dedicated to this type of solutions. These are the Act of 2008 on Public-Private Partnership [2008, Journal of Laws of 2015, item 696] and the Act of 2009 on Concessions for Construction Works or Services [2009, Journal of Laws of 2015, item 113]. In addition, widely understood cooperation between these sectors is regulated, for example, by: the Public Procurement Law, the Municipal Management Act, the Real Estate Management Act or the Act on Public Benefit and Volunteer Work. From the point of view of the use of public-private partnership in regeneration processes, of particular importance are legal acts directly relevant to the issue of PPP and the Act on Urban Renewal, the provisions of which pave the way for regeneration projects implemented in the form of a partnership. Cooperation between the public and private sector is based on the allocation of tasks and risks. Its importance is underlined by the European Commission in its guidelines [Guidelines..., 2003, p. 34] stating that "(...) Partners share joint rights and joint responsibilities, and when these are not met partnerships do not work. Partnerships require the will of all parties involved to work together." The tasks are allocated by the parties to the PPP contract, which perform it in a way appropriate to the skills and competencies to ensure execution of the investment project. The allocation of tasks is accompanied by the allocation of risk, which is one of the basic elements that distinguish partnership from traditional public procurement. The allocation of risk should be based on the principle: "Risk management should be transferred to the party, which is better able to manage it, which means that it will be able to control it at the lowest cost," [Hajdys, 2013, p. 241].

With regard to the process of regeneration, contribution of private funds to the implementation of projects under PPP is virtually non-existent. In the base of PPP projects at the end of 2016, regeneration projects accounted for 3% of all projects with a total value of PLN 660,200,000. Of six submitted projects, two were completed (Sopot, Kraków), two are in the process of implementation (Gdańsk, Opole), while two are in the tender phase (Warsaw, Kędzierzyn-Koźle). There are two reasons for the lack of interest of private partners in regeneration projects: weak PPP practice in Poland and poor institutional support.

3. Comparative analysis of funding sources for urban regeneration projects on the example of Lodz and Sopot

After Poland's accession to the European Union, the cities got a great opportunity to obtain significant funds for investment related to regeneration of degraded, post-military and post-industrial areas. The prerequisite for applying for EU funds under programmes related to regeneration is that a given investment is entered into the Local Regeneration Programme and fund sources are guaranteed.

The funding sources for the process of urban renewal were analysed by comparing the allocation of resources for regeneration in terms of local regeneration programmes of Lodz and Sopot.

On 14 July 2004, the City Council of Lodz adopted "The Simplified Local Regeneration Programme for Selected City Centre and Post-Industrial Areas in Lodz for 2004–2013", called the Local Regeneration Programme [Resolution No. XXXIV/0568/04]. This is a strategic document for the development of the city. It identified the crisis area in the city with the highest concentration of spatial and social problems, which, in its greater part, was recognized in the "Study of conditions and directions of land use planning in the city of Lodz", as areas intended for rehabilitation, regeneration and deep transformations. In this document, the area of Księży Młyn was selected as the so-called node area, which has a direct impact on the quality of public space in the centre of Lodz and which absolutely determines its identity. In addition, Księży Młyn, encompassing the centre of Scheibler's post-industrial "empire", which combined industrial, residential and housing (workers' housing estate) functions in the past, was indicated as an area of high historic and cultural value that demanded restoration.

The Integrated Regeneration Programme for Księży Młyn was established in connection with the provisions of Resolution No. XCI/1585/10 of the City Council of Lodz dated 7 July 2010 on establishing courses of action for the Mayor of Lodz to the extent of the preparation of an integrated development programme for the areas of Księży Młyn "Księży Młyn 2016" [The Integrated Regeneration Programme for Księży Młyn, p. 6]. The programme includes downtown Lodz, south-east of the centre, covering an area of 5.7 hectares with a population of 1,146 people. The funds for the programme implementation were included in the Multi-Annual Financial Forecast for the City of Lodz. For 2012–2014, the amount of PLN 10 million was set aside. Implementation of the project was divided into two main stages. Implementation of the first one

was completed in April 2015. The following investment works were performed during the first stage:

1. renovation of three historic residential houses (one is planned to be turned into a Tourist House, some dwellings were transformed into 12 studios for artists – among the tenants are designers, photographers, visual artists);
2. modernization of underground infrastructure (water supply, heat distribution and storm water sewerage systems);
3. renovation of a part of the public space: renovation of the so-called Koci Szlak (Cat Trail), construction of a bike route, putting up 33 street lamps stylized as gas lamps, reconstitution of a historic cobbled pavement, building a paved footpath, reconstruction of the entrance gate based on the original design, creation of a new recreational area between the building of a former school and a former railway siding, with a stage, autonomous power supply, lighting, benches, paths and new greenery.

The second stage of regeneration of Księży Młyn will include a comprehensive modernization of dozens of residential buildings. It was included in the Integrated Territorial Investment Strategy for the Łódź Metropolitan Area. The project is scheduled to be completed in 2019 [Raport... 2015, p. 13]. It is financed mainly from the city budget and EU funds. The cost of the first stage of the project amounted to PLN 12 million, of which PLN 400 thousand, i.e. 3.4% of the total expenditures, came from a subsidy from the Regional Fund for Environmental Protection and Water Management. The remaining 96.6% of funding came from the budget of the city of Lodz. The planned cost of the second stage of the project is PLN 64 million, of which about PLN 40 million is expected to come from EU funds. After obtaining the EU grant, it will be the main funding source for this stage of the regeneration accounting for 62.5% of all expenditures. The budget appropriations will cover costs of about 37.5% (Table 2).

Table 2. Funding sources for Integrated Regeneration Program for Księży Młyn

Description	1st stage of project implementation		2nd stage of project implementation	
	Project value (in thousand PLN)	Structure (%)	Project value (in thousand PLN)	Structure (%)
Budgetary resources	11,600	96.6	24,000	37.5
Regional Fund for Environmental Protection and Water Management	400	3.4	None	0.0
EU funds	None	0.0	40,000	62.5
Total project value	12,000	100	64,000	100

Source: own study based on *Raport z wykonania zadania 1pn. Rekomendacje w zakresie integrowania przedsięwzięć rewitalizacyjnych wraz z diagnozą dotychczasowych praktyki* (2015), Centrum Wiedzy Rewitalizacja.

There are no other financial instruments, e.g. private capital, to support the project. As a result of limitation of funding sources, the assumed image effects of the project will not be fully achieved.

The implementation of the first phase of the project allowed the achievement of [Raport..., pp. 14–16]:

- Economic goals: solution to the problem of technical degradation of buildings;
- Social goals: improved standard of flats;
- Environmental goals: revived space and improved aesthetics of housing estates.

Continuation of the regeneration in the second stage will expand the range of effects and contribute to the comprehensive renewal of the area, as intended. At the same time there is a demand to take into account the proximity of the Lodz Special Economic Zone in next regeneration works for the purposes of professional and social activation of the Księży Młyn estate, which was not taken into account in the first stage.

With its Resolution No. XXXVIII/640/2006 of 30 June 2006, the City Council of Sopot adopted the Local Regeneration Programme (LRP) entitled the Local Regeneration Programme for the City of Sopot for 2006–2015. Adoption of the documents has allowed applying for EU funds under Measure 3.3 of the Integrated Regional Opera-

tional Programme (IROP) in force in 2004–2006. In connection with the requirements of Measure 3.3. “Infrastructure of urban development – non-grant support”, on 18 November 2011, the City Council of Sopot adopted Resolution No. XIII/142/2011 updating the Local Regeneration Programme of 2006, in a manner enabling exercising the functions of the Integrated Plan for Sustainable Urban Development (IPSUD) for 2011–2015. The document opened the way for the city to apply for funds under the JESSICA initiative.

The investment project implemented by the city of Sopot “Development of the railway station area in Sopot and adjacent areas with the participation of private entities” is a classic example of implementation of a comprehensive regeneration programme with the use of financial engineering. In January 2012, the authorities of Sopot signed a public-private partnership agreement with a private partner, Bałtycka Grupa Inwestycyjna S.A., for the implementation of the project aimed at “regeneration of urban buildings, land development around the railway station, creation of spatial order in the city centre, modernization of the road network for the local public transport, making the city more attractive for tourists, development of green areas in the municipality”. The PPP project received a positive opinion and Bank Gospodarstwa Krajowego decided to grant a JESSICA loan (under the ROP of the Pomerania Province 2007–2013), which allowed raising funds for the project from different sources. The value of the project amounted to PLN 113.76 million (EU funding under JESSICA – PLN 42 million, the contribution from the budget of the city – PLN 3.1 million, the amount of PLN 68.66 million – investment loan obtained by the private partner). The agreement was concluded for 11 years, including 8 years of project management (Table 3).

Table 3. Funding sources for regeneration project entitled “Development of the railway station area in Sopot and adjacent areas with the participation of private entities”

Description	Value of contribution (in thousand PLN)	Structure (%)
Budgetary resources	3,100	2.7
JESSICA	42,000	37.0
Loan of private partner	68,660	60.3
Total project value	113,760	100

Source: own study based on Projekt hybrydowy, współfinansowany ze środków zwrotnych JESSICA „Zagospodarowanie terenów dworca PKP S.A. w Sopocie oraz sąsiadujących z nimi terenów” (2016), Ministerstwo Rozwoju, Warszawa.

Due to the hybrid nature of the project, involving combining funds of private investors with EU funds, the share of JESSICA, the EU repayable instrument, was 37.0%, and the dominant funding source for the railway station regeneration project were funds of a private partner amounting to 60.3%.

As a result of the project implementation, a commercial, retail and office complex of buildings with the function of a railway station as well as a two-level underground and on-ground car park were built, vehicle traffic near the railway station was directed underground and a road from the underground car parks was constructed, the traffic circulation system was modernized, as a result of which a transport hub was built in the areas next to the railway station. The project was put into use in December 2015 [Platforma PPP].

The implementation of the regeneration project in Sopot allowed the achievement of [Projekt hybrydowy... 2016, p. 13]:

1. Economic goals: increased attractiveness of the place – functional showpiece of the city, building of a representative railway station, generating additional tourist traffic, attracting investors, emergence of new businesses;
2. Social goals: creation of a new square in place of dilapidated railway buildings and pedestrian paved areas that will allow the organization of city and cultural events, improvement of the standards of the city – an aesthetic, friendly and safe (monitored zone) place, improved access to the Internet for travellers (Wi-Fi network) and to innovative network services, creating new jobs, investment in aesthetic greenery and modern street furniture, giving priority to safety and pedestrian traffic, disabled facilities;
3. environmental goals: optimization of energy use, establishing of vegetation, promotion of environmentally friendly means of transport, reduced exhaust emission thanks to directing all vehicle traffic in Dworcowa Street underground, transfer of the taxi rank, cars and tourist coaches.

The conducted study shows that the regeneration of the railway station area realized by the city of Sopot is complex due to the fact that economic, social and environmental factors were taken into consideration in the process. In the case of Lodz, it is difficult to unambiguously evaluate the project, since only the first phase has been implemented and further works are dependent on obtaining an EU subsidy. However, the project in its current stage of implementation has the features of complexity whose full effects will be evaluated after the completion of the regeneration process.

Conclusion

Implementation of regeneration projects is a complex process that requires not only the coordination of diagnostic and procedural activities, but also identification of the funding sources. The creation of financial engineering is determined, to a large extent, by the specific characteristics of the project, including public expectations, economic capabilities, and procedural and organizational conditions. The presented examples show that EU support is now one of the major funding sources for regeneration activities, as exemplified by projects implemented by the city of Lodz and Sopot. Local authorities finance projects by the state budget and apply for subsidies and preferential loans, like in case of the project implemented by the city of Lodz. Thus, the hypothesis formulated in the introduction has been positively verified. Poland's accession to the European Union and the opportunity to use the Structural Funds triggered local authorities to develop local regeneration programmes. In the era of limited budget resources, the innovation and openness to new solutions for combining budget funds with the JESSICA initiative and the formula of public-private partnership through the preparation of hybrid solutions should be assessed positively. Successfully completed projects are a set of best practices for the future.

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Wyższa Szkoła Biznesu w Dąbrowie Górniczej

Changes in Personal Income Tax in the Visegrad Group, Compared with the Trends in the European Union

Abstract: The way in which governments raise and spend revenue has a substantial impact on the economic and social development of societies. The analysis of available data and empirical research on current government revenue reveals different patterns of taxation between countries. The European Union is the best example for this. In this article the author presents the main trends in taxation in the European Union, which have been introduced since 2011, when The Sixspact was signed and Europe was in the middle of the financial crisis. Special attention was put on the Visegrad Group in order to describe personal income tax system in each of the state which belongs to this group. The goal of this article is to show how the undertaken PIT changes in the V4 Group reflected on macroeconomic situation in these countries and have anything in common with the trend in the EU. PIT is special tax because it affects worker activity and should improve their welfare. However, at present the situation is changeable and unstable and this goal will be very hard to achieve, what author try to show in the article. The movement of people and capital means that even the best solutions do not always fulfil the government's expectations without long-time and coherent tax strategy.

Key words: taxation, personal income tax, European Union, Visegrad Group

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Introduction

Taxation affects the lives of everyone of us. It shapes the relationships between people, business and the state and, of course, has an impact on politics, the economy and society. Nowadays many researchers are interested to know more about how members of the European Union and their tax revenues and tax system compare with each other. In this article the author presents the main trends in taxation in the European Union, which have been introduced since 2011, when The Sixspact was signed and Europe was in the middle of the financial crisis. Special attention was put on the Visegrad Group in order to describe personal income tax system in each of the states which belongs to this group. Personal income tax is very important because after paying it people have available income, which creates their welfare. The goal of this article is to show how the undertaken PIT changes in the V4 Group reflected on macroeconomic situation in these countries and have anything in common with the trend in the EU. The main proposition of this article was that generally broader tax bases and lower tax rates tend to be more conducive to growth. But more extensive use of deductions and exemptions means, that tax has a narrow basis. A state's personal income tax system serves not only to finance government expenditure but to offer a means of redistributing income and should encourage people towards activity. PIT is special tax because it affects worker activity and should improve their welfare. However, at present the situation is changeable and unstable and this goal will be very hard to achieve, what author try to show in the article. To present the problems, section one of this article describes the main trends in PIT in the EU after 2008. Section two deals with the Visegrad Group and the main economic indicators that occurred in each state. In the next sections are described PIT construction in all of the V4 countries. The statistics are based on the new European System of National and Regional Accounts (ESA 2010), which are prepared by Eurostat and DG Taxation and the Customs Union. The more detailed and updated information contains data base „Taxes in Europe”.

Personal income tax – main trends in the European Union after 2008

Taxes are a compulsory fee levied on individuals or corporations that is enforced by government institutions, whether local, regional or national in order to finance go-

vernment activities. In economics, taxes fall on whoever pays the burden of the tax, whether this is the entity being taxed, like a business, or the end consumers of the business' goods [Owsiak 2013].

Most nations have a progressive tax system by which a higher percentage of tax revenues are collected from high-income individuals or corporations rather than from low-income individual earners. Tax revenues are used for public services and the operation of the government [Wildasin 2003].

It's obviously known that a carefully designed tax system can have a significant positive impact on a country's economy. Tax system should ensure stability in public finance, growth and competitiveness. The European Union contributes to the discussion on better taxation by examining the trends in reforms seen across the Member States. It also provides in-depth analysis of the challenges being faced by Member States and the policies available to them to address these issues. The use of indicator – based analysis helps to identify the specific policy areas in which individual states should have scope to improve their tax system [Owsiak 2016].

Over recent years, Member States have increased their total tax revenue, as shown in Graph 1. All the main type of taxation – indirect taxes, direct taxes and, to a lesser extent, social security contributions- have been increased as a share of GDP. In 2015, total tax revenue is expected to fall, albeit only very slightly. Whilst indirect taxes are forecast to remain broadly stable, social security contributions will fall marginally, to around their 2011 level.

Graph 1. Change in tax revenue (EU, % of GDP)



Sources: Report „Tax reforms in EU Member States 2015. Tax policy challenges for economic growth and fiscal sustainability“, X/2015, p. 19.

Between mid-2014 and mid – 2015, nine Member States reduced the overall level of taxation on labour. Four others reduced labour taxes for low-wage earners and other specific groups, while increasing personal and labour taxes for higher-income groups.

Only three countries increased labour taxes: Bulgaria increased personal income tax (PIT) by removing a temporary tax relief previously given to those on the minimum wage, extending the taxation on interest and increasing social security contributions (SSC). At the same time, the tax deduction for children was increased. Latvia increased the ceiling on pension contributions. In Luxembourg, a new employee tax item – the temporary tax for fiscal balancing – was introduced. Eight member States reduced labour taxes by means of measures targeted at particular groups, including low-income earners and workers with children (Belgium, Bulgaria, Estonia, France, Croatia, Italy, Malta and than UK). In four Member States (Spain, France, Austria and Portugal), targeted reductions in labour tax were accompanied by an increase in tax on higher-income earners, thus increasing the progressivity of the system. Three Members States – Latvia, Hungary and Romania – that operate single-rate PIT systems – thus placing a high tax burden on low income earners – have introduced or announced non-targeted reductions in labour taxation [Taxation trends in the EU, 2015].

Table 1 shows the part of personal income tax revenue as a percentage of GDP after 2008. In the EU the average revenue of PIT is about 9% of GDP. The worst situation was in 2010 and 2011, when the financial crisis hit economies in the strongest way. After that we can observe a slight recovery which almost saw things return to where they were before the crisis. In this time the GDP growth in the EU was around only 1% per year [Tax reforms in EU Members States, 2015].

Table 1. Personal Income tax as % of GDP

State/Year	2008	2009	2010	2011	2012	2013
EU	9,3	9,2	8,9	9,0	9,3	9,4
Austria	10,3	9,8	9,7	9,7	10,0	10,2
Belgium	12,4	12,1	12,2	12,5	12,6	13,2
Bulgaria	2,8	2,9	2,9	2,8	2,9	2,9
Czech Republic	3,5	3,5	3,3	3,5	3,6	3,7
Denmark	24,1	25,2	25,1	25,1	25,6	26,6
Germany	9,0	8,9	8,1	8,2	8,6	8,9
Estonia	6,1	5,6	5,3	5,2	5,3	5,5
Ireland	9,3	9,2	9,1	9,3	9,9	9,9
Greece	4,6	4,8	4,4	4,8	7,0	6,0
Spain	7,2	6,9	7,2	7,5	7,6	7,6
France	8,0	7,9	7,8	8,0	8,7	9,0
Croatia	3,8	3,9	3,5	3,5	3,7	3,9
Italy	11,3	11,3	11,3	11,1	11,8	11,9
Cyprus	4,6	3,6	3,8	3,8	3,6	2,9
Latvia	6,0	5,3	6,1	5,6	5,7	5,7
Lithuania	6,5	4,1	3,6	3,5	3,5	3,6
Luxembourg	8,1	8,1	8,0	8,4	8,4	9,0
Hungary	7,5	7,2	6,4	4,9	5,3	5,0
Malta	5,7	6,4	5,9	6,4	6,5	6,9
Netherlands	6,6	7,8	7,7	7,4	7,0	7,0
Poland	5,3	4,6	4,4	4,4	4,5	4,5
Portugal	5,4	5,5	5,4	6,0	5,9	7,8
Romania	3,3	3,4	3,2	3,3	3,4	3,4
Slovenia	5,7	5,7	5,6	5,6	5,7	5,3
Slovakia	3,1	2,8	2,7	2,9	2,9	2,9
Finland	12,7	12,7	12,0	12,3	12,5	12,9
Sweden	15,7	15,4	14,7	14,3	14,6	14,8
United Kingdom	10,5	10,2	9,8	9,7	9,3	9,3

Source: Own Study on the base of Eurostat: ec.europa.eu/eurostat/en/web/products-datasets/-/GOV_10A_TAXA
 Update: 28.09.2016

Every state in the European Union has its own tax system. As we can see the highest revenue of PIT as a % of GDP is in Denmark, Belgium, Sweden, Finland and Italy. First four countries always characterize the creation of conditions for sustainable development and before – welfare state. It now remains to view the systems which exist in the countries in the Visegrad Group, namely the Czech Republic, Hungary, Poland and Slovakia.

Economic situation in Visegrad Group after 2008

The Visegrad Group (known as V4) reflects the efforts of the countries of the Central European region to work together in a number of fields of common interest within the all-European integration. The Czech Republic, Hungary, Poland and Slovakia have always been part of middle European civilization sharing cultural and intellectual values and common roots in diverse traditions, which they wish to preserve and further strengthen.

All the activities of the Visegrad Group are aimed at strengthening stability in the Central European region. The participating countries perceive their cooperation as a challenge and its success as the best proof of their ability to integrate also into such structures, such as the European Union [visegradgroup.eu].

As was said earlier the tax system reflects GDP growth, the level of deficit and the unemployment rate. Table 2 shows how the situation looks in V4 during the selected years compared to the EU and the EA.

Table 2. GDP Growth (%), deficit (% GDP) and Unemployment rate in V4 countries 2008–2015

State/Year	Deficit as % GDP							
	2008	2009	2010	2011	2012	2013	2014	2015
EU 28	-2,4	-6,6	-6,4	-4,6	-4,3	-3,3	-3	-2,4
EA (19)	-2,2	-6,3	-6,2	-4,2	-3,6	-3	-2,6	-2,1
Czechia	-2,1	-5,5	-4,4	-2,7	-3,9	-1,3	-1,9	-0,4
Hungary	-3,6	-4,6	-4,5	-5,5	-2,3	-2,6	-2,3	-2
Poland	-3,6	-7,3	-7,5	-4,9	-3,7	-4	-3,3	-2,6
Slovakia	-2,3	-7,9	-7,5	-4,1	-4,3	-2,7	-2,7	-3

Unemployment rates (%)								
State/Year	2008	2009	2010	2011	2012	2013	2014	2015
EU 28	7	9	9,6	9,7	10,5	10,9	10,2	9,4
EA (19)	7,6	9,6	10,2	10,2	11,4	12	11,6	10,9
Czechia	4,4	6,7	7,3	6,7	7,0	7,0	6,1	5,1
Hungary	7,8	10,0	11,2	11,0	11,0	10,2	7,7	6,8
Poland	7,1	8,2	9,7	9,7	10,1	10,9	9	7,5
Slovakia	9,5	12,0	14,4	13,6	14,0	14,2	13,2	11,5
GDP (%)								
State/Year	2008	2009	2010	2011	2012	2013	2014	2015
EU 28	0,4	-4,4	2,1	1,7	-0,5	0,2	1,5	2,2
EA - 19	0,4	-4,5	2,1	1,5	-0,9	-0,3	1,1	2
Czechia	2,7	-4,8	2,3	2,0	-0,8	-0,5	2,7	4,5
Hungary	0,8	-6,6	0,7	1,8	-1,7	1,9	3,7	2,9
Poland	4,2	2,8	3,6	5,0	1,6	1,3	3,3	3,6
Slovakia	5,7	-5,5	5,1	2,8	1,5	1,4	2,5	3,6

Sources: own study on base Eurostat: <http://ec.europa.eu/eurostat/data/database> last update 29.09.2016

As we look at deficits the worst situations were in 2009, 2010 and 2011. In Poland the deficit in 2010 was 7,5% like in Slovakia. Although Poland has the highest level of GDP among the V4 countries, the deficit was almost the highest, which is interesting. The same is when we look at the unemployment rate – its level is quite high if we take under consideration the GDP level and size and potential of this country. The worst situation was in Slovakia, which was caused by the financial crisis and the financial contribution that this country had to pay as a member of the Euro zone.

When we take under consideration these three indicators it can be seen that the best situation was in the Czech Republic. Here, the budget is almost balanced, the rate of unemployment is low and GDP shows a growing tendency. The same can be observed in Hungary. The data is worse than in the Czech Republic but better than in Poland and Slovakia.

Table 3 informs about real disposable income of householders the situation. In the EU and EA can be observed a little drop in 2009 but since then income has been

growing even faster in the EA or in the EU. In all V4 countries the level of disposable income is lower than in the EU or in the EA. Among these countries the best situation is in Czechia and then in Slovakia.

Table 3. Real adjusted gross disposable income of households per capita (in PPS)

geo\time	2008	2009	2010	2011	2012	2013	2014	2015
EU (28)	19 555	19 234	19 665	19 972	20 337	20 385	20 781	21 629
EA (19)	21 227	20 692	21 356	21 674	21 907	21 988	22 431	23 248
Czechia	13 496	13 849	14 191	14 748	14 924	15 370	16 086	:
Hungary	11 131	11 032	11 501	12 271	12 348	12 627	13 178	13 551
Poland	10 781	11 321	12 252	12 791	13 610	13 793	14 273	14 909
Slovakia	12 781	12 831	13 591	13 683	14 183	14 614	15 444	16 339

Source: Own Study on base: <http://ec.europa.eu/eurostat/tgm/table>; last update 16.01.2017.

To understand better the presented data we should look more closely at personal income tax in each of these four countries.

Personal income tax in Visegrad Group – similarities and differences

The best example for welfare are living conditions. These conditions are created by governments individually. The government set the tax system that reflects on the social welfare. Very important is PIT because after different deductions remains disposable income. Table 4 describe the PIT construction in V4.

Table 4. PIT in V4 countries

	The Czech Republik	Hungary	Poland	Slovak Republik
Tax object	- Employment income; - Income from business or self – employed activities; - Income from sport and entertainment activities; - Benefits in kind (company car); - Pension income; - Dividends; - Interest from: government bonds, corporate bonds, special saving accounts, deposits; - Royalties; - Income from immovable/movable property; - Capital gains on immovable/movable property; - Annuities from life insurance; - Prizes and awards; - Scholarships; - Income from occasional activities; - Revenues from lotteries and games activities.	- Employment income; - Income from business or self-employed activities; - Income from sport and entertainment activities; - Benefits in kind (company car); - Owner-occupied immovable property; - Dividends; - Interest from: governments bonds, corporate bonds, special saving accounts, deposits; - Royalties; - Income from renting immovable/movable property; - Capital gains on immovable/movable property; - Annuities from life insurance; - Prizes and awards; - Scholarships; - Income from occasional activities; - Revenues from donations and gifts; - Revenues from lotteries and games activities.	- Employment income; - Income from business or self-employed activities; - Benefits in kind (company car etc); - Pension income; - Dividends; - Interests from: government bonds, corporate bonds, special saving accounts, deposits; - Royalties; - Income from renting immovable property and movable property; - Capital gains on immovable/movable property; - Prizes and awards; - Scholarships; - Income from occasional activities; - Revenues from lotteries and game activities	- Employment income; - Income from business or self-employed activities; - Income from sport and entertainment activities; - Benefits in kind (company car); - Owner-occupied immovable property; - Interests from: government bonds, corporate bonds, special savings bonds, deposits; - Royalties; - Income from renting immovable/movable property; - Capital gains on immovable/movable property; - Annuities from life insurance; - Prizes and awards; - Income from occasional activities; - Revenues from donations and gifts; - Revenues from lotteries and games activities.
Rate(s) Structure	Bracket 1: rate 15% from 2008	Bracket 1: rate 16%	Bracket 1 from 3 091 PLN to 85 528 – rate 18%	Bracket 1 to 35 022 EUR – rate 19% Bracket 2 from 35 022 – rate 25%
Deduction from the tax base	- Interest on mortgages; - Donations; - Contributions to supplementary pension or health insurance; - Membership fees to Unions.	- Membership fees to Unions	- Interests on mortgages; - Donations.	- In case of business income if these expenses relate to achievement of business income. They are capped at 5 040 EUR/year;

	The Czech Republik	Hungary	Poland	Slovak Republik
Deduction from tax	-Tax reliefs available to the taxpayers depending on number of their disabled employees		- Obligatory health contributions (not more than 7,75% of calculation base); -Child relief;	- Social Security Contributions – i.e. social insurance and health insurance paid; - Social security benefits received; - Old age pension savings received; - Social assistance benefits received – poverty related benefits; - State social support benefits received – family related benefits
Credits	- Credit for an individual amounts to: 23 640 CZK;	- Contributions to supplementary pension of health insurance	Yearly credit for an individual amounts 556 PLN	Child care expenses

Sources: Own study on base: file:///C:/Users/Komputer/Desktop/PIT%20in%20V4/98_1313712000-Personal%20income%20tax%20Czechy.htmlast update 28.09.2016.

The earliest tax was introduced in Hungary on 1st January 1988; in Poland on 1st January 1992 and then in the Czech Republic and the Slovak Republic on 1st January 1993. This tax is set in all countries by the central authority and the tax base and reliefs, too. The differences appear in beneficiaries. In the Czech Republic the beneficiaries of this tax are central, regional and local authorities. In Hungary the central government is the only beneficiary. In Poland, central and local authorities have the right to part of this tax. But in the Slovak Republic beneficiaries from this tax include use central, regional and other institutions.

As we can see the base of this tax in each country is very broad, which means that people have to pay for all incomes they earn. The main differences in tax objects are in bold letters. What can be interesting is that only in the Czech Republic and Poland do they pay pension tax. Scholarships are without taxation in Slovakia and revenues from donations and gifts are taxed in Hungary and Slovakia. The differences occur in credits and deductions, too, which could be a key-factor affecting living conditions. After 2008, the revenues of PIT went down, as is shown in table 1. The biggest revenues from this tax as a percentage of GDP are in Hungary, than in Poland and then in the Czech Republic. In these three countries the level of revenues is lower after the

financial crisis, which was the first result of the crisis, despite the impact of it being weaker in Middle Europe. The worst situation was in Slovakia, only one state in the V4 group but which is a member of the Euro Zone.

The characteristic thing for the tax system in Czechia is the flat rate – 15%. The same rate is for dividends, interest on deposits and special savings accounts and interest on corporate and government bonds. The central government collects 70% revenues from this tax [Data base: PIT%20in%20V4/98_1313712000-Personal%20income%20tax%20Czech.htm.]

In Hungary the only beneficiary of PIT is the central authority. The tax basis is very wide because it includes everything except pension income and inheritance. Hungary is the second state in V4 with flat rate. The benefits in kind are usually partially or fully taxable. As of 1st January 2011 the tax rate is 16% in all categories of income. That's why no deductions are allowed by employment income. By self-employment income the expenses incurred and substantiated during the tax year in connection with the activity, up to the amount of revenues produced by such activity or 10 per cent of the revenues (10 per cent expense ratio), may be deducted. The positive aspect is that since 2011 the revenues to the budget has been growing but they are not so high as they were in 2008-2009. Year by year the situation with unemployment rate seems to be better and disposable income is higher [Date base: PIT%20in%20V4/309_1424159206-Personal%20income%20tax%20Hungary.htm.]

In Poland beneficiaries are central and local government. 49,52% of the revenues from PIT (general terms) is shared of the local authorities. Since 2009 there have been only two thresholds: 18% and 32%. Before 2009 there were three: 19%, 30% and 40%. The reform was introduced when the financial crisis began. The government counted on higher revenues for the budget. But as we can see from statistics the revenues from this tax never achieved the level before the reform. The PIT expanded. On the one hand there are lower thresholds but on the other side – the reliefs need to be considered. The same refers to the unemployment rate – it is lower not because of creating new jobs but because of emigration, that is estimated as over 2 million Polish people in their productivity age. Surprisingly the high GDP level did not transfer into a better economic situation like in the Czech Republic [Date base: PIT%20in%20V4/459_1424159284-Personal%20income%20tax%20Poland.htm.].

In Slovakia the beneficiaries of PIT are central (12,7% of PIT revenue), regional (21,9% of it), local (65,4%) government units and others (each taxpayer can assign 2% of his personal income tax to the third sector). In the Slovakia Republic there are

two thresholds: 19% up to 35 000 Euro and 25% above this sum. The tax is not paid from dividends. The interest on deposits and bonds are taxed 19%. When we look at the Eurostat statistics we can see that the revenues from PIT are lower since 2008 but stable, which is a good example of stability, despite the crisis. Slovakia is the only country from the V4 Group which is an Euro Area member. But in 2009 and 2010 the deficit was high but after that and Sixpacts reforms the situation seems to be better. What seems to be an unsolved problem is that Slovakia has still the highest unemployment rate in the V4 group [Date base:PIT%20in%20V4/554_1424159328Personal%20income%20tax%20 Slovakia.htm].

To sum up, in the V4 Group there are both flat and progressive PIT scales. Only the Czech Republic and Hungary decided for a flat rate whereas in Poland and Slovakia there are thresholds. The common thing for all these countries is that the revenues from PIT as % of GDP towards the budget are not high when compared to the other EU countries, especially when compared to the more Western ones. That means that in these countries a bigger share in budget revenues comes from indirect taxes and social contributions. Poland and Hungary have made PIT reforms during the financial crises to make the public finance situation better and thus the situation in their societies. PIT construction in all of these countries has expanded, especially in Poland but it does not transfer for indicators (unemployment and disposable income). The best situation is in the Czech Republic – the small country with flat rate of PIT that becomes more and more attractive in this part of Europe.

Summary

A carefully designed tax system can have a significant positive impact on a country's economy. Personal income tax influences people's activity and that reflects on public finance, growth and employment [Owsiak 2016]. During the crisis there appeared the urgent need to improve public finances and to find stable and certain sources of income. The one certain source of income is personal income tax. As we can see in the EU Members States the overall tax burden, as a percentage of GDP has been increasing over the last few years. Since 2015 the overall tax burden is expected to fall, albeit very slowly. The revenues from PIT to the budget are still lower than before 2008/2009, when the crisis began [Report 2015]. When we look at the V4 we can see that that the tax base is very wide. In two countries there is a flat taxation. Only in

the Czech Republic we can see that the economic indicators have indicated a better situation. V4 countries followed the EU trend in taxation and tried to modify their tax system to make better conditions for society and for public finance. The conclusion is that the tax, specially PIT, should affect worker activity and improve their welfare. However, at present the situation is changeable and unstable and this goal will be very hard to achieve, what assigned macroeconomic ratios clearly confirmed. The movement of people and capital means that even the best solutions do not always fulfil the government's expectations. That's why now the most important thing is to identify the common trends for taxation in EU countries which allow more stable economic conditions to develop, what will be the subject of the next more detailed studies.

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Talent Management in Life Insurance Industry: Evidence for Central Europe

Abstract: The purpose of this paper is to indicate, basis on developed model, the relation between the level of talented agents' competencies and life insurance company effectiveness, referring to the main competitors on the Polish insurance market. Based on competency management literature and scientific and practice partnership, the author developed and tested a model of how the talented agent's activity determines the life insurance company effectiveness. Data is collected from Poland and Lithuania – based on a scientific project with 241 talented agents from four top life insurance companies in Poland. The proposed model established a relation between the level of competency and organizational performance. The study explicates the implications of talent management and reveals its impact on life insurance industry effectiveness. The study also examines the implications of the competency level of talented individuals and organizational performance. It supports the organizational effectiveness theory and reveals that the talent management can be a source of the organization's competitive advantage. Thus, it makes a contribution to strategy management, HRM and marketing literature and it offers practical implications for those institutions that are striving for excellence in the sale of life insurance policies.

Key words: tcompetency, competitive advantage, effectiveness, human performance, talent management

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Introduction

Since there is no theory which covers various cause and effect elements, and there is no methodology approach which could be recognized as superior to others, talent management meets the criteria of a phenomenon [Cascio, Boudreau 2016] which is formed in four phases [Von Krogh et al. 2007]: embryonic, growth, maturity and decadent. In the period of the past eight years, literature in the area of talent management seems to have been evaluating from a marginal level to an increasing level. The discourse in this area was initiated through an introduction of the notion “fight for talents” to the organizational practice by McKinsey’s consultants [Michaels et al. 2001]. It is rooted in two assumptions: the sources of an achievement of competitive advantage in knowledge based economies are losing their advantage, while the human talent constitutes a resource that is hard to copy by competitors [Iles, 1997], inducing to work and a retention of talents is becoming more and more difficult as a result of specific and psychological tendencies [Tucker et al. 2005].

Although the source literature in the area of talent management abounds in postulates for a particularly high contribution of talented people to the organization’s effectiveness, it does not demonstrate an equally high precision in the definition of the notion of talent itself [Huang, Tansley 2012]. Furthermore, the majority of publications concerning this semantic field do not offer any explicit and precise definition of talent as a focus of research interest [Lewis, Heckman 2006] or a proportion of the quantity of organizations which have systemically implemented talent management [Larsen et al. 1998], whereas those papers where definitions of talent management were introduced, frequently fail to present scientifically based definitions of talent [Capelli 2008], nor do they indicate which specific practices are included in the notion of talent management [Ashton, Morton 2005]. In these papers, both an author’s approach to talent management [Pascal 2004; Bethke et al. 2011, Warren 2006] and examples of quotations of previously constructed definitions are used [Skuza et al. 2013, Stahl et al. 2012].

Talent management: opportunities and threats for service organizations

Based on the literature studies performed, it seems justifiable to propose the existence of a fundamental lack of consent as for the meaning of “talent” in the organizational environment. Another conclusion is that the literature concerning talent

management, though being diverse in the construction of ideas that form it, possesses a rather normative nature. In reality, assumptions that form the foundations of individual approaches to talent are frequently “traded” as objective facts, yet so far little empirical evidence as to their accuracy has been delivered by HR academics and practitioners. In accordance with the results of the analysis performed, in the organizational environment, talent is conceptualized in two ways: objectively and subjectively (talent as an object and a subject). Within the framework of the object approach, talent is perceived as exceptional abilities and attitudes demonstrated by a given person. It is essential to discern that various sub-perspectives in the object approach (talent as a natural ability, expertness, involvement and adaptation) should be perceived as supplementary rather than additive, with a special consideration of involvement and adaptation which, in the opinion of Ulrich and Smallwood, can never be used as sole talent indices but are always as supplementary in the measurement of ability [Ulrich, Smallwood 2012]. Furthermore, in the organizational environment, there is usually no distinction between inherent and acquired elements of talent but, in their assessments of talent, these rather concentrate on effectiveness identified [Silzer, Dowell 2010]. In the pragmatic perspective, an observation would be justifiable that the nature vs. education debate comes down to semantics [Tansley 2011]. However, the supposed belief demonstrated by those taking decisions in organizations concerning the extent to which the characterization of a person is permanent [Costa, McCrae 2003] in contrast to being flexible (subject to transformation) was repeatedly demonstrated as one that determines to a substantial degree an assessment of talent [Heslin et al. 2005]. In this context, it is proposed that subjective and objective approaches to talent should merge, i.e. the objective perspective defines what personality characterizations are to be sought for an identification of talent, whereas the subjective approach provokes an essential discussion as to its validation [Keating, Heslin 2015]. In the author’s view, an exceptional effectiveness of individuals recognized as talented constitutes a derivative of experience and effort, which is made conditional on the level of motivation oriented onto high professional activeness and the employee’s wish to develop. This is confirmed in the views expressed by Silzer and Dowell [2010]. The researchers find that even though distinguishing can be made between innate and acquired abilities, no common criteria exist in connection with this. The authors further conclude that the aforementioned situation constitutes a dilemma which they are trying to solve by equating talent with abilities and skills as well as the results of individuals’ activeness for the organization. This constitutes an incorporation of the

understanding of the effectiveness of the Austrian school of economics referred to above. Furthermore, in the papers by Gonzales-Cruz et al. [2009], talent is defined as a “set of competences which, while being developed and then implemented, enable the individual to play the organizational role in a perfect manner”. In this perspective, competences already constitute the main factor to define talent, which is characteristic for the description introduced in the publications of the European Union [SEC, 2005] as an “expression of the abilities of individuals to a spontaneous combination of various elements of knowledge and skills which they possess, in a particularistic context”. It is possible to construct the notion of talent based on this interpretation of competences:

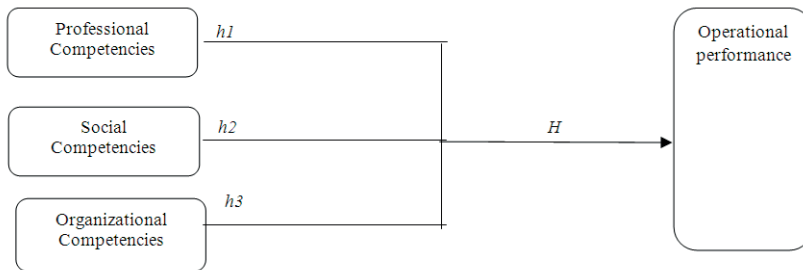
- talent includes components of knowledge, skills and abilities to combine them in order to obtain outstanding results; hence, high effectiveness constitutes both a result and an indicator of talent,
- because competence is perceived as an ability to combine different elements of knowledge and skills, this determines an avoidance of discourse in the area of the “inherent nature” of talent,
- there exists a possibility to consider the application in the accepted context considered, which may constitute a cause for discussions about the management of specific talent.

Furthermore, in accordance with the opinion held by Von Mises [2014] as well as Spencer and Spencer [1993], who developed theoretical and practical indices for the assessment of labour effectiveness, competences always include an intentional element, one that constitutes a motive or feature that determines activeness [Ericsson 2006] which is oriented onto an achievement of the accepted results [Effron 2010]. Based on this assumption, it seems to be necessary during the talent management process to specify competences determining the application of talent. Furthermore, making an assumption concerning the development of these competencies while planning professional career paths for employees is at variance with definitions referred to above because the development of competences is a result of an increase of the resource of experience or effective human resources management; however, it does not define competences or talent. Therefore, citing Ericsson [2006] and Effron [2010], the statement seems to be justifiable that the management of talents in organizations should be set in a practical dimension in every organization, especially in business institutions. It is the effectiveness of economic decisions taken that decides about their existence [Cheese et al. 2009], particularly in the area of human resources

management. Hence, the author proposes an implementation of the author's model of the management of talents, one which constitutes a bridge that connects the theoretical and practical approaches to talent.

Hypothesis H: Activeness of talented people (with the highest level of professional [h_1], social [h_2] and organizational [h_3] competences) is positively correlated with the organization's operational performance [Fig.1]

Figure 1. Talent Management Model



Source: Author's research.

Method

The research was carried out based on the inductive method, which is particularly useful and adequate when the conceptual base cannot determine identifiable dimensions in a simple way [Williamson et al. 1982]. This method requires an expert approach to an analysis of the content of the sample. It is based on a post hoc factor analysis [Anderson 2009; Kerlinger 1986] and it asserts a correct categorization of factors [Ford et al. 1986]. In addition to this, a comparative analysis of the existing literature of the subject increased the validation level of the research results [Eisenhardt, Graebner 2007]. Moreover, the case study was constructed through the use of an iteration process based on a consonance of theoretical assumptions and empirical evidence [Araujo, Dubois 2004; Dubois, Gadde 2002]. The implementation of the case study in the development of a theory enhances inductive research through the creation of an adequate theory that determines scientific development and that is testable [Gibbert, Ruigrok 2010]. The purpose of the research was to identify the competency profile of a talented life insurance agent.

Sample and data collection procedure

Assigning to the talent category was based on the definition proposed by Gagne [2000] and Ulrich as well as by Smallwood [2010]. The authors claim that the notion of talent is attributable to those people whose effectiveness ranks them in the upper 10% range of the organization. An additional criterion was for the agent to obtain the average level of competences ≥ 4.0 . Talented insurance agents (according to their sales results for the 5 years preceding the research) constituted the selection criterion. All the agents who meet this criterion were covered by the research. These agents were the intermediaries of AVIVA TUNŻ S.A. (AVIVA), Amplico Life S.A. (AMPLICO), Nationale Nederlanden S.A. (NN), Powszechny Zakład Ubezpieczeń na Życie S.A. (PZU), four insurance companies that operate in Poland and possess the largest share in the market. The agents were instructed to complete 3 competency questionnaires. To ensure confidentiality, each questionnaire was anonymous and put in an envelope when given to researcher. A total of 265 sets of questionnaires were returned, and 24 sets were excluded due to extensive missing data or irregular patterns, resulting in 241 valid sets, with a final response rate of 94,70%. Background information for the participants was as follow: 46% were male, 54% female, the majority of agents were between 30–50 years of age (72%); 61,60% had college degree, 38,40% a graduate degree; all the participants had more than 5 year life insurance sales experience.

Measures

The term of competence was implemented from the papers by Rakowska [2007] and Oleksyn [2014]. These authors perceive competence as a construct whose elements include knowledge, attitudes and skills. This constituted the basis to construct a model of the competences of an insurance agent by the managerial personnel of the life insurance institutions examined (the most effective sales managers: the classification was made based on the results obtained for the period of 3 years preceding the research). The abovementioned construct, which was obtained with the use of the Delphic method and brainstorming, was divided into three components in accordance with the previously accepted definition [Schriesheim et al. 1989]: professional competencies (expectation of client's needs [1.1], moni-

toring and utility of opportunities in competitive environment [1.2], marketing knowledge [1.3], acquaintance of office technique [1.4], data analysis [1.5], IT [1.6]), social competencies (communicativeness [2.1], stress handling [2.2], effective negotiations [2.3], influencing clients [2.4], assertiveness [2.5], change attitude [2.6], self motivation [2.7]), organizational competencies (acquaintance of organizational characteristics [3.1], creating the positive image of organization [3.2], maintain good client relation [3.3], sales orientation [3.4]). The professional behaviours of agents described in the categories of the individual competences underwent assessment. Each group of competences included additional test questions to assess the reliability of the scale created: the descriptions of competences 1.7, 2.8, 3.5 included significance that was identical with 1.2, 2.4, 3.4.

Territorial scope of the research: Poland, Lithuania

Duration: 2011–2014

Data Analyses

The hypotheses were tested regarding the average amount of collected insurance premium gained from life insurance policy. In the context of the determinants referred to above, an analysis of competency level of agents-talents was implemented. Agents differ in a statistically significant manner with individual level of competencies. To test Hypothesis, a regression was conducted with the individual mentioned premium, as the dependent variable and competency levels (professional, social and organizational), as the independent ones.

Results

Tests of Agent's competency level

Descriptive statistics and correlations for the variables can be found in Table 1.

Hypotheses were tested with a series of least squares multiple regression. Table 2 includes the results for all hypotheses testing including the control variables.

Table 2. The level of talented agents' competencies as predictors of job performance

Variables	β	SE β	P	M	SD
1.1	0,21	0,14	0,013	3.53	1.32
1.2	0,04	0,13	0,074	3.12	.73
1.3	0,12	0,09	0,020	3.56	.79
1.4	0,17	0,13	0,021	3.79	.93
1.5	0,49	0,12	0,000	3.69	1.07
1.6	0,12	0,11	0,026	3.54	1.07
2.1	0,11	0,15	0,045	4.16	1.10
2.2	0,22	0,11	0,050	4.17	.57
2.3	0,03	0,10	0,080	3.60	.66
2.4	0,07	0,14	0,063	3.52	1.17
2.5	0,43	0,14	0,000	4.03	.91
2.6	0,05	0,10	0,060	4.15	.63
2.7	0,24	0,12	0,004	3.94	.68
3.1	0,24	0,11	0,003	3.93	.62
3.2	0,00	0,13	0,099	3.81	.84
3.3	0,04	0,10	0,072	3.95	.88
3.4	0,30	0,08	0,000	4.19	.91

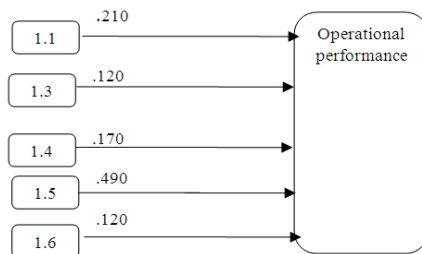
β = average bootstrapped regression coefficient, SE β - bootstrapped standard error of β , Chronbach α [1.2/1.7]=.813, Chronbach α [2.4/2.8]=.838, Chronbach α [3.4/3.5]=.847; R^2 =.77, $p < .05$

Source: Author's research.

To test Hypothesis, the level of talented agent's professional competencies was regressed on average amount of insurance premium per one insurance contract. Results suggest that:

- excluding 1.2, the level of professional competencies of talented agent is positively associated with operational performance ($\beta_{1,1}=.210$, $p=.013$; $\beta_{1,3}=.120$, $p=.020$; $\beta_{1,4}=.170$, $p=.021$; $\beta_{1,5}=.490$, $p=.000$; $\beta_{1,6}=.120$, $p=.026$) [Fig. 2],

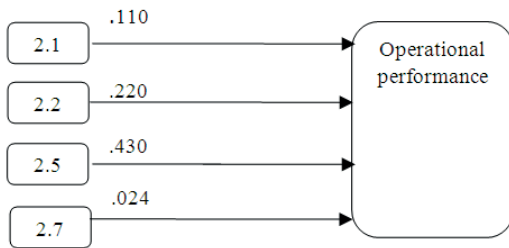
Figure 2. Results of the structural modelling of professional competencies of talented agent



Notes: $N=241$. Standardized estimates are reported. The coefficient in parentheses is the direct effect of professional competencies level and operational performance. $P < .05$ (two tailed). Source: Author's research.

- excluding 2.3, 2.4, 2.6, the level of talented agent's social competencies is positively associated with agent's performance ($\beta_{2.1}=.110$, $p=.045$; $\beta_{2.2}=.220$, $p=.050$; $p=.005$; $\beta_{2.5}=.430$, $p=.000$; $\beta_{2.7}=.024$, $p=.004$). [Fig.3],

Figure 2. Results of the structural modelling of professional competencies of talented agent

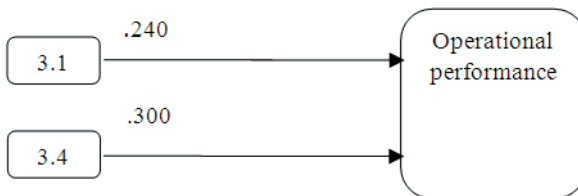


Notes: $N=241$. Standardized estimates are reported. The coefficient in parentheses is the direct effect of social competencies level and operational performance. $P<.05$ (two tailed).

Source: Author's research.

- excluding 3.2, 3.3., the level of organizational competencies is positively associated with agent's performance ($\beta_{3.1}=.240$, $p=.003$; $\beta_{3.4}=.300$; $p=.0353$ [Fig.4], that support the main Hypothesis [H].

Figure 2. Results of the structural modelling of professional competencies of talented agent



Notes: $N=241$. Standardized estimates are reported. The coefficient in parentheses is the direct effect of organizational competencies level and operational performance. $P<.05$ (two tailed).

Source: Author's research.

Theoretical contributions and practical implications

Talent management is currently of a particular interest in the context of the management of organizations, especially in the area of the recruitment and retention of people with those qualities and competences that determine obtaining competitive advantage, which is emphasized by Lawler (2011), who identifies 8 factors of effective talent management. In the author's view, talent management in the area of decision taking should be subject to the same strict disciplines, logics and precision which were implemented in relation to capital investments, products, technologies and physical assets. A lack of consequences in conduct is identical to condemning an institution to non-effective operations and, as a result, an economic collapse [Tansley 2007; Israelite 2010]. This view, however, is not reflected in the research carried out in life insurance institutions because no system activities oriented onto the recruitment and retention of talented people were identified in them. In the context of the effectiveness of service organizations, like life insurance institutions, this does not seem to be a significant problem because the activeness of talented people, even though it is high per capita, does have an essential impact on the results of the whole organization. In the most effective life insurance institution, i.e. AVIVA, talented individuals constitute almost 2.2% of the whole population of insurance agents, and the degree of their impact on the effectiveness of this institution is 12.22%.

In Nationale Nederlanden, the percentage of talented agents was 1.024%, while in the least effective life insurance institutions (PZU, Amplico) no people were identified who met the criteria of being assigned to a talent category, and these institutions were ranked on the third and fourth position on the market of life insurances in Poland respectively. Therefore, in the author's view, the statement on a significant relationship between the recruitment of the talented people by the organization and its effectiveness is not justifiable [Janowski 2015]. The abovementioned observation constitutes an essential contribution to management sciences because it empirically confirms the theses from literature research concerning the participation of talented people in the organization's effectiveness which was carried out by Gallardo-Gallardo and Thunnissen [2016] as well as by Cooke et al. [2014].

The authors referred to above were accused of the fact that their approaches lacked an implicational nature in the light of their failure to carry out empirical tests to confirm views based solely on literature studies. Finally, a confirmation of the rightness of results quoted in this study can be found in the paper by Shipton et al.

[2015], which emphasizes the harmful nature of the implementation of the talent management process in organizations as an activity that is economically unjustified because, in Finley [2002], Silzer and Dowell's [2010] views, no analysis of expenditures assigned to talent management in relation to effects obtained is possible, even though the latest source literature also abounds in the examples of positive correlates between talent management and effectiveness [Smith 2015; Cascio, Boudreau 2016]. An analysis of the impact of talents on the effectiveness of life insurance institutions demonstrates that the occurrence of talents, i.e. individuals with the highest levels of competences in the whole population of life insurance institutions with the highest participation in the market, is in the range of (0–2.2%). Based on statistical calculations, it is justifiable to pose a question as to the actual participation of those people in the final result of business operations.

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The Impact of the Method of Financing Mergers and Acquisitions on the Efficiency of the Progress

Abstract: Mergers and acquisitions are part of the external strategy of a company. In order to transaction was reasonable, greatest value should be created than just strategy of internal incrementation of enterprise. Investors' expectations towards mergers and acquisitions are generally positive, yet most of these transactions fail. The aim of the article is to evaluate the profitability of mergers and acquisitions depending on the source of financing of the transaction. Author verified the hypothesis that mergers and acquisitions made by the companies from WSE in the past 10 years are not effective and the source of financing do not influence the profitability of the purchase.

Key words: effectiveness, mergers and acquisitions, profitability, Warsaw Stock Exchange

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Introduction

Mergers and acquisitions are part of the external strategy of a company. In order to transaction was reasonable, greatest value should be created than just strategy of internal incrementation of enterprise. In case of stock company, which value is dependent on forecasted increment, these transactions have important influence on price of share. Not only merger but even foreshadow causes reactions of investors and it brings definite results for enterprises taking part in such connection. In such case quotations of companies taken over and taking over automatically change. If investors' expectations regarding the mergers and acquisitions are positive, you can expect an increase in share prices. If the transaction is judged negatively, the share price decline.

Investors' expectations towards mergers and acquisitions are generally positive, yet most of these transactions fail. One of the factors affecting the profitability of the transaction is its method of financing. The method of financing transactions in a significant way may determine the financial condition of the acquiring company and determine the success or failure in building the company's growth.

In the case of too high a financial burden for the acquiring company, the transaction may result in bankruptcy or takeover by another competing entity. Excessive cost burden of financing the purchaser may limit its possibilities to complete the transaction and its final implementation, and thus reduce or prevent the achievement of synergistic effect.

The aim of the article is to evaluate the profitability of mergers and acquisitions depending on the source of financing of the transaction. Author verified the hypothesis that mergers and acquisitions made by the companies from WSE in the past 10 years are not effective and the source of financing do not influence the profitability of the purchase.

Profitability of mergers and acquisitions and financing methods

Research results show that mergers and acquisitions more often end up with a failure rather than success. As Schuter and Jackson [2001, pp. 239–253] indicate, using the example of United States, up to 75% of the transactions does not meet the financial targets, measured by the value of capital, return on investment and the level of

liquidity after the transaction. In contrast, studies in European countries, conducted in 1995, indicate that as many as 50% of the transaction value of \$ 500 million and above, had a negative impact on the value of capital to shareholders, 30% had a negligible impact, while only 17% has created added value.

Results of research on transactions conducted by Brown in the period between 1971 and 2001 are not clear. However, only 20 to 30% of transactions generate profits or shareholders of companies being the target of a merger or takeover. Adolph et al. [2001] showed that more than half (53%) of analyzed transactions did not bring the expected results, and in case of mergers and acquisitions based on strategic motive the number grew up to 68% of the transaction. Impairment of the recipient companies was noted by Mitchell and Stafford [2000, pp. 287–329]. The results varied depending on the method of financing transactions – for cash financed transactions a higher probability of profit was observed, while in the case of issue of shares – higher probability of loss.

The choice of method of financing mergers and acquisitions is one of the key decisions in the process. To some extent, form of financing determines the future value of the transaction and owners' income. Also, the choice of financing may be dictated by a number of factors, including kind of offers, the theme of mergers and acquisitions, availability of financing, tax regulations, the financial liquidity of the buyer and the availability and the cost of capital and is differently perceived by investors.

Literature shows that method of payment in M&A transactions matters to the shareholders. Especially in case of cross – border acquisitions which are associated with significant challenges related with integrating foreign and domestic companies. Shareholders of acquiring companies generally perceive cash offers as more attractive than stock offers.

Fuller, Netter, and Stegemoller [2002, pp. 1763–1793] indicated that cash financed deals are more favourable than stock financed acquisitions due to information asymmetry and valuation uncertainty.

According to Dutta, Saadi, Zhu [2013, pp. 91–107] stock payment in M&A processes is viewed as a possible remedy for reducing asymmetry in information and decreasing risk related with corporate governance in cross-border acquisitions. In case of Canadian acquisitions majority of deals (more than 90%) is financed by cash. Stock financed deals do not generate positive effects in cross-border acquisitions in the long-term operating performance in comparison to cash financed deals. However, the positive abnormal returns around the announcement date were observed. Au-

thors suggested that this is a result of overenthusiasm about the cross-border stocks and overestimation of synergy gains. In long – term perspective, cross-border stock-financed deals significantly underperform. In addition to payment methods – no significant differences were found. Results are similar to Eckbo and Thorburn's [2000, pp. 1–25].

Also Shleifer and Vishny [2003, pp. 295–311] claimed that companies that are overvalued may increase shareholder wealth by using stocks in financing acquisitions of less valued companies. Ang and Cheng [2006, pp. 199–216] indicated that before transaction announcements acquirers are more overvalued than their targets.

Fu, Lin and Officer [2013, pp. 24–39] showed that stock financed purchases do not deliver synergy gains. Authors do the comparison in long-term perspective of stock price performance of overvalued acquirers and similarly overvalued industry peers that were not involved in M&A transactions. Results show that overvalued companies that were not involved in acquisitions, performed better and improved their market value.

Pinkowitz, Sturgess and Williamson [2013, pp. 128–149] examined the case of US cash-rich companies in the context of preferred method of payment in M&A transactions. Results indicate that cash-rich companies are 23% less likely to make cash transactions than companies that are not cash-rich. Authors also found some differences in characteristics of companies in the context of payment method in acquisitions. Stock bidders have a greater returns, sales growth and market ratios than cash bidders and usually concentrate on acquiring larger companies. Cash bidders are characterized by higher leverage and are often larger companies. Cash is often unsolicited for subsidiaries and is used in takeover defence.

A study on companies listed on the Polish Stock Exchange draws the following conclusions:

- in the case of companies, which announced their intention to merge, the impact of the merger announcement on the price of the shares is short and causes an increase of about 1.5–2 percent. during the few days before the disclosure of merger [Czerwotka 2010a, pp. 31–37],
- in the short term, the average prices for the shares, which announced the call to sales increased during +/- one session, by 4.5 percent. more compared to the situation if these companies were not targeted for acquisition; during the period of +/- 60 session of the increase it was more significant and was 22 percent. [Czerwotka 2010b, pp. 193–205]

- on average, acquired companies gained as well in short and long term, while the acquiring companies were losing or at the most the value of the company remained neutral [Czerwonka 2010c, pp. 33–36].

Research methodology and results

The following research is based on the case study methodology. The author's goal is to verify the effectiveness of mergers and acquisitions for the acquirer company. In the undertaken study, two approaches have been proposed. Firstly, the effectiveness has been measured from the market point of view, using the stock price as a point of reference. In the second part of the study, effectiveness was measured with typical financial indicators: ROE and ROA.

Cases of acquisitions included in the study have been obtained from the EMIS database and they include 29 transactions from the period 2005–2013. Companies considered in the research are functioning in different branches of market. Because of the stock market approach, the important criteria for selecting companies were that the acquirer firm had to be listed on WSE at least two years before the merger / acquisition and also two years after it. The target company did not have to meet these criteria. Also the complete financial information about the acquisition in the EMIS database was significant while constructing the companies list for the study. The final list of the transactions that have been taken into consideration was listed in table 1.

Table 1. List of acquisitions included in the study

Acquisition date	Deal value (thousands)	Target name	Acquirer name	Deal financing	method of payment
Feb-11	198 000,00	RESTAURAVIA GRUPO EMPRESARIAL SL	AMREST HOLDINGS SE	New bank facilities	Debt assumed
May-07	301 674,00	AMREST EOOD	AMREST HOLDINGS SE	Capital Injection	Cash
Dec-09	66 805,80	GRYCKSBO PAPER HOLDING AB	ARCTIC PAPER SA	Capital increase	Cash
Nov-12	2 282 512,00	ROTTNEROS AB	ARCTIC PAPER SA	Capital increase	Shares
Sep-07	524 946,68	PROKOM SOFTWARE SA	ASSECO POLAND SA	Capital increase	Shares
Mar-13	5 336 797,00	ASSECO CENTRAL EUROPE AS	ASSECO POLAND SA	Capital increase	Shares
Dec-09	817 609,09	GE MONEY BANK SA	BANK BPH SA	Capital increase	Shares
Dec-12	782 283,16	KREDYT BANK SA	BANK ZACHODNI WBK SA	Capital increase	Shares
Mar-07	59 381,40	BIOPARTNERS HOLDINGS AG	BIOTON SA	Capital increase	Debt assumed
Jan-05	520 428,00	SCIGEN LTD	BIOTON SA	Capital increase	Shares
Nov-13	1 465 100,95	METELEM HOLDING COMPANY LTD	CYFROWY POLSAT SA	Capital increase	Shares
Mar-11	94 443 987,00	TELEWIZJA POLSAT SA	CYFROWY POLSAT SA	Capital increase	Cash
Jul-13	389 429,19	PGE ENERGIA SA	PGE POLSKA GRUPA ENERGETYCZNA SA	Capital increase	Shares
Nov-10	96 296,24	LEXLUX2 SARL	EUROCASH SA	New bank facilities	Deferred payment
Jul-13	63 885,00	LOTOS CZECHOWICE SA	GRUPA LOTOS SA	Capital increase	Shares
Apr-11	31 414,00	LOTOS JASLO SA	GRUPA LOTOS SA	Capital increase	Shares
Mar-08	20 403,09	JC AUTO SA	INTER CARS SA	Capital increase	Shares
Apr-05	56 206,00	PRZEDSIĘBIORSTWO BUDOWY KOPALNI PEBEKA SA	KGHM POLSKA MIEDZ SA	Private placing	Cash

Acquisition date	Deal value (thousands)	Target name	Acquirer name	Deal financing	method of payment
Aug-10	83 6947,00	KREDIT INKASO PORTFOLIO INVESTMENTS (LUXEMBOURG) SA	KREDYT INKASO SA	Private placing	Cash
Apr-08	80 608,37	ARTMAN SA	LPP SA	Capital increase	Cash
Dec-07	3 180,00	ETEL POLSKA SP ZOO	MEDIATEL SA	Capital increase	Shares
May-09	234 186,00	VELVET TELECOM LLC	MEDIATEL SA	Capital increase	Shares
Jul-08	41 896,32	BEM BRUDNICCY SP ZOO	MERCOR SA	Capital increase	Cash
Feb-12	1 355,50	MARCO POLO TRAVEL SP ZOO	NETMEDIA SA	Capital increase	Shares
Apr-08	265,00	MARCO POLO TRAVEL SP ZOO	NETMEDIA SA	Capital increase	Deferred payment
Jul-13	389 429,19	PGE ENERGIA SA	PGE POLSKA GRUPA ENERGETYCZNA SA	Capital increase	Shares
Sep-12	559 766,00	ORPHEE SA	PZ CORMAY SA	Capital increase	Shares
Jan-07	210 003,00	GALERIA CENTRUM SP ZOO	VISTULA & WÓL-CZANKA SA	Capital Injection	Cash
Feb-11	13 664,00	TREND FASHION SP ZOO	VISTULA & WÓL-CZANKA SA	Private placing	Cash

Source: own elaboration based on EMIS database.

The important element of the analysis was to include the financing method of the acquisition transaction due to the further financial effectiveness study and the stock valuation. In the gathered operation list, most of them were financed with equity: (25) and only 4 with debt. The detailed list of financing method was included in table 2.

Table 2. Methods of deal financing and payment

Deal financing		method of payment	
Capital increase	22	Cash	9
Capital Injection	2	Debt assumed	2
New bank facilities	2	Deferred payment	2
Private placing	3	Shares	16
Sum	29	Sum	29

Source: own elaboration.

Considering the data from table one and also the stock market data gathered from WSE archive quotations, an analysis of yearly rate of return has been made in the context of the mergers. In table 3, author included the results of this part of research. Cells that represent the year of the acquisition were marked yellow and they will be the reference points for the further analysis of the financial data. Secondly the rates of return from the stocks that have been associated with the changes in the acquisition year have been marked orange or blue, depending on the conclusion from the data in them. Author calculated the standard deviation of the annual price change in the maximum historical horizon available and then referred it to the change in the merger year. Changes that were significantly higher or were breaking the decreasing trend around the merger year were considered as positive receiving news of the acquisition by analysts and investors. Those observations were marked orange. On the other hand, if the price change was negative or too low considering standard deviation, the observation was marked blue.

Table 3. Annual rates of return in context of acquisitions

AMREST HOLDINGS SE	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return		101%	81%	-64%	71%	4%	-25%	50%	-6%
Arctic Paper	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	40%	29%	46%	-36%	33%	-16%	-8%	-6%	1%
ASSECO POLAND SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	40%	29%	46%	-36%	33%	-16%	-8%	-6%	1%
BANK BPH SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	47%	23%	-89%	-66%	139%	-15%	-56%	57%	11%
BANK ZACHODNI WBK SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	46%	59%	12%	-56%	71%	13%	5%	7%	60%
BIOTON SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return		-82%	-59%	-78%	15%	-35%	-60%	67%	-80%
CYFROWY POLSAT SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return					1%	21%	-18%	22%	21%
EUROCASH SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return		53%	54%	-17%	56%	67%	10%	53%	9%

GRUPA LOTOS SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return		12%	-10%	-73%	166%	14%	-36%	77%	-14%
INTER CARS SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	-36%	83%	184%	-78%	199%	-10%	10%	9%	121%
KGHM POLSKA MIEDZ SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	100%	42%	19%	-73%	277%	63%	-36%	72%	-38%
KREDYT INKASO SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return				-9%	-5%	8%	-7%	3%	67%
LPP SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	43%	-3%	261%	-57%	39%	36%	-7%	126%	98%
MEDIATEL SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	-6%	-14%	-52%	11%	-18%	-11%	-83%	-13%	-33%
MERCOR SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return				-54%	-19%	6%	-53%	63%	28%
NETMEDIA SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return			-3%	-24%	-1%	10%	-50%	16%	-13%
PGE SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return						-5%	-11%	-12%	-11%
PZ CORMAY SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return					232%	48%	179%	-23%	-37%
VISTULA GROUP SA	2005	2006	2007	2008	2009	2010	2011	2012	2013
annual rate of return	22%	137%	-87%	-82%	5%	-7%	-62%	33%	73%

Source: own elaboration.

Due to the proposed method author concludes that only in 7 cases we could observe a positive and significant reaction from the market about the acquisition. That means that in 75% of the study, market did not react well or strongly for the information about the merger. This situation should not be connected with the actual market trend because this weak reaction can be observed in nearly every year of the study. Author also does not see the relation to the particular market sector or company.

Second part of the analysis focused on the financial data from the companies. The assumption is that the acquisition could affect the company itself but due to the negative moods on the market it can stay unnoticed in the stock price change. Because acquisition of other company is a very important operation in the firm, author seeks its results in a permanent change of financial indicators in area of effectiveness. A series of tests have been made to check if the average ROE and ROA levels were equal in the period before the mergers and after them. Their results are presented in table 4.

Table 4. Verification of differences in ROE and ROA before and after the acquisition

	average before	average after	The null hypothesis: the difference of two medium = 0
AMREST HOLDINGS SE			
ROA	4,99%	4,34%	p = 0,862
ROE	-8,26%	10,43%	p = 0,6584
Arctic Paper			
ROA	3,46%	4,45%	p = 0,8158
ROE	182,99%	9,18%	p = 0,382
ASSECO POLAND SA			
ROA	5,47%	5,00%	p = 0,02833
ROE	11,43%	9,08%	p = 0,04716
BANK BPH SA			
ROA	3,24%	-0,19%	p = 0,05885
ROE	28,54%	-1,72%	p = 0,06015
BANK ZACHODNI WBK SA			
ROA	1,71%	1,84%	p = 0,7326
ROE	20,06%	13,50%	p = 0,232
BIOTON SA			
ROA	6,62%	-9,02%	p = 0,1157
ROE	9,71%	-14,59%	p = 0,115
CYFROWY POLSAT SA			
ROA	15,59%	5,69%	p = 0,2767
ROE	41,21%	12,95%	p = 0,5478
EUROCASH SA			
ROA	6,75%	4,29%	p = 0,0008705
ROE	24,07%	24,52%	p = 0,8945
GRUPA LOTOS SA			
ROA	7,41%	-0,22%	p = 0,02927
ROE	12,52%	-0,43%	p = 0,04652
INTER CARS SA			
ROA	1,97%	6,15%	p = 0,06457
ROE	9,05%	13,29%	p = 0,5792

KGHM POLSKA MIEDZ SA			
ROA	11,28%	16,57%	p = 0,5998
ROE	21,85%	23,98%	p = 0,8894
KREDYT INKASO SA			
ROA	3,80%	4,84%	p = 0,1634
ROE	5,61%	11,29%	p = 0,05524
LPP SA			
ROA	7,53%	13,43%	p = 0,06273
ROE	13,45%	24,90%	p = 0,02968
MEDIATEL SA			
ROA	-5,95%	-3,00%	p = 0,9173
ROE	-29,13%	-27,58%	p = 0,9936
MERCOR SA			
ROA	11,53%	2,22%	p = 0,01289
ROE	27,53%	4,53%	p = 0,003121
NETMEDIA SA			
ROA	8,03%	8,45%	p = 0,02921
ROE	12,81%	13,31%	p = 0,01637
PGE SA			
ROA	6,06%	2,33%	p = 0,01822
ROE	10,46%	3,22%	p = 0,01997
PZ CORMAY SA			
ROA	7,09%	-5,08%	p = 0,03513
ROE	9,93%	-13,69%	p = 0,0414
VISTULA GROUP SA			
ROA	8,31%	3,78%	p = 0,4842
ROE	11,91%	6,20%	p = 0,5435

Source: own elaboration.

The tests have shown that in 8 companies we could notice significant increase in ROE and ROA after the acquisition. That stands for 42% of the studied group. Considering the earlier conclusions about the stock prices, the theory about the importance of mergers from the operation side of the business seems to be correct. It is more likely to notice the improvement in financial statements than in stock prices. Nevertheless we should not forget that over 50% of the companies have not noted increase in financial effectiveness.

4. Conclusion

The proposed article was aimed to analyze the effectiveness of the mergers and acquisitions made by the companies from WSE in the past 10 years. The transactions analyzed in the proposed article have shown that the effectiveness of the information about the merger or acquisition is rather unimportant as a simple factor of the investment impulse. It mostly does not meet the expectations of the price change, if there will be any. Second thing is that acquisitions are only partly effective in context of improving financial results because of the nearly 50/50 results of the ROE and ROA analysis. Analysis has shown that the method of payment and financing is not a significant factor determining the success of the operation in the company. Nevertheless, it should be noted that the undertaken study is not representative in the context of the whole market. It is a pilot study to outline the direction of the target research.

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Reliability of Brokerage Recommendations in Context of M&A Transactions on Polish Stock Exchange Market

Abstract: Information efficiency of the stock exchanges is wide and capacious subject and its analysis in the modern economy would require hundreds of variables to take into account in terms of their impact on the market. Brokerage recommendations have big impact on stocks and play an important role in reducing the information asymmetry between company managements and investors. Literature research indicates, that the valuation of the companies deducted in the recommendations differ from their real future market value, moreover, they are often overestimated. The mentioned phenomenon also occurs in the case of mergers and acquisitions. The aim of the article is to evaluate the practicality of the recommendations in context of M&A. Hypothesis is that brokerage recommendations, prepared for M&A purpose, are miscalculated.

Key words: stock recommendation, stock exchange, capital market, company evaluation, mergers and acquisitions, M&A

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Introduction

The market information efficiency is wide and capacious issue and its analysis in the modern economy would require hundreds of variables to take into account in terms of their impact on the market. Data coming to the investors in the market may have a different character and a point of reference, providing information on selected aspects of reality. Stock market recommendation is usually formed by using fundamental analysis which objective is to measure the situation of the company on many levels, from the global to the situation within the company itself. This means that the final result, showing an analyst prediction about the future of the company, should be based on a wide range of information, processed and compensated in a very terse message like buy / sell. This type of information is a very clear message to the recipient of the report, and in conjunction with the prestige of the institution of the brokerage house, as a specialized company in the field of trading, may represent a strong indicator for the performance of investments in accordance with its recommendation.

It should be considered, whether the analysts are always honest and conscientious in the creation of the recommendation and whether the information presented by them are actually discounted by investors in their investments. According to the author, information capacity recommendations, the prestige of the brokerage houses and the constant search for investors reasons to invest, as a basis to analyze the actual impact of such reports on the Polish stock market. Because of the mechanisms that govern it, focusing mainly on supply and demand, the effects of the impact of the emergence of brokerage recommendation should be visible and reflected in the price movement that can be linked to this publication.

Research of literature indicates that the valuation of the companies included in the recommendations differ from their real value, moreover, are often overestimated. This phenomenon also occurs in the case of mergers and acquisitions. This is indicated by the logic of the process itself. Investors perceive the company which is the object of the acquisition, as much worth and the process leading to the increase in the value of the company. At the same time, most mergers and acquisitions fail. The Company does not achieve the desired result of the transaction and the expected benefits tend to be overestimated [Schuler and Jackson, 2001, pp. 239–253, Mitchell and Stafford 2000, pp. 287–329].

The study evaluated selected brokerage recommendations that emerged shortly after the publication of the news of the merger in order to verify the correctness of the analyses carried out in the recommendations. The aim of this article is to evaluate

the usefulness of the recommendations of brokerage houses in mergers and acquisitions. The author verifies the hypothesis that brokerage recommendation, prepared on M&A purpose, are miscalculated.

The importance of brokerage recommendations for the stock market

Brokerage recommendations play an important role in reducing the information asymmetry between company management and external market participants. They support capital investors to identify profitable investment opportunities. However, the first study on the impact of recommendations on price changes showed that most of the recommendations are not a significant source of information giving an advantage to its holder [Cowles 1934, pp. 309–324]. Studies of Walker and Hatfield [1996, pp. 13–29] confirmed this phenomenon. The results of the subsequent tests were not so clear. Stickel [1995, pp. 25–39] showed that investors are guided by the reputation of the brokerage house and do not treat all of the recommendations in the same way. Hence, different is the impact on investment decisions of stock investors, which depends on the range of institution that issued the recommendation. Chang and Chan [2008, pp. 309–325] reached similar conclusions. Hall and Tacon [2010, pp. 18–33] also examined whether trading according to recommendations issued by analysts who made accurate earnings in a prior year is profitable. According to authors these accurate forecasters cannot be identified on the basis of their track record. While there is statistically significant evidence that forecasting ability is persistent, it is not sufficient to generate profitable stock recommendations in the future. Authors indicated that analysts are predisposed to recommend stocks with low book-to-market ratios and positive price momentum what may impede their ability to make profitable recommendations.

Another study, held by Liu, Smith and Sayed [1990, pp. 399–410] showed that the impact of recommendations on price change, on the day of its issue, is inevitable. Barber [1998, pp. 531–563] showed that the positive recommendations result in higher rates of return, while negative result in lower. Research results were compared to a market benchmark and indicated a significantly higher rate of return in the strategy, in which the recommendations were used as a source of fundamental information about companies. Juergens [1999] showed results indicating the fact

that the publication of recommendations makes additional changes in prices and can thus achieve above-average returns. He analyzed 3679 reports coming from IT and similar sectors focusing on recommendations and other information directly given by these companies. These conclusions seem to be confirmed by Fang and Ayako [2005], who in their deliberations proved the usefulness of the information derived from the recommendations and significantly higher profitability of investment projects based on these reports.

On a contrary Azzi's studies indicates low efficiency rate of recommendations. The information provided is often in the wrong context and tone of the recommendation is adapted to the trend in the market. This means that the market interprets the recommendations in an arbitrary manner. In case it is negative for growing market, it has less impact on the stock price, if it is positive in a declining market, the situation is analogous. Loh and Stulz [2010] observed above-average change in prices after the announcement of recommendations, mainly in the case of being in the media spotlight. Their research shows that around $\frac{1}{4}$ of recommendations does not affect the share price, while about 10% has a very significant impact.

Research conducted by Moshirian, Ng and Wu [2009, pp. 74–83] concentrates on emerging markets, that are often perceived by investors as too exotic, too risky, hard to analyse and to invest. The informational value of analysis provided by analysts is supposed to be significant. Authors found that in case of emerging markets, the number of sell recommendations is far less than the number of buy recommendations. According to authors, stock prices react strongly to stock analyst recommendations and revisions. They also found that there is a stronger positive bias in analyst recommendations and revisions in emerging markets compared with that in developed markets.

Using the example of Warsaw Stock Exchange, Keller and Pastusiak [2013, pp. 304–309] indicated that brokerage recommendations do not illustrate the real companies' value and information provided are misleading. For example, the number of positive recommendations is almost twice as negative ones, regardless of the situation on the market and in some cases of neutral recommendations may provide the 35% growth. According to authors, the majority of recommendations are subjective and overestimated. It is a result of lack of strict and unambiguous procedures and methods of valuation of companies listed on the stock exchange. Further studies confirmed that analytical reports are not significantly discounted by investors. Methodological ambiguity of stock recommendations hinders their reliability and unequivocal evaluation by their receivers, which respectively results in ignoring these reports while making

investment decisions. Certainly, there is a group of investors who are using some of the reports in their decisions, but their strength in the general market demand is relatively low and does not result in the effects that can be associated directly with the publication of the recommendation [Keller, Pastusiak 2016, pp. 419–437].

Research, methodology and results

The following research is based on the case study methodology. The author's goal is to verify the correctness and utility of their stock recommendations in context of mergers and acquisitions. The data used in the article is based on the information obtained from the Polish Stock Exchange database and then information gathered directly from the companies websites and financial statements. To verify the stated thesis outdoor also needed specified brokerage recommendations that have been made especially due to the announced murder or acquisition. On the Polish Stock Exchange Market there is about 400 companies listed. Most of them are quoted in the continuous mode, so their price changes fluently and we can assume that those changes are effective enough for the research purposes, because we are examine the investment horizon of one year.

Author has found the information about all the acquisitions that took place between year 2003 and 2013 where the acquirer was a company from the stock exchange. The target firm did not have to be listed on WSE and even did not have to be a joint-stock company. The list of transactions that have met the following criteria had over 14 000 positions.

The next step of building the database where to find the stock recommendations that where prepared and released maximum 2 months after the information about the acquisition has been released. This initial selection allowed to filter the recommendations from the 13 000+ reports that have been prepared in the examined period to about 200 that have been considered separately to find the information if they were prepared as an valuation update caused by the merger information. The final selection led to a list of 38 transactions for the further analysis in the study undertaken. The whole list has been shown in table 1.

Table 1: List of acquisitions included in the study

Acquisition date	Target name	Acquirer name	Acquisition date	Target name	Acquirer name
Nov-13	METELEM HOLDING COMPANY LTD	CYFROWY POL-SAT SA	Sep-15	SECAPITAL SARL	KRUK SA
Mar-11	TELEWIZJA POLSAT SA	CYFROWY POL-SAT SA	Jun-05	TOP SECRET SP ZOO	REDAN SA
Dec-09	GE MONEY BANK SA	BANK BPH SA	Nov-06	INPOST SA	INTEGER.PL INWESTYCJE SP ZOO
Dec-12	KREDYT BANK SA	BANK ZACHODNI WBK SA	Jan-15	INNOVA PHOENIX SP ZOO	BAKALLAND SA
Sep-12	ITI NEOVISION SP ZOO	TVN SA	Aug-10	KREDIT INKASO PORTFOLIO INVESTMENTS SA	KREDYT INKASO SA
Sep-07	PROKOM SOFTWARE SA	ASSECO POLAND SA	Dec-13	IGA MOTO SP ZOO SP KA	INTER GROCLIN AUTO SA
Jul-13	PGE ENERGIA SA	PGE POLSKA GRUPA ENERGETYCZNA SA	Sep-15	AGRO PROVIMI SP ZOO	DUDA SA
Dec-10	TRADIS SP ZOO	EUROCASH SA	Feb-12	NP PROPERTIES POLAND SP ZOO	ZAKLADY PRZEMYSŁU CUKIERNICZEGO MIESZKO SA
Feb-11	RESTAURAWIA GRUPO EMPRESARIAL SL	AMREST HOLDINGS SE	Aug-14	MEDFINANCE SA	MAGELLAN SA
Aug-08	ABG SA	ASSECO POLAND SA	Apr-05	PRZEDSIĘBIORSTWO BUDOWY KOPALN PEBEKA SA	KGHM POLSKA MIEDZ SA
Dec-13	ZELMER MARKET SP ZOO	ZELMER SA	Sep-12	ORPHEE SA	PZ CORMAY SA
Nov-10	LEXLUX2 SARL	EUROCASH SA	Jan-05	SCIGEN LTD	BIOTON SA
Feb-08	RABAT POMORZE SA	PRZEDSIĘBIORSTWO PRODUKCYJNO-HANDLOWE BOMI SA	Nov-11	MW LEGAL 9 SP ZOO	BERLING SA
May-08	W KRUK SA	VISTULA & WÓLCZANKA SA	Dec-15	CD PROJEKT BRANDS SA	CD PROJEKT SA
Apr-08	ARTMAN SA	LPP SA	Jan-14	MIEJSKI KLUB SPORTOWY CRACOVIA SPORTOWA SA	COMARCH SA
Dec-09	GRYCKSBOR PAPER HOLDING AB	ARCTIC PAPER SA	Jan-11	AGROVITA BIALYSTOK SP ZOO	MISPOL SA
Dec-07	RAST SA	PRZEDSIĘBIORSTWO PRODUKCYJNO-HANDLOWE BOMI SA	Dec-07	ETEL POLSKA SP ZOO	MEDIATEL SA
Mar-07	BIOPARTNERS HOLDINGS AG	BIOTON SA	May-07	AMREST EOOD	AMREST HOLDINGS SE
Mar-13	ASSECO CENTRAL EUROPE AS	ASSECO POLAND SA	Oct-10	PEGAS - NW AS	PEGAS NONWOVENS SRO
Jul-08	BEM BRUDNICZY SP ZOO	MERCOR SA	May-09	VELVET TELECOM LLC	MEDIATEL SA
Jan-15	ZWG SA	BUMECH SA	Sep-04	FEBER SP ZOO	INTER CARS SA

Oct-15	ZELMER PRO SP ZOO	ZELMER SA	Jan-07	GALERIA CENTRUM SP ZOO	VISTULA & WÓLCZANKA SA
Dec-15	CDA GROUP LTD, THE	AMICA WRONKI SA	Mar-09	TRIMTAB SA	ARTERIA SA
Sep-15	SECAPITAL SARL	KRUK SA	Feb-12	MARCO POLO TRAVEL SP ZOO	NETMEDIA SA
Jul-98	BIOLEK SP ZOO	BIOTON SA	Jul-11	INNOVATION ENTERPRISE LTD	PZ CORMAY SA
Nov-12	ROTTNEROS AB	ARCTIC PAPER SA	May-07	AGRO-FISH SP ZOO	GRAAL SA
Mar-08	JC AUTO SA	INTER CARS SA	Jul-13	LOTOS CZECHOWICE SA	GRUPA LOTOS SA
Jan-07	PVT AS	ASSECO POLAND SA	Apr-11	LOTOS JASLO SA	GRUPA LOTOS SA
Sep-07	PHARMATEX ITALIA SRL	BIOTON SA	Apr-08	MARCO POLO TRAVEL SP ZOO	NETMEDIA SA
Dec-13	SIGNUM SP ZOO W ORGANIZACJI SP KA	KOMPUTRONIK SA	Feb-11	TREND FASHION SP ZOO	VISTULA & WÓLCZANKA SA
Feb-07	W KRUK SA	VISTULA GROUP SA			

Source: own elaboration based on EMIS database.

Author's aim was to verify how useful and accurate were the recommendations that have been taken under consideration in the following research. The key variable for that is the growth potential based on the target price from recommendation and the stock price at the time of its publication. Growth potential is calculated as follows:

$$\text{Growth potential} = \frac{\text{Target price} - \text{current price}}{\text{current price}} * 100\%$$

The value is next compared to the actual annual rate of return from the particular stocks. The analysis is based on the differences that occur between those values, divided in groups with different criteria.

Also it should be noted that mergers and acquisitions are one of the most important and significant type of information that can affect the stock price, so in many cases after announcing this type of operation, many brokerage houses are preparing the valuation updates. In this research, in 34 / 38 cases this situation occurs. In the remaining 4 case, only one recommendation has been announced due to the merger information. Author decided to analyze the average growth potential from the groups of reports in particular cases.

The first part of the analysis was aimed to find the average differences associated with analyst mistakes in valuation in every acquisition in the study. Results have been shown in table 2.

Table 2. Comparison of the growth predictions and the actual price changes in every transaction

Transaction number	growth potential from recommendation	annual rate of return	Absolute difference	Transaction number	growth potential from recommendation	annual rate of return	Absolute difference
1	-33,70%	-40,55%	6,85%	20	19,82%	-0,04%	19,86%
2	-0,09%	-6,41%	41,65%	21	25,64%	13,39%	12,24%
3	-31,70%	144,98%	176,68%	22	9,79%	-93,52%	103,30%
4	-0,74%	115,19%	115,93%	23	-11,06%	-20,99%	9,92%
5	-7,22%	8,10%	17,06%	24	21,77%	0,00%	21,77%
6	17,52%	-226,33%	243,85%	25	13,35%	6,89%	6,45%
7	10,92%	-234,18%	245,10%	26	11,71%	-6,32%	18,03%
8	7,66%	-100,17%	107,83%	27	11,55%	-9,11%	20,66%
9	37,52%	-59,38%	96,89%	28	6,79%	-12,86%	19,66%
10	6,26%	-42,08%	48,34%	29	14,93%	-17,91%	32,84%
11	8,50%	-38,05%	46,56%	30	-10,26%	-54,29%	44,03%
12	9,24%	-139,71%	148,95%	31	41,55%	-24,81%	66,36%
13	19,76%	-72,30%	92,06%	32	21,91%	-45,80%	67,71%
14	10,30%	-100,47%	110,77%	33	13,91%	77,44%	63,53%
15	34,77%	-87,07%	121,84%	34	12,57%	47,53%	34,96%
16	9,34%	-82,86%	92,19%	35	16,22%	6,12%	10,11%
17	-1,94%	-57,71%	55,77%	36	3,54%	27,81%	24,27%
18	12,63%	-191,85%	204,48%	37	7,63%	-16,87%	24,50%
19	20,12%	-63,50%	83,62%	38	13,75%	23,29%	9,54%

Source: own elaboration.

From the data from table 1 we can conclude that the average mistake in the recommendation was about 70,16% and the median about 47,45%. Very important thing is that in only cases the average mistake was lower than 10% from target price and in 18 cases the difference was higher than 50% so in over 47% of acquisitions considered. That leads to conclusion that despite the time of the acquisition and the brokerage house that prepared the report, average analysts mistakes are significant and can lead to big portfolio miscalculations and in result – losses.

Next step of the study was to find the errors in reports of different type. In natural way, we assume that acquisition of other company is a positive event and should lead to the growth of the acquirer and the rise in his stock, but depending on the situation of the acquirer at the moment of recommendation and on the condition of the target company, the objective judgments of the analysts can differ. In this study, there are 90 recommendations of different type included. Most of them have positive approach [68], but also there are 10 neutral and 12 negative. In next step author verified if the differences that occur in those groups are equal or not.

Table 3. Comparison of the growth predictions and the actual price changes in different recommendation types

Recommendation type	Number of reports	growth potential from recommendation	annual rate of return	Absolute difference
accumulate	29	7,08%	-30,00%	56,76%
buy	39	19,98%	-22,02%	54,09%
neutral	10	-5,88%	27,16%	66,94%
reduce	5	-15,46%	16,73%	34,74%
sell	7	-14,91%	-5,80%	40,52%

Source: own elaboration.

The findings from this part are that the differences are even between the 5 tested groups. Of course there are nominal differences but from the statistical testing point of view they are insignificant. The average error in this division is 53,85% which again leads to very negative conclusions.

Next criteria in the research was associated with particular acquiring companies. The reason for that is the surmise that even though the stock companies have specified disclosure requirements, there are some market branches and firm specifics that results in different level of evaluation of the company and its situation. That could lead to the bigger differences in particular branches or companies. In table 4 there are results of calculations in this division.

Table 4. Comparison of the growth predictions and the actual price changes in different companies

Company	growth potential from recommendation	annual rate of return	Absolute difference
AMREST HOLDINGS SE	19,08%	-31,47%	50,55%
ARCTIC PAPER SA	9,79%	-93,52%	103,30%
ASSECO POLAND SA	6,31%	-4,32%	23,30%
BANK BPH SA	-11,06%	-20,99%	9,92%
BANK ZACHODNI WBK SA	12,57%	47,53%	34,96%
BIOTON SA	-4,93%	-31,63%	144,49%
CYFROWY POLSAT SA	14,34%	2,69%	21,19%
EUROCASH SA	11,64%	-7,48%	19,13%
GRAAL SA	6,26%	-42,08%	48,34%
GRUPA LOTOS SA	0,47%	-31,84%	32,31%
INTER CARS SA	13,85%	-38,68%	73,73%
KGHM POLSKA MIEDZ SA	-0,74%	115,19%	115,93%
KREDYT INKASO SA	21,77%	0,00%	21,77%
LPP SA	9,34%	-82,86%	92,19%
MEDIATEL SA	25,64%	13,39%	12,24%
MERCOR SA	20,12%	-63,50%	83,62%
NETMEDIA SA	9,99%	-51,76%	61,74%
PEGAS NONWOVENS SRO	13,35%	6,89%	6,45%
PGE SA	3,54%	27,81%	24,27%
BOMI SA	15,98%	-83,57%	99,55%
PZ CORMAY SA	41,55%	-24,81%	66,36%
REDAN SA	-33,70%	-40,55%	6,85%
TVN SA	13,91%	77,44%	63,53%
VISTULA & WÓLCZANKA SA	15,56%	-212,54%	228,10%
VISTULA GROUP SA	10,92%	-234,18%	245,10%

Source: own elaboration.

This criteria have shown massive differences between the companies. The lowest differences are for: Bank BPH, Redan and Pegas. Unfortunately even if we take into consideration more companies, there is no clear pattern for such low results. BPH is a bank, Pegas is a fiber production company and Redan is in clothing industry. The biggest errors are noted in Vistula and Bioton which also function in different markets, so we cannot conclude that the branch or company itself is a significant factor in error predicting.

Next criteria is refers to the brokerage houses. In authors point of view this is an obvious criteria because we can predict that the level of knowledge of employees in brokerage house can differ which leads to potential different level of mistakes that they make. The analysis of this factor is shown in table 5.

Table 5. Average difference between the growth predictions and the actual price changes in different brokerage houses

Brokerage house	Average difference
AmerBrokers	12,24%
BDM	52,47%
BPH	108,36%
BZ WBK	26,05%
Citi	96,78%
Deutsche Bank	18,72%
Erste Bank	52,10%
Espirito Santo	37,10%
Goldman Sachs	63,60%
HSBC	65,43%
IDM	43,37%
ING Securities	148,79%
Ipopema Securities	34,51%
KBCS	41,59%
mBank	30,45%
Millennium	56,01%
Noble Securities	21,77%
PEKAO	35,33%
PKO BP	79,07%
Raiffeisen	12,92%
Societe Generale	16,64%
Trigon	49,00%
UniCredit	88,43%
Wood & Company	61,47%
VISTULA GROUP SA	10,92%

Source: own elaboration.

The study has shown that average error level coming from different institutions varies. Although the statistical test have shown that only few of them really differs from the rest of the group. Significantly best recommendations were coming from: Amer-Brokers, Raiffeisen and Societe Generale. The worst ones from: BPH, Citi bank and ING Securities. Despite the nominal differences in other groups, we cannot prove them unambiguously.

Finally author decided to find if the time criteria was a significant factor in the recommendation process, so the reports were divided in quarters through the examined period.

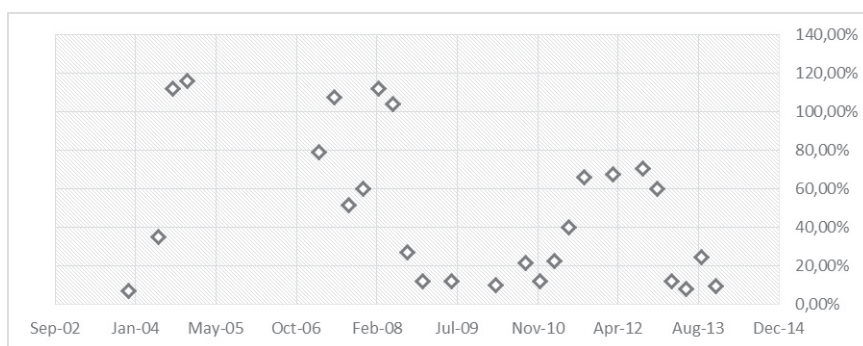


Figure 1. Average difference between the growth predictions and the actual price changes in particular quarters

Source: own elaboration.

The graph above is showing the average errors made in every quarter of the research. Base on that we can clearly see that there were clearly periods of lower and higher mistakes in valuation. Crucial at this point is the period of 2007–2008 which can be associated to the global crisis start on financial markets that led to the trends alteration and deep depreciation of prices. Clearly analytics have not included this scenario in their predictions. Second wave falls in a year 2012. In authors point of view this was the time when brokerage mainstream thought that the crisis is over and again the valuations can rise, if the company are buying other firms. Unfortunately this prediction was wrong, and the WSE have not grown as they predicted.

Conclusion

The proposed article was aimed to analyse the miscalculations in the brokerage recommendations on WSE, related to the fact of merger and acquisitions. The analysis have shown that the standard prediction errors may vary between particular brokerage houses but in general, the average errors are near 50% from the actual price change. Study also has shown that there is a relation between the time of the publication and the valuation errors which leads to conclusion that actual trends may be a very important factor for the error predictions. Authors did not manage to prove any relation between the level of difference and the branch of the company or the recommendation type. The following studies should focus more on obtaining bigger database and the other criteria of division of the recommendations to gain a more full view of this market aspect.

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The Role of Trade Linkages in Business Cycle Synchronization in Central and Eastern European Countries

Abstract: This paper examines the similarity of country structure and commodity structure of trade in Central and Eastern European countries and the relationship between trade factors and business cycle synchronization. The aim of article is to study a synchronization of cycles in these countries and to verify the impact of trade factors on the level of synchronization. The authors apply measures of structure similarity to assess the similarity of country structure and commodity structure of trade in Central and Eastern European countries. Then it enables to analyze the impact of level of bilateral trade and structure of trade on business cycle synchronization.

Key words: business cycle, synchronization, international trade, trade structure, similarity structure

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Introduction

In the era of globalization, covering all spheres of societies, the differences between countries are becoming less clear defined. It was confirmed by the recent global financial crisis in 2007–2009, which showed that we live in a globalized world, consisting of a network of interconnected entities. This situation makes that modern societies live with the existing interdependence and at the same time unable to isolate from the outside world.

The progressing integration of markets for goods, services, capital and labor increases interdependence between business cycles in different countries. In the encyclopedia *Business Cycles and Depressions*, Dore [1997] treats the business cycle synchronization (BCS) as a stylized fact. According to it, "institutional changes such a free capital mobility, floating exchange rates, and the increase in international arbitrage and speculative activities have increased interdependence among the major capitalist nations, which is likely to lead to further synchronization of cycles'.

One of the major directions of research on the business cycle synchronization is identification of its determinants. Analyses in this area indicate various factors that influence the synchronization, and there is no consensus on the most important of them. The group of most frequently mentioned reasons contains international trade. Frankel and Rose [1998] show the positive impact of bilateral trade on the degree of business cycles correlation. In this context, the volume of trade in relation to the level of domestic production is considered as stimulant. But in the literature there is no agreement on the impact of the trade on BCS. Krugman [1993] noted that stronger trade integration may lead to greater regional specialization, which can lead to less output synchronization. On the other hand, Imbs [2004] explains covariation of cycles by similarity of industrial structure in the countries. Another factor cited by Rose and Engel [2002] is membership in the monetary union. The set of BCS determinants is most often completed by gravity variables, i.e. the distance between countries, common border, common language, product of GDP, product of populations, etc.

In this paper, the authors will examine the level of business cycle synchronization and the impact of international trade on BCS in the Central and Eastern European countries belonging to the European Union. These countries are similar in many respects. They share a common past – participation in the socialist system and common present and future – participation in the EU. They are characterized by a relatively large share of the industry, strongly dependent on foreign capital and on import of

energy resources from Russia. Their largest trading partner is Germany. Despite these similarities, they implement their own economic policies and realize their own goals, and they compete for foreign investment and markets. It is interesting to know if this group of Central and Eastern European countries similar in terms of changes of an economic situation. This paper tries to study the linkages between business cycles in these countries and to assess the impact of international trade on BCS. For this purpose the relationship between BCS and bilateral trade, commodity and country structure of trade will be investigated.

Trade determinants of business cycle synchronization

The economists are not agreed on the direction of trade impact on synchronization of business cycles. On the one hand, Frankel and Rose [1998] estimate a single equation model with instrumental variables for developed and developing countries, that confirms strong and positive relationship between bilateral trade and business cycle synchronization. Baxter and Kouparitsas [2004] obtain consistent results applying extreme bound analysis. They find that an increase in trade causes increase in correlation of business cycles. In line with this concept, Moneta and Ruffer [2009] adopt dynamic factor model to find strong dependence between export and BCS for East Asian countries. On the other hand, Krugman [1992] indicates the specialization, the effect of increased trade relations, as factors of dispersion in business cycles between trading partners. In a similar line of thought, Barro and Tenreyro [2007], and Gonçalves et al. [2009] confirm that monetary unions enhance bilateral trade between union members, but business cycles become more divergent.

The studies on business cycle synchronization of Central and Eastern European countries appear frequently in the literature, but there is the lack of research on linkages between BCS and international trade and other factors. The research in the first area was conducted by Boone and Maurel [1998], Artis et al. [2004], Fidrmuc and Kohronen [2006], Darvac and Szapáry [2008], Jiménez-Rodríguez et al. [2013]. Böwer and Guillemineau [2006] investigate the key factors underlying BCS in the euro area applying the extreme-bound analysis. Artis et al. [2008] analyze the bilateral trade and financial flows as the potential sources of business cycle synchronization.

An interesting direction of research on synchronization of business cycles, undertaken in this article, is the study of impact of country structure of trade on BCS.

The country structure of trade is the result of the industrial structure of economy, its specialization, trade policy and geographical factors (the distance between countries, common border). So, the countries with similar structure of trade can be expected to have high synchronization of business cycles.

There are at least two alternative ways of constructing the bilateral trade variable. One approach is to define it as the average of the sum of bilateral exports and imports (of both economies) divided by the sum of total exports and imports of the two economies. It measures the share of bilateral trade between countries in their total trade and is expressed as:

$$BTS_{ij} = \frac{1}{T} \sum_{t=1}^T \frac{x_{ijt} + m_{ijt} + x_{jit} + m_{jit}}{x_{it} + m_{it} + x_{jt} + m_{jt}}$$

where:

x_{ijt} – the export of country i to country j at time t ,

m_{ijt} – the import of country i from country j at time t ,

x_{it} – the total export of country i at time t ,

m_{it} – the total import of country i at time t .

Second, the sum of national GDPs serves as scaling variable which gives the following formula:

$$BTY_{ij} = \frac{1}{T} \sum_{t=1}^T \frac{x_{ijt} + m_{ijt} + x_{jit} + m_{jit}}{y_{it} + y_{jt}}$$

where x_{ijt} denotes the national GDP of country i at time t .

In order to examine the effect of trade specialization on BCS, the measure of similarity of trade structure may be used. There are many measures of similarity that can be applied to assess the similarity of trade structure. One of them is the correlation of export (import) structure:

$$TSC_{ijt} = \frac{\sum_{n=1}^N s_{int} s_{jnt}}{\sqrt{\sum_{n=1}^N s_{int}^2} \sqrt{\sum_{n=1}^N s_{jnt}^2}}$$

where s_{int} stands for share of commodity n in total export (import) of country i at time t . More generally, if correlation of trade structure is calculated, s_{in} represents share of commodity n in sum of total export and import of country i at time t . This measure takes on values in the interval $[0,1]$. Larger values of TSC indicate greater similarity in sectoral structure.

Other indicators of trade structure similarity are the measures based on Manhattan distance and Jeffries-Matusita distance. They are calculated as follow:

$$TSD1_{ijt} = 1 - \frac{1}{2} \sum_{n=1}^N |s_{int} - s_{jnt}| \quad TSD2_{ijt} = 1 - \sqrt{\frac{1}{2} \sum_{n=1}^N (\sqrt{s_{int}} - \sqrt{s_{jnt}})^2}$$

These indicators, like the previous one, are normalized in the range of $[0,1]$. The construction of measures makes that the first one is used when a greater weight is given to the component with higher shares, and the second one prefers the components with lower shares.

The same measures as in the case of the similarity of trade structures for commodities can be applied to assess the similarity of country structure and commodity structure of trade.

Study results

Data set

The analysis of the impact of trade factors on GDP was conducted for 11 Central and Eastern European countries belonging to the EU – Bulgaria (BUL), Croatia (CRO), Czech Republic (CZE), Estonia (EST), Hungary (HUN), Latvia (LAT), Lithuania (LIT), Poland (POL), Romania (ROM) Slovakia (SVK) and Slovenia (SLO).

The study deals with time series quarterly data of GDP for the period 1997Q1–2015Q4. The statistical data come from the International Financial Statistics published by the International Monetary Fund. The choice of research period is mainly motivated by the availability of comparable data for all surveyed countries. Initially, input GDP values are logarithmized and deseasonalized using the X-12-ARIMA procedure. Then, the Cristiano-Fitzgerald filter is applied to extract cyclical components from the series.

Information about bilateral trade flows comes from Passport, which is Euromonitor International's global market research database. The data for 11 countries abo-

ut export by destination and commodity, and import by origin and commodity are used. The commodities are classified according to the Harmonized Commodity Description and Coding System, also known as the Harmonized System (HS) of tariff nomenclature. It is an internationally standardized system of names and numbers to classify traded products, which has been developed and maintained by the World Customs Organization (WCO).

Similarity of trade structure

Forming country-by-country pairs from 11 countries delivers 55 bilateral combinations. For each couple of countries, the bilateral trade variables and similarity measures of country structure and commodity structure of trade are calculated. The similarity of trade structure is measured by indicators described in the previous chapter. The country structure of trade consists of many components with low shares, so the authors choose TSD2 indicator for similarity of structure measurement. In the case of commodity structure there is opposite situation, which result in application of TSD1 indicator. The values of similarity indicators for country structure and commodity structure are reported in table 1 and table 2.

Table 1. Values of similarity indicator for country structure of trade for Central and Eastern European countries in the years 1997–2014

Country	BUL	CRO	CZE	EST	HUN	LAT	LIT	POL	ROM	SVK	SLO
BUL	1										
CRO	0.74	1									
CZE	0.57	0.61	1								
EST	0.51	0.46	0.47	1							
HUN	0.64	0.67	0.87	0.50	1						
LAT	0.56	0.52	0.54	0.76	0.54	1					
LIT	0.61	0.55	0.58	0.70	0.58	0.81	1				
POL	0.64	0.64	0.83	0.55	0.85	0.61	0.65	1			
ROM	0.75	0.80	0.67	0.48	0.73	0.54	0.59	0.72	1		
SVK	0.61	0.64	0.82	0.47	0.81	0.54	0.57	0.76	0.69	1	
SLO	0.67	0.83	0.68	0.43	0.74	0.50	0.53	0.70	0.82	0.71	1

Source: own elaboration.

The highest level of similarity between country structure of international trade with other countries have Poland and Hungary. Their country structure of trade is the most

characteristic for this group of countries, i.e. the highest share of trade with Germany (about 28%) and high import, mainly energy resources, from Russia (about 7–9%). In turn, the most different country structure from other countries have Baltic countries: Estonia, Latvia and Lithuania. Estonia, with the most specific structure, has high shares of trade with Finland (18%), Sweden (12%) and Russia (10%), and relatively low share with Germany (8%). Latvia and Lithuania have high share of trade with each other (Latvia – 13%, Lithuania – 7%), Russia (Latvia – 11%, Lithuania – 20%) and Germany (Latvia – 13%, Lithuania – 12%). There is also a group of countries which have similar country structure of trade with each other and different structure with the remaining countries. It consists of former Yugoslavia countries: Slovenia and Croatia, and Romania. They have highest shares of trade with Germany (14–20%) and Italy (15–17%). The study confirms that the similarity of country structure of trade is result of trade policy and specialization, and geographical factors (the distance between countries, common border).

Table 2. Values of similarity indicator for commodity structure of trade for Central and Eastern European countries in the years 1997–2014

Country	BUL	CRO	CZE	EST	HUN	LAT	LIT	POL	ROM	SVK	SLO
BUL	1										
CRO	0.84	1									
CZE	0.75	0.78	1								
EST	0.81	0.84	0.82	1							
HUN	0.71	0.73	0.88	0.81	1						
LAT	0.81	0.83	0.77	0.87	0.73	1					
LIT	0.86	0.86	0.74	0.82	0.71	0.82	1				
POL	0.81	0.87	0.89	0.86	0.82	0.84	0.81	1			
ROM	0.85	0.84	0.82	0.83	0.78	0.80	0.80	0.86	1		
SVK	0.77	0.80	0.91	0.83	0.83	0.78	0.77	0.87	0.83	1	
SLO	0.79	0.82	0.89	0.84	0.81	0.83	0.78	0.90	0.84	0.89	1

Source: own elaboration.

The commodity structure of trade between Central and Eastern European countries is more similar than country structure. In addition, it is clear that there is less variation in similarity indicators for commodity structure than for country structure. Poland and Estonia have the highest similarity of commodity structure with other countries

(all the indicators are at least equal to 0.8). The highest shares in trade have commodities belonging to the groups of Machinery and Electrical (24–25%), Mineral Products (9–11%) and Metals (9–11%). The most different commodity structure from other countries has Hungary (half of indicators are less than 0.8). There is very high share of Machinery and Electrical products in Hungarian trade (43%), which is about two times larger than for other countries.

Impact of trade factors on business cycle synchronization

Due to the low level of bilateral trade, the trade variables for some pairs of countries take very low values. So, the pairs of countries for which bilateral trade variable is less than 0.5% are eliminated from analysis of trade impact on business cycle synchronization. It ensures that insignificant trade relationships between some countries do not affect the results of the study. After removal pairs of countries with insignificant level of bilateral trade, 32 pairs of countries remained for further analysis.

Using cyclical components extracted from quarterly GDP data, the correlation coefficient for 55 pairs of Central and Eastern European countries are estimated. The results are presented in table 3. The indicators for pairs of countries with bilateral trade variables more than 0.5% are marked with asterisk in order to point the dyads involved in the study of impact of trade factors on BCS.

Table 3. Correlation coefficients of cyclical component of GDP for Central and Eastern European countries in the years 1997–2014

Country	BUL	CRO	CZE	EST	HUN	LAT	LIT	POL	ROM	SVK	SLO
BUL	1										
CRO	0,86	1									
CZE	0,47*	0,69*	1								
EST	0,54	0,72	0,80	1							
HUN	0,38*	0,60*	0,77*	0,70	1						
LAT	0,50	0,72	0,68*	0,94*	0,68	1					
LIT	0,71	0,89	0,62*	0,85*	0,67	0,9*	1				
POL	0,02*	0,35*	0,59*	0,59*	0,63*	0,58*	0,47*	1			
ROM	0,73*	0,80	0,51*	0,39	0,38*	0,45	0,62	0,04*	1		
SVK	0,74	0,93*	0,68*	0,77	0,68*	0,77	0,94	0,41*	0,67*	1	
SLO	0,46	0,78*	0,82*	0,68	0,83*	0,70	0,73	0,64*	0,63*	0,8*	1

* – the pairs of countries with bilateral trade variable more than 0.5%.

Source: own elaboration.

The correlation coefficients between cyclical component of GDP for 11 countries have highest values for Slovakia, countries of the former Yugoslavia: Slovenia and Croatia and Baltic countries: Estonia, Latvia and Lithuania. The countries with lowest level of synchronization of business cycles with other countries are Poland, Romania and Bulgaria. The countries with highest business cycle synchronization are relatively small ones with low level of GDP and their economic situation depends on the economic conditions in other countries.

In order to assess the impact of international trade on business cycle synchronization in Central and Eastern European countries the correlation coefficients between the measure of cycle synchronization and trade factors are estimated. The coefficient are calculated for 32 pairs of countries, marked with asterisk in table 3, with a sufficiently high level of bilateral trade. 7 trade variables are taken into consideration: bilateral trade variable (BTS), country structure of trade (TSD2), country structure of export (TSD2E), country structure of import (TSD2I), commodity structure of trade (TSD1), commodity structure of export (TSD1E) and commodity structure of import (TSD1I). Using similarity of trade structure variables allows for the more detailed study. Broadening the set of trade variables with indicators for export and import enables to specify which directions of domestic trade is more important for BCS. The results are presented in table 4.

Table 4. Correlation coefficients between BCS and trade variables for Central and Eastern European countries

Trade variable	BTS	TSD2	TSD2E	TSD2I	TSD1	TSD1E	TSD1I
BCS	0,313	0,252	0,27	0,169	0,127	-0,001	0,169

Source: own elaboration.

The correlation coefficients between measure of BCS and trade variables for Central and Eastern European countries are rather low. Only coefficient between BCS and bilateral trade variable is significant at 0.1 level. Its positive and relatively high value is consistent with the theory and expectations. The correlation between BCS and similarity of country structure of trade is slightly lower than the previous one. The relationship between country structure of trade and cycle synchronization is mainly the result of similarity of country structure of export. It means that destinations of export matter more for BCS than the origins of import. The correlation coefficient between measure of BCS and commodity structure of trade takes the lowest values. In contrast to the country structure of trade, the correlation between BCS and commodity

structure of import is much higher than correlation between BCS and the commodity structure of export. The latter one is equal 0. The conclusion is that cycle synchronization depends on destination of export and commodity structure of import.

Conclusions

This paper focuses on the trade determinants of business cycle synchronization in Central and Eastern European countries. The particular attention is paid to the level of bilateral trade and to similarity of country structure and commodity structure of trade. The study has confirmed the high similarity of these structures between countries. Polish and Hungarian country structure of trade is the most characteristic for this group of countries, i.e. the highest share of trade with Germany and relatively high import from Russia. On the other hand, Estonia has the most specific country structure of trade, with high shares of trade with Finland, Sweden and Russia, and relatively low share with Germany. The similarity of commodity structure of trade between countries is higher and less variable than similarity of country structure. Commodities belonging to the groups of Machinery and Electrical, Mineral Products and Metals have the highest share in trade.

The business cycle synchronization is high for relatively small countries with low level of GDP – Slovakia, Slovenia, Croatia, Estonia, Latvia and Lithuania. The countries with the lowest level of synchronization of business cycles with other countries are Poland, Romania and Bulgaria. The impact of trade factors on BCS in Central and Eastern European countries is rather low. Only the level of bilateral trade has a significant influence on cycle synchronization. The correlation between BCS and country structure of trade is low, but higher than correlation between BCS and the country structure of trade. Another conclusion from research is that cycle synchronization depends on destination of export and commodity structure of import. These findings are similar with Artis et al. [2008], who confirm that the trade intensities strengthen BCS. Moreover, they find that European Monetary Union membership is associated with additional synchronization effects beyond those implied by higher trade and FDI flows. High degree of business cycle synchronization between EU countries is crucial condition for a smooth functioning of EMU as it facilitates the coordination of economic policies and, in particular, the conduct of a common monetary policy.

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Equity Crowdfunding as a Form of Financing Projects in Poland

Abstract: The paper refers to the issue of crowdfunding, an alternative type of financing projects. Generally, crowdfunding involves raising many small amounts of money for a special project from a large number of people in a direct or indirect manner. The subject of consideration of this article is the equity crowdfunding model. The main purpose of the article was to systematize knowledge in the field of equity crowdfunding model and to identify the main characteristics of the equity crowdfunding model. The following hypothesis was put forward: complexity of the equity crowdfunding is visible in the requirements concerning the preparation of the equity crowdfunding campaign. The following methods have been used: an analysis of literature on the subject and a descriptive and comparative method. Upon the analysis of the literature and research of crowdfunding in Poland and an analysis of crowdfunding platforms in Poland and projects on beesfund.com platform, major characteristics of equity-based crowdfunding were found. The equity crowdfunding model seems to be an important field of research. Equity crowdfunding puts much greater demands on entrepreneurs than other crowdfunding models and is much more complicated because of restrictive legal requirements, connected with shares issues, which have to be accounted for. Equity crowdfunding can help start-ups and SMEs in the early stage equity financing gap and gives experience in applying for more advanced forms of funding and entering the stock exchange.

Key words: crowdfunding, equity crowdfunding, crowdinvesting, SME, start-up, Poland

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Introduction

Collecting many small amounts of money from people for realising attractive ideas in the form of projects became popular with the development of the Internet. In the 1990s the first online campaign supporting a new form of capital accumulation became known as crowdfunding. Currently crowdfunding in different types is becoming an increasingly well-known and popular form of alternative financing for projects. The World Bank estimates that crowdfunding will reach \$96 billion by 2025 [World Bank Report 2013, p. 42]. In 2015 crowdfunding was estimated to have exceeded \$34 billion based on data gathered for 1,250 funding platforms worldwide. Meanwhile in Poland 28 crowdfunding platforms were active by the end of 2016 (17 donation platforms, 7 lending platforms and 4 equity based platforms), which have gathered 220 million PLN. Crowdfunding is a relatively new form of financing in Poland. In the Polish Agency for Enterprise Development 2015 report crowdfunding was identified as a source of financing a new business externally in only 2% of cases. Research literature on crowdfunding in Poland is focused mainly on the assessment of crowdfunding development. Although crowdfunding has already been studied several times in Polish literature, there is a research gap in one of the crowdfunding models. A subject of consideration of this article is the equity crowdfunding model. Equity crowdfunding lets anyone invest in innovative startups and growing companies, it can support early stage entrepreneurs and SMEs. Equity crowdfunding is for entrepreneurs who are not interested or not able to access traditional banks, vc/pe or business angels. Therefore, this crowdfunding model as an alternative form of financing seems to be an important area of research.

The research problem which is the subject of consideration in this article is the complexity of the equity crowdfunding. The main purpose of the article was to systematize knowledge in the area of equity crowdfunding model and to identify the main characteristics of the equity crowdfunding model. The following hypothesis was put forward: complexity of the equity crowdfunding is visible in the requirements concerning the preparation of the equity crowdfunding campaign. The following methods will be used: an analysis of literature on the subject and descriptive and comparative methods. An attempt to achieve the objective will be made through the presentation of crowdfunding definitions, comparison of equity crowdfunding against other crowdfunding models, an analysis of research on crowdfunding in Poland and an analysis of equity crowdfunding projects from one of equity crowdfunding platforms in Poland, i.e. beesfund.com.

1. Crowdfunding definitions and literature review

The term “crowdfunding” comes from the “crowdsourcing” concept. The “crowdsourcing” term was introduced by Howe and Robinson in Wired Magazine in 2006. Howe noticed that crowdsourcing “represents the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call” [Howe 2006]. Another author claims that crowdsourcing takes place “when a profit-oriented firm outsources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the internet, with the intention of animating individuals to make a contribution to the firm’s production process for free or for significantly less than that contribution is worth to the firm” [Kleeman, Voß, Rieder 2008, p. 6].

Generally the “crowdfunding” term is narrower than “crowdsourcing”. Both concepts refer to the power of the crowd but crowdfunding is based primarily on gathering money from the crowd to finance projects. List of examples of definitions are given in table 1.

Table 1. Definitions of crowdfunding

Authors and sources	Crowdfunding definitions
[Belleflamme, Lambert, Schwienbacher 2013]	“(…) allows entrepreneurs to raise funding through an open call on the Internet. An important characteristic is the extra private benefits that funders (i.e., “crowdfunders”) enjoy by participating in the crowdfunding mechanism.”
[Belt, Brummer, Gorfine 2012]	“(…) process by which capital is raised for a project, initiative or enterprise through the pooling of numerous or relatively small financial contributions or investments, via the internet.”
[De Buysere, Gajda, Kleverlaan, Marom, Klaes 2012]	“(…) a collective effort of many individuals who network and pool their resources to support efforts initiated by other people or organizations. This is usually done via or with the help of the Internet. Individual projects and businesses are financed with small contributions from a large number of individuals, allowing innovators, entrepreneurs and business owners to utilise their social networks to raise capital.”
[Dziuba 2012]	“In a broader sense crowdfunding (Internet) can be interpreted as almost any form of collection of funds through the network. While the narrower way of defining, highlights the process by which entrepreneurs, artists and non-profit organisations collect funds for the needs of their projects, based on the support of many people (from an online “crowd”), who together offer money for such projects etc. or invest in them.”
[Hemer 2011]	“open call, essentially through the Internet, for the provision of financial resources either in form of donations (without rewards) or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes.”
[Król 2013b]	“Type of collection and allocation of capital transferred for the development of a particular project in exchange for providing feedback, which involves a wide range of lenders, characterised by the use of ICT and a lower barrier to entry and better conditions than public transactions on the market”
[Lebraty, Lóbrz-Lebraty 2013]	“(…) can be defined as a resource allowing a project initiator to obtain financing from Internet users.”
[Mollick 2014]	“The efforts by entrepreneurial individuals and groups - cultural, social, and for-profit - to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries.”
[Steinberg 2012]	“(…) the process of asking the general public for donations that provide start-up capital for new ventures. Using the technique, entrepreneurs and small business owners can bypass venture capitalists and angel investors entirely and instead pitch ideas straight to everyday Internet users, who provide financial backing.”

Source: own study.

Although there are many definitions of crowdfunding, all of them have common features. Generally crowdfunding involves raising many small amounts of money for a special project from a large number of people in a direct or indirect manner.

In the whole crowdfunding process the role of the crowd is significant because “a central tenet of crowdfunding is that the crowd funds what the crowd wants” [Ley, Weaven 2011]. In the crowdfunding process the crowd (investors) can comment on projects, ask about details and give advice to fundraisers. This involves the concept that says that large groups of people are smarter than an elite few, which is known as “the wisdom of the crowds” [Surowiecki 2005].

In the indirect crowdfunding, the important role in connecting and matching fundraisers and investors, is an intermediary. Indirect crowdfunding involves an intermediary in the crowdfunding process as the appeal is announced via a specific platform [Bouncken, Komorek, Kraus 2015, p. 410] usually an Internet based platform. Successful service businesses that organise crowdfunding and act as intermediaries are emerging, attesting to the viability of this means of attracting investment [Ordani, Miceli, Pizzetti 2011, p. 443]. Internet platforms standardise the crowdfunding process and give the possibility of communication between fundraisers and investors.

2. Equity-based crowdfunding as the most complex model among crowdfunding models

In the literature there are various divisions of crowdfunding. One of the most common is the classification based on the return type offered for the support. In UKIE report [UKIE 2012] three models of such crowdfunding divisions were indicated: the donation model, the lending model, and the investment model (divided into the securities model and the collective investment scheme model).

Other authors identified four models of crowdfunding [Kuti, Madarasz 2014]: equity-based, credit-based, donation-based and reward-based crowdfunding. In the Polish literature, the most detailed classification was presented by Dziuba [Dziuba 2015]. This classification is presented in Table 2.

Table 2. Classification of crowdfunding models

Model	Submodel
donations model	• non-rewards model (charity crowdfunding; charitable & cause-based crowdfunding) • reward-based model (perks-based; pledge-based crowdfunding)
lending model (debt crowdfunding)	• social lending model • microcredits model, microfinance-lending model, P2P microfinance model
investment model	• contribution crowdfunding (collective investment) • securities model • crowd-bonds model • community shares model • real estate crowdfunding • invoice trading model • royalty-based crowdfunding • model of investing by Bitcoin and other digital cryptocurrency • crowdfunding investment fund • other investment models • integrated investment model
hybrid model	Connects different models.

Source: own study based on: [Dziuba 2015, pp. 22–23].

Brüntje and Gajda indicated that the most common classification divides crowdfunding into reward-based crowdfunding, crowdlending, crowdinvesting and crowddonation [Brüntje, Gajda 2015, p. 13]. Main features of crowdfunding models are presented in Table 3.

Table 3. Features of crowdfunding models

Features	Crowdfunding models (different names)			
	Donation-based Donation Crowddonation	Reward-based Reward	Equity-based Equity Crowdinvesting	Lending-based Credit-based Crowdlending
Motivation	Intrinsic, social	Intrinsic, social, extrinsic	Financial gain	Social or financial
Type of contribution	Donation	Pre-order	Investment	Loan
Expected return	Intangible benefits	Tangible and intangible benefits	Return on investment, profit sharing	Return on investment
Main focus	Philanthropy	Products for first adopters	Start-ups, SMEs	Short-term borrower
Complexity of the process	Very low	Low	High	Medium
Type of contract	A contracts without tangible reward	Purchase contract	Shareholding contract	Lending contract

Source: own study based on: Hossain, Oparaocha 2015, p. 40.

The equity-based crowdfunding model is also known as crowdinvesting or equity crowdfunding. The equity model comprises fundraising via selling shares of the funded company to the crowd [Bouncken, Komorek, Kraus 2015]. "Equity crowdfunding is a form of financing in which entrepreneurs make an open call to sell a specified

amount of equity- or bond-like shares in a company on the Internet, hoping to attract a large group of investors” [Ahlers, Cumming, Güntherand, Schweizer 2015]. The equity crowdfunding process is assisted by a crowdfunding platform, which provides the means for the transactions.

Crowdfunding, as a vehicle for accessing resources embedded within online social networks, may provide access to a new source of capitalisation for entrepreneurs [Ley, Weaven 2011] and may provide a solution to early stage equity financing gaps resulting from a market failure [Shane, Cable 2002]. Start-ups and entrepreneurs receive money from the crowd and bridge early stage gaps in funding [Mollick 2013]. These features of crowdfunding are particularly important in the case of equity crowdfunding, which is intended primarily for start-ups and SMEs. On the one hand entrepreneurs can assess the potential of their projects and gain funds for their realisation and on the other hand investors can receive profit sharing as a material reward.

Equity crowdfunding is considered as one with the highest complexity of the process in comparison with other models, which can be seen in Table 3. Wilson and Testoni pointed out that „equity crowdfunding is more complex than other forms of crowdfunding and requires proper checks and balances if it is to provide a viable channel for financial intermediation in the seed and early-stage market in Europe” [Wilson, Testoni 2014, p. 1]. These authors presented general phases of equity crowdfunding platforms (table 4).

Table 4. General phases of equity crowdfunding platforms

Investment stage	Selection and valuation		Investment		Post-investment	Exit
	→		→		→	→
Entrepreneur	Submits application		Shares online all relevant information			Finds new sources of capital
Platform		Screens applications	Post pitch online	Performs more vetting and released funds	Mentors and monitors the company	
Crowdinvestors			Asses company and decide on funding		Can participate and monitor the company	Sell shares to new investors

Source: based on Wilson, Testoni 2014, p. 4.

Valuation performed by the crowd might also benefit from the so-called “wisdom of crowds”, which is visible in the assessment and monitoring stages of the company (Table 4). Hornuf and Schwienbacher indicated that in the case of crowdfunding,

the fact that the participating crowd makes investment decisions rather than consumption decisions could be particularly useful, because the information inferred from investments by the crowd relates to the value of the firm more generally, rather than personal consumption preferences for a specific product [Hornuf, Schwienbacher 2015, p. 5].

It should be noted that the main distinction between equity crowdfunding and other forms of crowdfunding is that in the equity crowdfunding the fundraiser is always an entrepreneur (a company). Another distinctive feature of equity crowdfunding is the asymmetry of information between entrepreneur and crowdinvestors. "Crowdinvestors face three primary disincentives: entrepreneur incompetence, fraud, and project risk, which are exacerbated by the particularly high degree of information asymmetry associated with equity-based crowdfunding in an environment with minimal oversight and regulation" [Agrawal, Catalini Goldfarb 2014].

3. Equity crowdfunding in Poland on the basis of beesfund.com

3.1. Research on crowdfunding in Poland

In the 2015 report of the Polish Agency for Enterprise Development [Tarnawa, Węclawska, Zadura-Lichota, Zbierowski 2016, p. 63] crowdfunding was identified as a source of external financing of a new business in only 2% of cases in Poland. The most frequently indicated was government funds (43%), banking and financial institutions (31%) and family resources (24%). Other external sources of funding were much less indicated: employer (20%), business angels and venture capital (13%) and friends (5%).

This early stage of development of crowdfunding in Poland was visible in the research focused mainly on the assessment of crowdfunding development in Poland [Kordela 2016; Koziół-Nadolna 2015]. In the Polish literature crowdfunding was presented as a source of financing for start-ups and SMEs [Piekunko-Mantiuk 2016]. Other authors presented the results of a study on crowdfunding platforms operating in Poland [Kordela 2016; Koziół-Nadolna 2015] and the study of the recognition of crowdfunding platforms among young people [Guzek 2016]. Campaigns carried out on selected networks of crowdfunding in Poland were also analysed [Guzek 2016; Dziuba 2015; Adamska-Mieruszevska, Mrzygłód 2014; Chrzanowski, Dziedzic 2014]. One publication was devoted to real estate crowdfunding as a type of investment crowdfunding [Gostkowska-Drzewicka 2016]. In Dziuba's monograph crowdfunding issues were widely raised. Economic crowdfunding was presented along with its detailed typology [Dziuba 2015]. Besides economic aspects, pertinent legal

regulations and tax regulations of crowdfunding in Poland were presented in the literature [Frańczuk 2014; Kędzierska-Szczepaniak, Szczepaniak 2015]. Some other publications provide tips and recommendations for those who want to take advantage of financing through crowdfunding [Król 2013a; Malinowski, Giełzak 2015; Brunello 2015].

3.2. Beesfund.com as a case of an equity crowdfunding platform in Poland

For the research, beesfund.com crowdfunding platform was chosen. According to the regulations, www.beesfund.com website is a crowdfunding platform enabling companies to present planned projects to users. Beesfund.com platform is one of the four identified as active equity crowdfunding platforms in Poland. The list of equity crowdfunding platforms in Poland which were active by the end of 2016, along with the basic conditions, is presented in Table 5.

Table 5. Equity crowdfunding conditions on crowdfunding platforms, end of 2016

Equity crowdfunding platform	Target of the event	Duration	Commissions and fees	Number of projects
Beesfund.com	Max. 100 000 EUR	2-16 weeks	Fee: 6.9% + VAT The commission payment provider: 2%	10
CrowdAngels.pl	Min. 15 000 PLN	30-180 days	Fee for publication of the project: generally 999 PLN, in the promotion period 0 PLN Commission: 6% of the collection (successful only)	2
Sharevestors.com	Lack of information	30-180 days	Success fee from 1.5% to 5%	3
Wspólnicy.pl	Lack of information	Max. 60 days with the possibility of extension for another 14 days	Fee: 7% net (+ VAT) Commission payment 2.6% Fee for publication the offer: 350 PLN net	3

Source: own study based on platforms websites

All presented platforms charge companies a fee, typically 1.5–7% of the amount raised, plus sometimes a fixed up-front fee. By the end 2016 there were 18 realized projects. It is worth noticing that beesfund.com was the most experienced platform in terms of the number of completed projects (10 projects).

During the period 2012–2016 ten projects on the beesfund.com platform were announced. The list of projects is presented in Table 6. It has to be noticed that Beesfund S.A. was the first crowdfunding project on www.beesfund.com website.

Table 6. Equity crowdfunding projects on beesfund.com in the period 2012–2016

Company name	Date of commencement of activities of the company	Target of the event [in PLN]	Share Price [in PLN]	Percentage of the shares* [in %]	The capital raised [in PLN]	Number of investors	The range of payments [in PLN]	Initial period for raising of funds. (Realisation or non-realisation of target)
Beesfund S.A.	01.06.2012	50 000	10	5	50 000	104	100 – 10 000	04.08.2012–09.10.2012 (04.08.2012 – 09.10.2012)
InPay S.A.	26.06.2014	200 000	40	5	200 000	182	40 – 40 000	16.10.2014–12.11.2014
MIGAM "RKP" Sp. z o.o. S.K.A.	12.01.2015	400 000	50	8	302 200	147	50 – 50 000	25.03.2015–25.06.2015 (25.03.2015 – 25.06.2015) the goal was not realised
Sport GURU S.A.	15.12.2014	400 000	40	9.09	21 200	19	40 – 6 000	25.05.2015–27.08.2015 (27.05.2015–12.08.2015) the goal was not realised
InneBeczki S.A.	14.10.2015	400 000	40	9.09	400 000	757	40 – 40 000	05.03.2016–05.06.2016 (07.03.2016–18.03.2016)
Harbour Restaurants Group Sp. z o.o. S.K.A.	16.03.2016	400 000	40	16.67	16 680	41	40 – 4 000	26.04.2016 – 26.07.2016 (26.04.2016 – 22.06.2016) the goal was not realised
Towarzystwa Biznesowe S.A.	29.04.2016	400 000	40	9.09	400 000	417	40 – 20 000	09.05.2016 – 26.07.2016 (09.05.2016 – 21.07.2016)
Faktorama Sp. z o.o. S.K.A.	30.05.2016	401 500	55	12,74	401 500	187	55 -150 040	01.07.2016–01.10.2016 (01.07.2016–27.09.2016)
KWG Superfood S.A.	22.06.2016	400 005	15	21	165 015	210	15 – 20 025	01.08.2016 – 01.11.2016 (02.08.2016 – 01.11.2016) the goal was not realised
Cydrownia S.A.	10.08.2016	402 000	30	11,82	402 000	370	30 -30 000	28.09.2016–28.12.2016 (28.09.2016 – 28.12.2016)

*percent of the share capital in the form of company shares offered to investors.

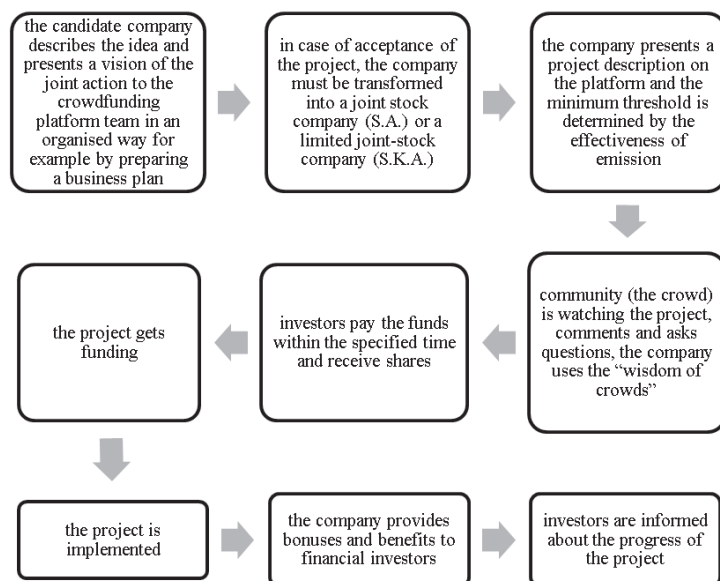
Source: own study based on: <https://www.beesfund.com/>, <http://www.krs-online.com.pl/>.

Companies which were announced on beesfund.com platform had usually been founded a few months before collections started. In the case of the beesfund.com platform, the financial target has a maximum value of 100,000 EUR. It is a threshold defined in the law [Act on Public Offer 2005] which does not require the company to prepare a prospectus. The range of targets of events on the beesfund.com platform was between 50,000 and 402,000 PLN and did not exceed the equivalent of 100,000 EUR. The share prices were between 15 and 50 PLN. The range of the number of investors was between 19 and 757. Raising capital for a project by a company lasts for a definite period of time, this time is indicated in the project description presented on the website. The company may prolong the capital raising period in agreement with beesfund.com for a period not longer than 3 months after the project presentation starting date.

Beesfund.com offers a crowdfunding collection in the formula of “flexible funding” (“you take as much as you earn”). Even if the company does not sell all the shares, the company gets the resources for the development of the project. In four cases the financial targets were not realised (MIGAM “RKPK” Sp. z o.o. S.K.A, Sport GURU S.A., Harbour Restaurants Group Sp. z o.o. S.K.A., KWG Superfood S.A.). In the other six cases all planned funds were raised. It is worth emphasising that 400,000 PLN planned for the project InneBeczki S.A. was collected in just 11 days. InneBeczki S.A. is going to build the “Small Brewery”, which will have a brewing capacity of 60-80hl per month. The experiences gained at the “Small Brewery” will be used to build the “Large Brewery”. In the next step the company is planning to raise funds by entering the stock exchange or by a private placement for investors.

It should be emphasised that almost all projects were offered, as an incentive, different kinds of bonuses for the purchase of shares, such as small gifts, discounts, the possibility in participation in company development, participation in the general meeting of shareholders, etc. Investors who purchased more shares, including such forms of gratification, were potentially more attractive.

Beesfund.com generally defines a project as an undertaking of economic character, consisting in making a public offer for securities by the company and conducting a promotion as stipulated in the Act on Public Offer. The company gathers funds for the project implementation from registered users of the website. The process of equity crowdfunding on the platform is presented on the basis of beesfund.com platform in Picture 1.

Picture 1. Equity crowdfunding process on the basis of beesfund.com platform

Source: own study based on: <https://www.beesfund.com/>, <http://www.krs-online.com.pl/>.

The equity crowdfunding on the beesfund.com platform is dedicated to companies. At the beginning of the process, an entrepreneur has to prepare the project in an organised way, usually as a business plan. It helps to make a preliminary project selection. The main factor influencing the duration of campaign preparation is the legal status of companies. The problem of choosing the right legal status of the company in Poland was presented by Pietkiewicz [Pietkiewicz 2013, pp. 30–33]. In case of acceptance of the project the company must be transformed into a joint stock company (S.A.) or a limited joint-stock company (S.K.A.). In the next step the company prepares a project to be presented on the platform (for example: project description, main goal of the project, history of the company, achievements, products, benefits, plans, people). An important part of the presentation is the offering document with information about the issuer. Community (the crowd) is watching the project and can comment on projects, ask about details and give advice to the company. It allows the community to decide which ideas are worth funding, which is known as “the wisdom of the crowds” mentioned before. Investors have 2–16 weeks to pay the funds. In the next step investors receive shares. When the project gets funding and is implemented the company provides benefits to investors. In the last step investors are informed about the progress of the project.

4. Conclusions

Crowdfunding is an alternative type of financing projects. Although there are many definitions of crowdfunding in existing literature, generally crowdfunding involves raising many small amounts of money for a special project from a large number of people in a direct or indirect manner. The analysis of the literature on crowdfunding in Poland indicates that crowdfunding has become a subject of study in Poland fairly recently mainly because it is in the early stages of development. One of the crowdfunding model is equity crowdfunding, which can help start-ups and SMEs in the early stage equity financing gap and give experience to apply for more advanced forms of funding and to enter the stock exchange.

The subject of consideration in this article was the complexity of the equity crowdfunding. The main purpose of the article was to systematize knowledge in the area of equity crowdfunding models and to identify the main characteristics of the equity crowdfunding model. Upon the analysis of crowdfunding platforms in Poland and projects on beesfund.com platform, it can be confirmed that complexity of the equity crowdfunding was visible in the requirements concerning preparation the equity crowdfunding campaign. The equity crowdfunding puts much greater demands on entrepreneurs than other crowdfunding models. Studies confirmed that a company must prepare a business plan, must have a proper legal form. In case of acceptance of the project the company must be transformed into a joint stock company (S.A.) or a limited joint-stock company (S.K.A.). The equity crowdfunding process is much more complicated than other crowdfunding models because of the need to issue shares by the company. There is a need to take into account all the requirements related to the legal issues of emission. Because of high demands, equity crowdfunding is a better source of financing for start-ups and SMEs

Upon the analysis of the subject literature, research of crowdfunding in Poland, additional characteristics on equity-based crowdfunding can be found. Accordingly, the equity crowdfunding research conducted in Poland has been rare. Equity crowdfunding platforms are dedicated only to companies. Because the equity model comprises fundraising via selling shares of the company fundraised to the crowd, the role of the crowdfunding platform seems to be necessary in the equity crowdfunding process. Presenting of the company project on the crowdfunding platform allows the community to decide which ideas are worth funding, which is known as “the wisdom of the crowds”. Investors are watching a project and can comment on projects, ask about details and give advice to the company. In the equity crowdfunding model the information inferred from investments by the crowd relates to the value of the firm more generally, rather than personal consumption preferences for a specific product.

The equity-based crowdfunding model is an attractive field for further research. Additionally the stage of projects after raising funds by equity crowdfunding still remains unexplored.

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Goodwill in the Bank Accounting's Praxis

Abstract: Goodwill is a specific intangible asset, resulting after a merger or acquisition as a positive difference between the purchase price of the merged or acquired entity and the fair value of its net assets. Although the goodwill's share in the sum of total assets is relatively small in most cases, its impairment can exert a considerable negative impact on the profit figure, due to the necessity of creating a proper provision in charge of costs. The described examples of testing procedures disclosed in financial reports of several Polish commercial banks show that the impairment testing methodology is too complex, comparing with the practical utility. Moreover, it is based on non-standardised assumptions, impacting negatively the test reliability and comparability of results.

Key words: goodwill, goodwill impairment, disclosures in financial statements, accounting standards

1. Introduction

The financial standing of a bank can change unexpectedly and disadvantageously, when the changing market environment will cause a decrease in the value of assets, and the necessary impairment provisions will charge the financial result with a considerable loss. It concerns, among others, the goodwill, that is, a specific asset compo-

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ment, which appears as a consequence of an enterprise acquisition and results in the acquiring entity as the positive difference between the purchase price of the acquired business (or its part) and the fair value of acquired net assets. This component is classified among intangible assets, and – according to International Financial Reporting Standards (further mentioned as IFRS) – is not depreciated in regular portions, but systematically tested for impairment: at least once a year, or more frequently, if there will be known some facts or appear some circumstances which can cause a loss on the goodwill value (IFRS 3 Business combinations, point 55). Although the share of goodwill in the bank's sum of assets is relatively small, the proportion becomes much bigger when the profit is concerned. It means that the negative result of the impairment test, obtained under bad circumstances, enforces the necessity of the full or partial impairment provision, charging the bank's costs, in accordance with international accounting standards (IAS 36: Impairment of assets). The article is aimed at an overview of the intensity of the goodwill presence in balance sheets of commercial banks listed on the Warsaw Stock Exchange, as well as at a critical evaluation of impairment test methodologies applied in these banks from the point of view of their practicability and comparability of results.

2. The goodwill in balance sheets of commercial banks

Theoretical definition of IFRS3, point 52, says that the goodwill acquired in a business combination represents a payment made by the acquirer in anticipation of future economic benefits from assets that are not capable of being individually identified and separately recognised. It means in the practice that the goodwill presented in the financial statement characterises not the reporting entity, but the acquired one. It can be treated in the same time as a kind of confirmation that the decision taken during the acquisition process, of spending a bigger amount than the book value of the acquired business, was really correct. Thus, the goodwill can be interpreted as a combined result of all measurable or immeasurable factors contributing to the achievement of expected profits from the acquired business, being bigger than the market average for a similar activity.

But the basic difficulty results from the fact that the goodwill is easily and precisely achievable *ex post*, after the acquisition – moreover, it is visible only when the acquiring entity presents a proper financial statement. On the opposite, it is very difficult to evaluate the goodwill *ex ante*, although such estimation would be very useful when

negotiating the purchase price which should be paid by the new investor for the acquired business. A simple approximation of the goodwill could be the indicator defined as the profitability surplus of the considered entity over the average profitability observed in the market sector of similar activities [Dobija 2005, pp. 141–142], which can be also expressed as the following formula proposed by R. Patterson [2011, p. 111]:

$$\text{Goodwill} = \left(\begin{array}{c} \text{ROA} \\ \text{[of the analysed} \\ \text{entity with results} \\ \text{better than the} \\ \text{average]} \end{array} \text{ minus } \begin{array}{c} \text{ROA} \\ \text{[average for} \\ \text{similar activities]} \end{array} \right) \times \begin{array}{c} \text{Assets} \\ \text{[of the analysed entity} \\ \text{with results better than} \\ \text{the average]} \end{array}$$

Unfortunately, we have in this case to deal with a difficulty resulting from the fact that the calculations should consider not only the present, but the future profitability as well. That means, there should be available appropriate budgeting/forecasting models, accompanied by consistent scenarios for exogenous assumptions and discounting schemes converting future profit flows into the net present value – both for the analysed entity, and its market sector as a whole. Moreover, these scenarios must be individualised, reflecting the differentiation of goodwill sources in diverse merger/acquisition cases. The examples taken from the real situations occurring in the Polish commercial banks can be found in the Table 1.

Analysing the situation on the basis of financial statements for the fiscal year 2014, we can state that the goodwill was present in 10 of 12 studied cases (commercial banks listed by the Warsaw Stock Exchange, with exception of BGŻ S.A. and Bank Millennium S.A.). In one case (BOŚ S.A.) the presented goodwill achieved the small amount of PLN 45 thousand, not significant both from the point of view of the asset volume and the achieved profit. Further two cases include the goodwill not exceeding PLN 5 million gross, being additionally accompanied by the impairment provision, however relatively small, comparing with profit figures (the loss in the range of 0,1% of the net profit in the case of mBank S.A. and 0,7% of the net profit in the case of Allior Bank S.A.). The absolute record belongs to the bank BZ WBK S.A., with the goodwill reported with the amount of PLN 1 688,5 million, giving only 1,4% of the total asset figure, but 85% of the net profit figure for the year 2014. However, the relative “winner” is Bank Handlowy S.A.: the goodwill presented in its balance sheet (PLN 1 246 million) amounts to 2,5% of total assets and 131,5% of the net profit earned for 2014.

It should be stressed that comments accompanying the financial statements of the analysed banks deliver in most cases only a formal description of the goodwill's

arising mechanism, repeating standard prescriptions of the IFRS 3, with the additional information pointing out to the merger/acquisition case producing the relevant goodwill amount. The inconsiderable goodwill amount in relation to the total assets figure, as well as the fact that the first goodwill disclosure has been made in diverse past periods, can be accepted as a very likely excuse for such a treatment. However, two banks decided to deliver more detailed explanations:

- BZ WBK S.A. disclosed the expectations concerning the merger with Kredyt Bank S.A., which generated the presented goodwill amount: the goodwill is an equivalent of a premium for the control overtake and results from additional advantages due to the expected synergies, income increase, higher market share, combined qualifications of employees as well as the higher efficiency of processes ;
- PKO BP S.A. disclosed in his financial statement as of December 31st 2014, in the comment concerning the merger with Nordea Bank Polska S.A. (p. 65), profits expected from the enlarged customer basis and the enhanced competition capability. Moreover, the bank presented the total goodwill amount resulting from this merger (PLN 863,3 million) split into Cash Generating Units (CGUs), profiting from the merger: Retail CGU (PLN 746,7 million) and Corporate CGU (PLN 116,6 million).

Table 1. Goodwill in relations to total assets and net profit figures of listed commercial banks

Bank	The goodwill resulted from:	Gross value (PLN th.)	Net value (PLN th.)	Total assets (PLN th.)	Net profit (PLN th.)	% of assets	% of net profit
Allior Bank S.A.	- acquisition of a credit union	2 321	0	30 168 178	337 030	0,0%	0,0%
Bank Handlowy S.A.	- merger with the Citibank Polska - acquisition of a part of the ABN AmroBank (Polska) Total	1 243 645 2 331 1 245 976	1 243 645 2 331 1 245 976	49 843 665	947 312	2,5%	131,5%
BOŚ S.A.	- merged subsidiaries (no further comments given)	45	45	19 479 980	60 828	0,0002%	0,07%
BPH S.A.	- acquisition of the Pierwszy Komer-cyjny Bank S.A. - acquisition of the Przedsiębiorstwo Kapitałowo-Inwestycyjne „Chrobry” Modro Sp. Jawna Total	107 659 47 105 154 764	107 659 47 105 154 764	30 721 290	123 496	0,50%	125,3%
BZ WBK S.A.	- merger with the Kredyt Bank S.A.	1 688 516	1 688 516	121 607 365	1 994 632	1,4%	84,7%
Getin Noble Bank S.A.	- acquisition of the Bank Przemysłowy S.A.	51 307	51 307	67 594 305	322 347	0,08%	15,9%

Bank	The goodwill resulted from:	Gross value (PLN th.)	Net value (PLN th.)	Total assets (PLN th.)	Net profit (PLN th.)	% of assets	% of net profit
ING BSK S.A.	- the equivalent of the ING Bank N.V. branch transfer	223 300	223 300	96 742 400	1 067 900	0,2%	20,9%
mBank S.A.	Not commented	4 728	3 532	117 985 822	1 286 668	0,003%	0,3%
PEKAO S.A.	- acquired component of the bank BPH S.A. assets: the part of goodwill resulted from the earlier acquisition of the Pierwszy Komercyjny Bank S.A. (PKBL) in Lublin, and related to these branches of PKBL, which were overtaken by PEKAO S.A. - acquisition of a credit union Total	51 675 960 52 635	51 675 960 52 635	164 322 831	2 662 266	0,03%	2,0%
PKO BP S.A.	- overtaken assets of a subsidiary (Centrum Finansowe Puławska Sp. Z o.o.) - acquisition of the Nordea Bank Polska S.A. Total	7 785 863 262 871 047	7 785 863 262 871 047	243 760 527	3 079 471	0,4%	28,4%

Source: own study based on: <https://www.beesfund.com/>, <http://www.krs-online.com.pl/>.

Another accounting policy has been described in the financial statement of the bank BGŻ S.A. for the accounting year ending with December 31st, 2014 (pp. 34–35 – the case is not presented in the Table 1): the assets and liabilities of Rabobank Polska S.A., also merged in 2014, were priced on the book value basis, without recognising the goodwill amount, due to the fact that both merging bank entities were subsidiaries in the capital group of Rabobank, being controlled by the Cooperatieve Centrale Raiffeisen-Boerenleenbank B.A. The difference between the book value of merged net assets and the purchase price has been added to own funds of BGŻ S.A., according to the policy of the Rabobank Group.

3. The methodology of goodwill impairment tests.

The general principles of the goodwill impairment test methodology, common for all analysed banks, are presented within the accounting policy disclosures, attached to financial statements. They are conform with regulations of the IAS 36 "Impairment of assets" (paragraphs 80–99):

- after the first disclosure, the goodwill shall be tested for the impairment at least once a year, or more often, when there appears some impairment indication, by comparing the book goodwill value with its recoverable amount;

- the recoverable amount is an estimation based on the forecast of the carrying value of CGUs, to which the goodwill has been assigned. CGUs correspond to the lowest management level which is monitoring the goodwill for internal purposes;
- the carrying value equals to the present estimated value of future income flows generated by individual CGUs. This estimation considers among others also residual CGUs values, calculated by the extrapolation of income flows beyond the forecast period by applying an assumed growth rate;
- the negative difference between the book value and the recoverable amount causes the necessity of creating an impairment provision, charging the financial result of the recent accounting year. This provision is not subject to further reversals or corrections.

IAS 36 (paragraph 33) requires in addition, that forecasts of future income flows shall be constructed with considering:

- reasonable and supportable (possibly by the external evidence) assumptions that represent management's best estimate of the range of economic conditions that will exist over the expected goodwill life;
- the most recent financial budgets or forecasts approved by the management (principally with the maximum period of five years);
- extrapolation of projections based on budgets or forecasts by using a steady or declining growth rate for subsequent years. This growth rate should not exceed the long-term average growth rates observed on the banking market for individual products or customer segments.

Reading these standard requirements, we can note that among obligatory regulations there is still much place for optional choices which can cause that the details of test assumptions applied by individual banks, will certainly differ in aspects of:

- the diversified test precision level in terms of the number of considered CGUs (one unit covering the whole bank vs. several units corresponding to the operational segments defined for purposes of the managerial accounting);
- the time horizon of financial budgets;
- the time horizon of extrapolations;
- assumed growth rates;
- assumed discount rates (the risk-free rate, the relevant risk margin).

The description of methodological approaches applied in analysed banks, disclosed in comments to financial statements, consists sometimes of a general, schematic description copying the accounting standard formulations. However, we can also find

numerous cases, when the detailed information has been delivered, explaining the reason of assumptions applied in the testing procedures. It is worth to bring some examples:

Getin Noble Bank S.A. applies five years' forecasts of future flows, based on:

- historical data presenting the CGUs' capabilities from the point of view of the cash flow generating,
- approximations of the balance sheet and the profit/loss statement of each CGU starting from the test date,
- projections of the balance sheet and the profit/loss statement of each CGU for the whole forecast period,
- assumptions of the most recent bank's budget,
- analyses explaining the differences between forecasts constructed for the past and real past cash flows.

Future cash flows, being the basis for the carrying value calculation mirror the potential dividends as well as necessary capital injections assuming the profit forecasts and the needs for own funds, needed to fulfil the obligatory capital adequacy requirements. The net value of future flows, calculated with considering a discount rate combining the risk-free interest level, general risk premium, premium for a low capitalisation and premium for specific risk factors, is then compared for each CGU with the book value of: assigned goodwill and net assets (assigned capital and earned net profit) as of the test day [GETIN NOBLE BANK S.A., Financial statement for the year ending on December 31st, 2014, p. 41].

Bank Handlowy S.A. discloses in the annual report of 2014 [p. 54] that the estimation of the recovery value of each CGU with the assigned goodwill is based on the CGU's utility value, calculated by the management with considering the financial plan reflecting the bank's financial results on the background of the future macro-economic situation, the discount rate applied in forecasts of cash flows, as well as the growth rate used for extrapolating the cash flows over the financial plan's time horizon.

The bank PEKAO S.A. also estimates the CGUs' recovery values on the basis of utility values, defined as the sum of estimated net present value of cash flows within the period of 5 years, and of the CGU's residual value, calculated by extrapolating the cash flows projections over the forecast time horizon by using the 2,5% growth rate. The cash flow forecasts base on assumptions of the actual annual budget and the 2016–2019 financial plan. The applied discount rate of 7,64% is considered to reflect both

the risk-free level and the satisfactory risk premium [see the unit financial statement for 2014, p. 104].

In the case of PKO BP S.A. the CGU's utility value is defined as the estimated present value of future cash flows for the period of 10 years, with the additional considering of the CGU's residual value. The applied projection period, longer than observed by other banks, is said to correspond with periods of achieving planned activity levels by individual CGUs. The CGU's residual value is calculated by extrapolating the cash flow projection over the forecast horizon (that is, over 10 years), with the growth rate of 1,6%. The cash flow forecasts base on the assumed bank's goals for 2015, neglecting the historical data and being not comparable with past figures, due to the merger with Nordea Bank Polska S.A. (the year 2015 means the first full accounting year, when the activity results of both merged entities can be visible to the full extent). The discount rate applied for future cash flows amounts to 7,7%, considering both the risk-free level and the satisfactory risk premium.

A more sophisticated model is applied in BPH S.A., where the recovery value of the Retail segment is estimated by using a dividend discount model, with considering the 7 years' financial forecast for the period of 2015–2021. The extrapolation of cash flows exceeding the forecast period and constituting the residual segment value, assumes the 3% growth rate, being lower than the forecast of the long-term GDP growth rate, applied in the financial forecast.

The key assumptions, used in the estimation process of the utility value, include among others:

- the discount rate,
- the growth rate of cash flows after the forecast period (that is, after 2021),
- the profit forecast of future periods,
- the forecast of risk-weighted assets in subsequent years,
- the minimum required supervisory capital adequacy ratio,

and depend on the global and local macro-economic situation, as well as on the expected regulatory environment conditions. The discount rates, assumed for the required return rates, have been estimated by applying the Capital Asset Pricing Model, considering the risk-free interest rate, the beta index for the banking industry, and a premium for risks connected with the capital.

The capital requirements are also considered in the model applied by the bank ING BSK S.A. The test input data include the economic capital, risk-weighted assets and EBIT assigned to particular CGUs. The excess cash flows of each unit are defined

as the net profit, after deducting the capital amount, necessary to maintain the required capital adequacy ratio. Cash flows are discounted by using the interest rate of 11,5%, reflecting the average weighted cost of capital. Other projections concern the taxation rate, the nominal growth rate after the forecast horizon, as well as the future WIBOR 3M rate. Forecasts of cash flows are based on the accepted mid-term strategy and financial plan, covering the period of next three years. Projections for further two years are simple extrapolations, based on the assumption that each CGU will maintain its profitability indicator, defined as the gross profit relation to the risk-weighted assets, on the level achieved in the last year of the bank's financial forecast, increasing the profit amount according to the above mentioned growth rate.

Although it is not required by IAS 36, three of the analysed banks (BPH, ING BSK, PKO BP) inform in their comments that they apply the sensitivity analysis of the goodwill impairment test against changes of selected parameters and report that the test results are most sensitive to the discount rate and then to the long-term growth rate (BPH, PKO BP).

4. Rationality of the goodwill impairment tests

The above given description of the general methodology of goodwill impairment testing and practical examples of the methodology realisation in real cases allow for conclusions pointing out advantages and disadvantages of the test. With no doubt, among advantages there are:

- a systematic check, if the conditions, which were a basis of the goodwill appearance, are still fulfilled, contributing to the earnings being more fruitful than average (a possibility of verifying, if the former investment decision has been really well grounded);
- the disclosure of the test result not only to the internal receivers (management, audit), but to the external stakeholders as well (to shareholders, market analysts, supervisory organs), contributing to the better evaluation of factors influencing the financial situation of the bank;
- the methodological elasticity, allowing for construction of the test model adjusted to the specific situation of the reporting entity (but the excess elasticity can convert to a disadvantage, as it is mentioned below);
- after introducing some modifications, the same methodology could be useful not only for purposes of verifying the goodwill resulting from past merges and acquisi-

tions, but also for a trial of an estimation of the current or future market value of the bank.

Unfortunately, one could also state considerable disadvantages:

- only in individual cases the obligatory test concerns a relatively important component of assets, with a significant share in the balance-sheet total and a high proportion to the current profit figure;
- the starting point of the test is not the reliable book value of goodwill, but the current book value of CGUs, where the goodwill has been assigned – that is, a figure with a more or less subjective nature, depending on assumptions in applied managerial accounting approaches;
- the considerable numerical complexity of tests, accompanied by an extended set of input data, independent from the problem significance;
- the arbitrary character of assumptions concerning the growth and discount rates, the test time horizon etc., disabling for any comparisons with other entities – even dealing in the same market branch;
- the potential ability to „creative” adjustment of model parameters aiming at the positive result, to avoid the necessity of charging the costs with the goodwill impairment provision.

Taking these advantages and disadvantages into account, we can formulate the question: who gains from the goodwill disclosing in periodical financial statements, and for which purposes these disclosures can be used. The enclosed descriptions of the accounting policy rules, applied in the analysed banks and concerning the goodwill estimation and its impairment testing, are formulated in a full conformity with texts of relevant international accounting and reporting standards. One can suspect that these formulations are introduced by authors of financial statements, to fulfil the mandatory disclosure obligation with the minimum effort, but nobody cares for making some use of this information neither for every day management purposes nor for decisions concerning the future. An exceptional approach concerns probably these two banks (BPH, ING BSK – see Chapter 3), which exceeded the minimum formal standard requirements and applied more sophisticated models considering the capital allocation and controlling the capital adequacy in individual CGUs, integrated with models used for financial plan construction.

The remarks formulated until now allow to conclude that the current mandatory methodology is too sophisticated and time consuming, comparing with the problem scale and with the real managerial needs. A similar conclusion can be also drawn from

the KPMG enquiry, which was performed in 2014 with engaging the diversified group of stakeholders interested in the goodwill questions (persons responsible for proper disclosures in financial statements, capital market investors, market analysts, supervisors). The enquiry, concentrated around questions concerning:

- the usefulness of information coming from the every year's goodwill impairment testing,
- needs of improving the test methodology,
- main challenges arising during testing,

has been put by the International Accounting Standard Board (IASB) in January of 2014 in order to verify the appropriateness of IAS 36 standard regulations concerning goodwill after 10 years of the new rules running (goodwill impairment testing and impairment provisions, if necessary, instead of the smooth goodwill depreciation – see *Who cares about...*, 2014, p. 1). The most important conclusions coming from this enquiry say that:

- results of the goodwill impairment tests are more often applied to confirm the appropriateness of investment decisions made in the past, than in forecast purposes (in short-term or strategic plan constructions);
- the practical usefulness of the test methodology is limited by the large number of assumptions, estimations and time-consuming calculations;
- the majority of enquired entities does not apply the results of goodwill impairment tests in the managerial praxis, giving the preference to other management efficiency indicators, like EBITDA [*Who cares about...*, 2014, p. 7].

Taking it into consideration, the majority of respondents voted for the return to the previous regulation, allowing for the smooth goodwill depreciation in a given time period. Another proposal worth some analysis is a possibility of introducing some initial quality criterion (like it has been made in the US accounting standards – GAAPs), formulating some conditions enabling to check whether we have to deal with a high or low goodwill impairment likelihood, so that the full test could be started only in the first case [*Who cares about...*, 2014, p. 14]. But this proposal also does not ensure the full testing objectivity, since it still requires an individual formulation of test conditions, according to the specific situation of the individual bank. Anyway, the real need for simplifying the reporting burden means the necessity of a revision in the relevant accounting standard, towards expectations of stakeholders.

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POWSZECHNA KASA OSZCZĘDNOŚCI BANK POLSKI S.A. (www.pkobp.pl)

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Analysis of Conceptualization and Taxonomy of Division of National Intellectual Capital (NIC)

Abstract: The concept of intellectual capital in the macroeconomic perspective is in the stage of early development. During recent years, a number of definitions and proposals of national intellectual capital division have been offered. However, there is no commonly accepted conceptual approach through which the results of measurements various objects of research could be comparable. This is determined mainly by the complexity of national intellectual capital, its heterogeneous character, different levels of specificity and aggregation approaches, not unanimous structure of theoretical models. As a result we have a diversity of authors' approaches to conceptualization and taxonomy of national intellectual capital. Taking it into consideration, it is reasonable to organize current stage of knowledge in this field.

The aim of the article is analysis of selected national intellectual capital models in respect of their conceptualization and used division taxonomy. The results of this research paper are an attempt to organize the available economic knowledge of NIC and create the foundation for in-depth studies. Analysis has given a factual basis for the presentation author's own approach to the understanding of national intellectual capital (NIC) and taxonomy of it.

Key words: national intellectual capital, national intangible assets, definition of NIC, components of NIC.

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Introduction

The concept of national intellectual capital is in the stage of early development. Intellectual capital in macroeconomic perspective has been recognized as a determinant of the national wealth only in the 90s of the last century [Labra Sanchez 2013, p. 584]. The importance of the significance of this research problem is demonstrated by the growing number of publications, in which this subject has taken up. Nevertheless, the NIC issue is still unfathomable.

The first part of work on the NIC measurement is to create the definitions and develop an appropriate division determining the methodology. A particularly important aspect seems to identify differences in existing orientation to defining and its fragmentation. So there is a need to systematize approaches to defining and division of NIC as well as the dissemination of the concept of national intellectual capital in the literature.

The aim of the article is analysis of selected national intellectual capital models from the perspective of their conceptualization and taxonomy division. The results of the study contribute towards orderliness of available economic knowledge in NIC area and create a foundation for further researches (e.g. for developing a measurement tool of NIC).

Taking into account the fact that in Polish literature does not find a lot of reflections about the NIC issues, the article is based mainly on foreign literature review. This analysis constitutes the complement of the scientific gap on this subject. The information contained therein may be used for further research. Referring to the results of the review, the authors of the article attempted to develop their own definition and taxonomy of NIC.

The term of national intellectual capital

To express the national intellectual capital is used the abbreviation NIC in the literature, what coming from the first letters of English phrase – national intellectual capital. In earlier studies occurs the expression 'IC of nations'. The review of NIC definitions is presented in Table 1.

Table 1. The review of understanding national intellectual capital

Research object	Year	Authors	Definitions of national intellectual capital
Sweden	1996 1999	Stenfelt-Dunn et al. Rembe, ISA	Authors were not able to become to the definitions elaborated in these researches .
Israel	1998 2004 2007	Pasher Pasher, Shachar Pasher, Shachar	NIC is a intangible national assets including human capital, process capital, costumer/market capital, renewal&development capital to provide competitive advantage and potential high growth. The value of NIC by potential financial returns that attributable to those intangible or non-financial assets [Malhotra 2000, pp. 7–8]. NIC is not explained explicitly. The definition is based on the model of Skandia. Fragmentary described as the hidden values of the including the knowledge, wisdom, abilities, experience to provide the nation a competitive advantage and potential for future growth [Pasher Shachar 2004, p. 3, 5, Pasher Shachar 2007, p. 10].
Theoretical research paper	2003	Malhotra	NIC – National Knowledge Assets are intangible assets of the county that have significant implications for the future national growth and future value of the country. NIC embedded in individuals, firms, institutions, communities, government and represent current and potential sources for wealth creation and improved quality of life [Malhotra 2003, pp. 3, 24].
Arab region	2004	Bontis	NIC is the hidden value of individuals, enterprises, institutions, communities and regions that are the current and potential source of wealth creation. These hidden values are the roots of future nourishment and the cultivation of future wellbeing [Bontis 2004, pp. 14–15].
15 EU, 19 countries – (UE, USA, Japonia)	2004 2008	Andriessen Stam	NIC is the intangible resources available to country or region, that bring a relative advantage, and which in combination are able to produce benefits in the future [Andriessen Stam 2008, p. 490].
EU	2007	Węziak	NIC — the same meaning like in Bontis definition. Węziak adds only note “directly unobservable” in connection to the value [Węziak 2007, p. 4].
Poland	2008	Boni	NIC is the whole of intangible assets of people, enterprises, communities, regions and institutions, which properly use could be a source of current and future wellbeing of the country. [ZDSP 2008, p. 6]
Nordic countries 40 countries	2008 2011	Edvinsson Lin	NIC is defined as “intellectual material” — includes information, knowledge, intellectual property, experience - which can be put to use to create wealth and are the roots of future earning capacities and comparative advantages relative to other countries [Edvinsson Lin 2008, p. 526, Edvinsson Lin 2011, p. 254].
Thailand	2011	Phusavat et al.	NIC is not clearly described by the authors, who quote the fragments of definitions of other authors. The sum of these citations is the understanding of the NIC as a non-material values generated by people and resources in the form of relationships, philosophy and organizational system [Phusavat et al. 2012, pp. 868–869].
49 countries from Europe and Asia	2014	Navarro Ruiz Peña	NIC is the sum of intangible capital as an invisible value in form of human capital (knowledge skills, — QHC, personal development towards achieving the objectives as well as cultural values, labour market conditions of the country, resources, foreign labor) and structural capital (socio-economic framework, non-human structure that enables a country to generate future benefits) [Navarro Ruiz Peña 2014, pp. 263–264].

Source: own elaboration based on publications from Table 1.

The presented definitions constitute the majority of the most popular approaches to the conceptualization of national intellectual capital. They show understanding of intellectual capital in the macroeconomic perspective, as well as determine its frame. However, it is characterized by the terminology and conceptual divergence which is undoubtedly the result of an individual authors approach to understand the same concept of intellectual capital and large dichotomous possibilities. As it is emphasized by Brennan and Connell [Brennan Connell 2000, p. 209], differences are the result of different levels of aggregation of intellectual capital and the dual perception of the essence of the term. This duality can be seen in two basic styles: static and dynamic way to define [Michalczuk 2013, p. 90]. The NIC conceptualization variety also depends on the sample size, the specificity of examined object, the availability of data and other publications connected with this subject.

Despite the differences in the approaches to defining the NIC, they are in a general sense similar to each other [Käpylä Kujansivu Lönnqvist 2012, p. 345]. Definitions have common features, which include:

1. The main feature of the national intellectual capital is invisible, intangible, hidden form of capital (intangible assets).
2. The resources of intellectual capital underlie in individual human being, i.e. in inhabitants of a country so in man, e.g. in knowledge, wisdom, experience, ability, creativity. In some definitions (mostly elaborated after 2003) they are aggregated to larger groups (enterprises, communities, institutions, administrative units, regions, government).
3. It is assumed the perspective view of the nature of intellectual capital usefulness (future growth, potential financial returns, potential for wealth creation, future nourishment, roots of future earning capacities, cultivation of future wellbeing).
4. The essence of the intellectual capital of the country is explained with the use of terms relating to the current state (the current wealth, potential, sources, comparative advantages) and the future (future growth, future wealth, future benefits).
5. In defining the NIC authors use the static expression (wealth, benefits, welfare, quality of life, value) and dynamic (improvement of quality life, future growth, produce benefits, wealth creation).

Analysed concept models clearly evolved over time. Due to the microeconomic sources of the NIC theory, the older definitions are more similar to explanation from the company perspective. They differ only in the note, what expanding the scope of intangible resources of the company to the country level (Sweden, Israel). In this context, the relatively revolutionary definition is proposed by Malhotra, whose understanding of the NIC contained a new mention concerning the country division into the diverse, from the homogeneity and size point of view, parts: individuals, companies, institutions, government. However, due to the theoretical nature of his work, the greatest share of practical function is attributed to Bontis work [Rószkiewicz, Węziak, Wodecki 2007, p. 61]. Bontis also used the organizational segmentation of state in his research of twenty-

two economies, extracting the hidden values of individuals, enterprises, institutions, communities and regions. In works published after 2003 only in the definitions of Edvinsson & Lin's [2008, 2011], Phusavat et al. [2012], Navarro & Ruiz & Peña [2014] did not apply the same kind of country structure.

Most of the studied conceptual approaches rely on the Skandia model (Scandia Navigator) developed by Leif Edvinsson, who exposed two main components of NIC (human and structural capital). In 1994 as an effect of his efforts was published first at the world supplement to the annual report of the company Skandia about intellectual capital in Scandia Company. New solution in form of the crucial report should be considered as a breakthrough achieve, systematizing the knowledge of intellectual capital and the reporting of „hidden value“ of organization [Fiedorczuk Michalczuk 2016, p. 18]. Although the initial microeconomic scale of application and the elapse of almost a quarter-century, the conceptual Edvinsson's approach still inspires and creates the core of the methodology in significant number of the research papers about (NIC).

Based on an author's opinion was undertaken an attempt to develop own definition of national intellectual capital – heterogeneous and complex resource based on knowledge, identified in the framework of the components of intellectual capital, which create the current wealth of the country and contribute to the future development, build competitive advantages and form a potential for growth.

It should be emphasized that for creating current and future wealth of the country only individual intangible assets are not sufficient. It is the result of synergy between particular intangible assets of national intellectual capital. Therefore, an important issue is the proper use and investing in these resources. Creating wealth of the country is also through synergistic integration with other resources making up the financial capital of the country. This means that by proper allocation of capital resources between the tangible and intangible assets is built competitive advantage of the country.

The taxonomy of national intellectual capital division

Developed to the present day concept of NIC differ in approaches to the understanding of this category. There is also lack of unanimity in the division (components) matters. As an effect, the internal structure of intellectual capital is recognized differently by the individual authors. The variety of their attitudes to the definition and characteristics of intellectual capital determines the need to organize current state of knowledge in the field of categorizing NIC [Michalczuk 2013, p. 93]. The selected approach to the division of the intellectual capital of the country is presented in Table 2.

Table 1. The review of understanding national intellectual capital

Author/s (year of publication)	Research object	Components of the national intellectual capital					
		Human capital	Structural capital	Market capital	Process capital	Renewal capital	Others capitals
Stenfelt et al. (1996) Rembe (1999)	Sweden	+		+	+	+	
Pasher (1998) Pasher Shachar (2004,2007)	Israel	+		+	+	Renewal and development capital	
Malhotra (2003)	Theoretical research paper	+		+	+	Renewal and development capital	
Bontis (2004)		+		+	+	+	
Andriessen Stam (2004) (2008)	15 EU 19 EU	+	+				Relational Capital
Węziak (2007)	EU	+	+			+	Relational Capital
ZDSPRM (2008)	Poland	+	+				Relational Capital Social capital
Edvinsson, Lin (2008) (2011)	Nordic countries 40 countries	+		+	+	+	
Phusavat et al. (2012)	Thailand	+		Customer or Market capital	Process or information capital		Innovation capital
Navarro, Ruiz, Peña (2014)	49 countries from Europe and Asia	+			Process capital	Research, development and innovation capital	Relation or trade capital Marketing or image capital Social and environmental capital

Source: Own elaboration based on: Andriessen Stam 2005, p. 3, Andriessen Stam 2008, p. 490, Bontis 2004, p. 15, Edvinsson Lin 2011, p. 254, Edvinsson Lin 2008, p. 528, Hervás-Oliver Rojas Martins i in. 2011, p. 115, Malhotra 2003, p. 24, Navarro, Ruiz, Peña 2014, p. 264, Pasher Shachar 2004, p. 7, Pasher Shachar 2007, p. 12, Phusavat et al., 2012, p. 869, Węziak 2007, p. 4, ZDSPRM 2008, p. 23.

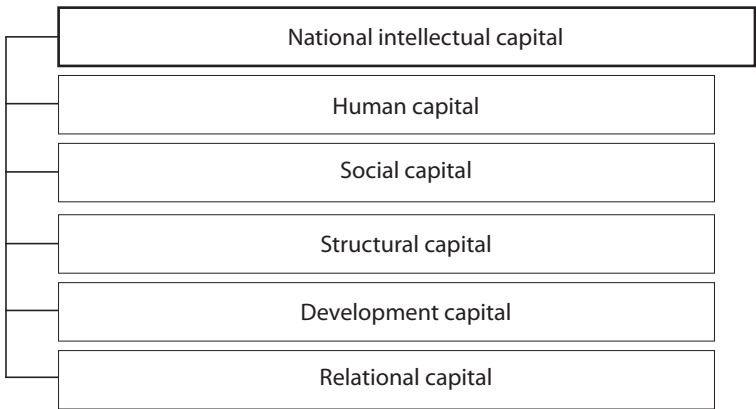
By the analysis of approaches to division of national intellectual capital it can be concluded that the majority of them are composed of the four basic components (human capital, market capital, process capital and renewal or renewal&development capital). Andriessen's and Stam's theoretic models of national intellectual capital consist of three elements. While Navarro Ruiz Peña identifies six part of intellectual capital of the country.

In all presented conceptual models of NIC human capital is distinguished as an essential element. Human capital can be defined as „thinking” element of intellectual capital. Differences in selected approaches relate to the scope of aggregation and naming of the so-called „no-human” part of national intellectual capital, within are identified intangible resources that contribute to the creation of national wealth. Both of them constitute the so-called national knowledge resources, which proper use determines the wealth of the country.

The presented approaches for categorizing NIC belong to the so-called group of academic models. National intellectual capital is being considered in terms of the determining factors of the economic development. This fact, combined with macro-economic scale of measurement and the definitional approach resulted in the appearance of some models additional, separate element of financial capital, which deliberately does not included in Table 2, to emphasize structure of only NIC. Merely in publications of Andriessen & Stam [2004, 2008], Węziak [2007] and Boni [2008] does not appeared in a reference to the financial capital, as the determinant of the value of country . Such an assumption of research exposes the focus on intangible factors determining national wealth.

Taking into account the presented taxonomy of national intellectual capital, the authors made the attempt to prepare own structure of NIC. In accordance with their point of view NIC co-creates five main elements: human capital, social capital, structural capital, capital development and capital of relationships that together create specific non-material resources.

Scheme 1. The division of national intellectual capital according Authors



Source: own elaboration.

Human capital, as pointed out earlier, is part of the 'thinking' intellectual capital. It consists among other of intangible resources such as knowledge, education, an in-born or acquired skills, personal qualities, experience, health status, ability to communicate, satisfaction and quality of life, intellectual abilities of society. They have a material impact on the achievement of national goals. Intellectual capital is the most homogeneous and also a key component of the NIC. On the other hand, it is the least durable component of intellectual capital.

Other elements form the 'no-thinking' part of national intellectual capital. The social capital of the country authors defines similarly to D. Węziak-Białowska [2010, pp. 51–52] recognizing it as a team of social, legal norms and widely shared values and customs, shaping the conditions for social and economic relations, expressed primarily in the level of social trust. For social capital authors also classify a non-material part of the cultural heritage and social attitudes towards various issues, eg. environmental, tolerance, otherness.

Structural capital is identified with the intangible, no-human macroeconomic resources of the country in the form of knowledge [Andriessen Stam 2008, p. 490], which is revealed in the social and technical infrastructure [Węziak-Białowska 2010, p. 52]. Structural capital is co-create by unobservable organizational, communication, technological, information and process structures.

Development capital is the national potential for future intellectual wealth [Bontis 2004, p. 24]. This kind of capital reflects the capacity of the economy to create competitive advantages continuously that will ensure sustainable growth of wealth. Development capital depends on the ability of the nation to be creative and generate new knowledge. It consists of intangible resources such as the number of patents, scientific publications, innovation, spending on research and development on higher education, level of education and higher education.

Relational capital is the value being expressed by internal and external state relations facilitating cooperation, underling in attractiveness and competitiveness of the economy, in the image of the country [ZDSPRM 2008, p. 23] in the opinion of partners, investors, individuals. Relational capital can be assessed from the perspective of integration in the international arena and the internal and external activity.

According to the judgment of the authors separation of social capital in NIC structure is important and pertinent move. Social capital is rarely secreted as a separate component of national intellectual capital. It is only isolated on national intellectual capital in Polish report and in work of Navarro, Ruiz, Peña together with the environmental

aspect. However, in the second case, it has a different meaning than the term of social capital. The authors assume that social capital is necessary to the effective use of human capital. Often, non-codified standards of behaviour are a condition of the strength of relationships, attitudes to work. Social capital performs a role of a liaison between individuals, determining the durability of the relationship. Therefore, a suitable quality of social capital facilitates the activities and bonds individual's or nation's relations.

The presented approaches to NIC taxonomy does not exhaust all spectrum of proposals. They designate to the complexity of the category of national intellectual capital and its heterogeneous character. Over time, there are more and more complex models of intellectual capital of the country. As part of the NIC began to establish more and more specific spheres of functional – resource country.

Summary

Currently, changes are taking place consisting in the reduction of the role of financial capital in favour of intellectual capital in the development process in the global economy. The leading role of invisible assets in building competitive advantages has already been scientifically proven and described in many publications among others about the knowledge-based economy, innovation, human capital. The growing importance of national intangible resources in the process of generating value (wealth of the country) should revolutionize the way the valuation economies and realize the need to manage the national intellectual capital. Therefore, a new approach to the evaluation of the national wealth should be a measurement based not only on financial capital but intellectual capital, too. However, application of such a measure will require the creation of a universal and widely acceptable conceptual definition and division of NIC, which could be used to develop a reliable method for ensuring the comparability of results.

In recent years, many definitions of NIC were formulated and still there are new interpretations. They differ among themselves, but also reveal common features. This state of affairs is determined by that in most cases they are being modified or made more precise version of existing one [Michalczyk 2013, p. 91]. Despite ongoing for many years of work in the area of national intellectual capital, today failed to work out a universal definition of NIC and its common taxonomy. [Michalczyk 2013, p. 91]. Despite ongoing for several years of work on the concept of national intellectual capital, at this moment it does not manage to work out a universal definition of NIC and its common taxonomy.

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The EU Funds in the Financing of Innovativeness of Polish Enterprises within the Europe 2020 Strategy

Abstract: A very important element of economic development strategy in Poland is focusing on the enhancement of the innovativeness of its economy. Hence, the discussion is focused on the mission of the new Smart Growth program (2014–2020), which includes a new architecture of financial support targeted mainly at enterprises and their institutional environment, which objective will be the broad cooperation between business and science conducive to the improvement of the innovativeness of the Polish economy.

Key words: research and development; priority axes, smart growth, innovation indicators, smart specialization; innovativeness

Introduction

In order to further reduce the distance between Poland and the highly developed countries of the European Union it is necessary to conduct development policy stimulating economic growth based on improving innovativeness, the use of the po-

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tential associated with creativity and entrepreneurship of the society and the ability of business and science to cooperate.

The European Union funding is the most important tool of the investment policy of the European Union contributing to the achievement of „smart” development goals, and thereby to financing of research and innovation conducive to the development of the competitiveness of enterprises. The analysis of the experience of the functioning of Poland in the European Union allows so state that it received a major financial support for the period 2014–2020 amounting to 82.5 billion euro [Kleinowski, Piechowicz, Sikora-Gaca 2016, p. 34]. The shift of Poland in the innovation ranking of EU countries from the group of modest innovators to moderate innovators in 2016 is hardly satisfactory.

The goal of this paper is to present the role of the EU funds in improving innovativeness within the Europe 2020 Strategy, with particular attention paid to the Smart Growth Operational Program (SG OP). New areas of support within the analyzed program will allow for moving from a model of business innovation based on buying innovative solutions to the creation of enterprises’ own innovations and their commercialization. The creation of a viable model of knowledge-based economy linking science with business is the most important task for the improvement of innovativeness. Smart use of EU support for the benefit of the innovative economy is the biggest challenge faced not only by Poland but the entire Central and Eastern Europe.

The innovativeness of the EU countries and the volume and structure of R&D expenditures

The effectiveness of innovation processes is determined primarily by the volume and structure of expenditures on R&D. The most synthetic measure of the volume of expenditures is their relation to GDP. Differentiation of domestic expenditures in relation to GDP is shown in Table 1.

Table 1. Gross domestic expenditures on R&D (GERD) as % of GDP in the European Union countries 2002–2015

Country/year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EU (28 countries)	1,81e	1,8e	1,76	1,76	1,78	1,78	1,85	1,94	1,93	1,97	2,01	2,03	2,03p	2,03
Eurozone (19 countries)	1,81e	1,81e	1,78	1,78	1,8	1,81	1,89	1,99	1,99	2,04	2,1	2,11	2,11p	2,12
Belgium	1,89	1,83	1,81	1,78	1,81	1,84	1,92	1,99	2,05	2,16	2,36	2,44	2,46	2,45
Bulgaria	0,47	0,48	0,47	0,45	0,45	0,43	0,45	0,49	0,56	0,53	0,6	0,63	0,79	0,96
Czech Republic	1,1	1,15	1,15	1,17	1,23	1,31	1,24	1,3	1,34	1,56	1,78	1,9	1,97	1,95
Denmark	2,44	2,51	2,42	2,39	2,4	2,51 b	2,78	3,07	2,94	2,97	3	3,01	3,02	3,03
Germany	2,42	2,46	2,42	2,42	2,46	2,45	2,6	2,72	2,71	2,8	2,87	2,82	2,89	2,87
Estonia	0,72	0,77	0,85	0,92	1,12	1,07	1,26	1,4	1,58	2,31	2,12	1,73	1,45	1,5
Ireland	1,06	1,12	1,18	1,19	1,2	1,23	1,39	1,61 e	1,6 e	1,54 e	1,56 e	1,56 e	1,51 e	:
Greece	:	0,55	0,53 e	0,58	0,56 e	0,58 e	0,66 be	0,63 e	0,6 e	0,67	0,7	0,81	0,84	0,96
Spain	0,96	1,02	1,04	1,1	1,17	1,23	1,32	1,35	1,35	1,33	1,29	1,27	1,24	1,22
France	2,17	2,11	2,09 b	2,04	2,05	2,02	2,06	2,21	2,18 b	2,19	2,23	2,24	2,24	2,23
Croatia	0,95	0,95	1,03	0,86	0,74	0,79	0,88	0,84	0,74	0,75	0,75	0,82	0,79	0,85
Italy	1,08	1,06	1,05	1,05	1,09	1,13	1,16	1,22	1,22	1,21	1,27	1,31	1,38	1,33
Cyprus	0,28	0,32	0,34	0,37	0,38	0,4	0,39	0,44	0,45	0,45	0,43	0,46	0,48	0,46
Latvia	0,41	0,36	0,4	0,53	0,65	0,55	0,58	0,45	0,61	0,7	0,67	0,61	0,69	0,63
Lithuania	0,66	0,66	0,75	0,75	0,79	0,8	0,79	0,83	0,78	0,9	0,89	0,95	1,03	1,04
Luxembourg	:	1,65	1,62	1,59	1,69	1,61	1,64	1,71	1,51	1,47	1,28	1,31	1,28	1,31
Hungary	0,98 d	0,92 d	0,86 b	0,92	0,99	0,96	0,98	1,14	1,15	1,19	1,27	1,39	1,36	1,38
Malta	0,25	0,24	0,49 b	0,53	0,58	0,55	0,53	0,52	0,62	0,67	0,83	0,77	0,75	0,77
Netherlands	1,77	1,81	1,81	1,79	1,76	1,69	1,64	1,69	1,72	1,9 b	1,94 b	1,95	2	2,01
Austria	2,07	2,18 e	2,17	2,38 e	2,37	2,43	2,59 e	2,61	2,74 e	2,68	2,93 e	2,97	3,06 e	3,07
Poland	0,56	0,54	0,55	0,56	0,55	0,56	0,6	0,66	0,72	0,75	0,88	0,87	0,94	1
Portugal	0,72 e	0,7	0,73 e	0,76	0,95 e	1,12	1,45 e	1,58	1,53	1,46	1,38	1,33	1,29	1,28
Romania	0,38	0,38	0,38	0,41	0,45	0,52	0,57	0,46	0,45	0,49 b	0,48	0,39	0,38	0,49
Slovenia	1,44	1,25	1,37	1,41	1,53	1,42	1,63 b	1,82	2,06	2,42 b	2,58	2,6	2,38	2,21
Slovakia	0,56	0,56	0,5	0,49	0,48	0,45	0,46	0,47	0,62	0,66	0,8	0,82	0,88	1,18
Finland	3,26	3,3	3,31	3,33	3,34	3,35	3,55	3,75	3,73	3,64	3,42	3,29	3,17	2,9
Sweden	:	3,61 e	3,39 e	3,39 b	3,5 e	3,26	3,5 e	3,45	3,22 e	3,25	3,28 e	3,31 e	3,15 e	3,26
United Kingdom	1,64	1,6	1,55	1,57	1,59	1,63	1,64 e	1,7 e	1,68 e	1,68 b	1,61 e	1,66	1,68 e	1,7

:= data not available, e = estimate, p = preliminary data, b = break in the data series, d = difference in definition

Source: EUROSTAT, http://ec.europa.eu/eurostat/tgm/table.do?Tab=table&init=1&plugin=1&language=en&PCOD=t2020_20, date of access: 01.05.2017.

The level of expenditures on R&D usually determines the level of innovativeness of the country. The statistics and the experience of all countries of the EU and euro area economies indicate that the minimum level of expenditures on R&D should be above 2% of GDP (2015). Significant is the very low level of innovation financing a. o. in Poland, Latvia, Cyprus, Bulgaria, Malta and Romania. The share of R&D expenditures in GDP in the EU has been increasing since 2004, but compared to 2015 it increased by only 0.27 percentage points, while in Poland at the same time there was an increase of 0.46 pp. and it has been systematically though not very significantly growing since 2002.

The increase in R&D expenditures affects the pace of innovative processes, and thus increases the competitive advantage of the countries compared to other countries. The highest rate of above 3% throughout the whole period was recorded in Sweden and Finland, and since 2013 also in Denmark. Belgium, Germany, France and Slovenia ranked above the EU average (which was 2.03% in 2015). Eight countries exceeded the average EU share equaling 1.99%. The largest share was recorded in Finland and the lowest in Bulgaria and Cyprus. In 2005, when the EU average was 1.76%, the highest share was recorded in 7 countries (the leaders were Sweden and Finland). Poland achieved a share of 0.56%. The EU average in 2002 was 1.81% and this share was lower than the EU average in as many as 17 countries. It should be noted that the highest share in all analyzed years was observed in the Scandinavian countries.

Table 2 presents the structure of the sources of expenditures on R&D in the EU.

Table 2. Gross domestic expenditures on R&D (GERD) in the countries of UE28 by source of funds 2004–2015 (in%)

Sector / year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Business sector	54,2	54,1	55	54,9	54,8	54,1	53,8	55	54,9	55	55,3	:
Government sector	35,2	34,4	33,6	33,3	33,8	34,9	34,8	33,3	32,8	32,7	32,3e	:
Higher education sector	0,7	0,8	1	0,9	1	1	0,9	0,9	0,9	0,8e	0,8e	:
Private non-profit sector	1,6	1,6	1,7	1,7	1,6	1,6	1,6	1,6	1,6	1,6e	1,6e	:
Abroad	8,4	9,1	8,8	9,2	8,8	8,4	8,9	9,2	9,8	9,9	10e	:

: = data not available, e - estimate

Source: EUROSTAT, http://ec.europa.eu/eurostat/tgm/table.do?Tab=table&init=1&plugin=1&language=en&PCOD=t2020_20, date of access: 05.01.2017.

The above table shows that the highest share in domestic expenditures on R&D in the entire analyzed period was observed in business sector, which was followed by

the government sector and the funds from abroad. The smallest was the share of the higher education sector. The detailed analysis shows that the structure of expenditures on R&D in Poland in 2010 was different. The largest was the share of expenditures of the government sector (60.9%) and the business sector (24.4%). Visible changes in the structure of expenditures on R&D were observed after the Poland's accession to the EU. For example the funds from abroad (mainly the EU funds) accounted for 11.8% in 2010, which was an increase by 6.6 percentage points compared to 2004. In 2015 the share of foreign funds in R&D financing was 16.7%. Noteworthy is the increase in the share of the business sector and reduction of the share of government financing of research and development. These shares were at 30% and 61.9% accordingly in 2002, and in 2015 the corporate sector recorded an increase of 9 pp., the government sector recorded decrease of 20.1 percentage points.

According to the results of detailed analysis, the share of expenditures in the private sector in different countries may be dependent on the economic and social policy. In Poland, the share of the enterprises financing R&D from their own resources is relatively small. The report of the consulting company Deloitte [Badania i rozwój w przedsiębiorstwach 2016, pp. 3–34] shows that only 1/3 of Polish companies spend on research and development more than 3% of their revenues, and the number of companies which do not have any development strategy increases. Besides, the number of entities that spend on research and development 3% or more of their revenues decreased during the year from 48% to 33%. 44% of firms admit that they have no R&D strategy at all [Badania i rozwój w przedsiębiorstwach 2016, pp. 3–34].

The possible reasons for a relatively small involvement of entrepreneurs in research and development are: cultural patterns supporting or not supporting entrepreneurial activity, unstable institutional and legal environment, tax rates and the availability of funding sources. According to A.K. Koźmiński, a key to innovation „is not money, but human activity referred to as entrepreneurship” [2016 B12]

One of the sources of information about innovativeness of economies is a report called Innovation Union Scoreboard. Eight dimensions of innovation and 25 indicators allow to analyze innovation performance. There are three types of indicators: enablers, activities, outputs and eight dimensions of innovation comprising a total of 25 different indicators.

Factors enabling innovation (Enablers) are external in relation to the firm and differentiate between 3 dimensions of innovation: human resources; open, excellent and attractive research systems, as well as finance and support. Firm activities

represent innovative efforts of firms, grouped in three dimensions of innovation: firm investments, linkages and entrepreneurship and intellectual assets. Outputs show the effects of innovative activity of enterprises in the two dimensions of innovation: innovators and economic effects. On this basis it is possible to monitor changes, and also differences in adapting to the recommendations of the European Commission's policy regarding the improvement of innovativeness. National innovation systems should promote the recommendations of the EU, particularly in case of the countries benefiting from the resources coming from their budgets.

According to the ranking European Innovation Scoreboard 2016, published by the European Commission, Poland takes 23th position among the 28 countries included in the ranking. Despite the low level of expenditures on research and development, Poland's position improves thanks to the relatively high propensity of Polish enterprises to invest (15th place in the ranking). Poland's position in the ranking also results from: intellectual assets, which include Community trademarks and designs; human resources – population aged 20–24 having completed at least upper secondary education, and new doctorate graduates per 1000 population aged 25–34; finance and support - R&D expenditures in the public sector as percentage of GDP. The above-mentioned areas have a positive impact on the value of the Summary Innovation Index. Poland's place in the ranking is mainly lowered by weak internationalization of research (international cooperation of scientists, the share of scientific publications among the most cited publications and the percentage of non-EU doctorate students), a relatively small number of PCT patents applications per billion GDP, as well as the low level of innovativeness of SMEs. Particularly important areas for the improvement of indicators measuring entrepreneurship of Polish small and medium-sized enterprises are related to their innovative activities and collaboration between enterprises.

The comparison of the innovativeness of the EU countries to major global competitors reveals that it is lower in relation to South Korea, the United States and Japan, but higher than that of Canada, Australia and the BRICS (China, India, Russia, Brazil, South Africa). The biggest innovation leaders dominate EU average especially in the partial indicators related to expenditures on R&D in the business sector, scientific co-publications and PCT patents, and also the number of people having completed tertiary education. This advantage increases in case of South Korea, as the growth rate of its performance during the period 2006–2013 was two times higher than in the EU [European Innovation Scoreboard 2016, p. 32]. The firms in these countries are de-

veloping through cooperation between the public and private sectors and they are investing more in research and innovation.

The presented measurable factors indicate that the level of innovativeness does not depend only on the size of expenditures on research and development but also on many indicators [Mikołajczyk 2015, p. 25].

The main areas of support under the Smart Growth Operational Program

The scope of support under the new Smart Growth Operational Program (SG OP) resulted from the experience of the Innovative Economy Program 2007–2013.

The conducted analyses show that:

- it was characterized by a big thematic dispersion of the areas of support,
- there were no transparent tools allowing to evaluate and measure the innovativeness of projects,
- non-refundable support instruments played a too dominant role,
- tax instruments of innovation support did not bring the expected results. There was a relief for the acquisition of new technologies but it gave no impetus for the inventiveness but rather promoted the purchase of the final results of R&D activities, mainly from abroad.

The development model based on cheap labor and import of new technologies slowly ceases to exist. In Poland, the capital equipment was only used for production of cheap goods. We need to move from the stage of reproduction to the stage of creating more value added. Poland's economy loses the ability to increase export by taking on foreign technologies. So we should create more domestic innovations.

Thus, the Smart Growth Operational Program (SG OP) assumes a new approach – support from the idea to the market. It means financial support throughout the innovation development process – that is from the phase of creating the idea, through realization – preparation of prototype, to commercialization. There will also be a change in the form of financing the implementation of new technologies. The grant system was supplemented by repayable and mix instruments. One of the key objectives of the new program will be the concentration of support in accordance with the concept of smart specialization where the highest growth potential is observed [Gwizdy, Kosewska-Kwaśny, Żółciński 2014, p. 40]. The EU funds supporting research

and innovation within the Smart Growth Operational Program (SG OP) will be used to finance only the projects related to smart specialization, those with the greatest innovative and competitive potential.

The domestic smart specializations are sectors which development will ensure: creation of innovative socio-economic solutions, increase in the value added of the economy and growth of its competitiveness in the international arena.

The entrepreneurs should ensure that their projects were implemented in areas compatible with smart specializations [Oleksiuk 2015].

Table 3. The structure of the Smart Growth Operational Program budget in Poland 2014–2020 in %

Actions (Priority axis)	Total	EU support in %	National support in %
I. Support for R&D activity of enterprises	44,7	44,69	44,84
II. Support for the environment and capacity of enterprise for R&D&I activity	12,11	12,11	12,11
III. Support for innovation in enterprises	25,55	25,55	25,56
IV. Increasing the research potential	14,18	14,20	14,07
V. Technical Support	3,44	3,45	3,42
Total	100,00	100,00	100,00

Source: Program Operacyjny Inteligentny Rozwój 2014–2020. Ministerstwo Infrastruktury i Rozwoju, Warszawa, pp. 136–139.

The domestic support consists of national public and national private funds (estimated distribution). The data in the table shows that: a similar percentage of R&D funds falls to the development of Polish enterprises through both external and enterprises' own planned internal financial resources.

Within the program 5 priority axes are implemented and EU support amounts to 8,614.1 million euro.

I. Support for R&D activity of enterprises.

In this area research and development projects of enterprises are financed, including projects involving experimental prototypes and pilot installations. A funding scheme for R&D projects was provided and implemented in cooperation with venture capital funds. The instrument will stimulate the creation of firms based on the results of R&D activities of the research units.

II. Support for the environment and capacity of enterprise for R&D&I activity.

Within the framework of Axis II of the program projects such as the creation or development of R&D infrastructure in enterprises will be co-financed. Activities supporting pro-innovative services for enterprises will be implemented. These services will be provided by business environment institutions or research units. They will include services related to R&D, technology transfer, protection of intellectual property and cooperation in the area of R&D&I.

III. Support offered under the Axis III of SG OP will be available mainly for the SME sector. The financing includes projects aiming at implementation of innovative products, services or technologies. Due to the variable level of risk of the implementation projects the emphasis will be placed on the selection of projects related to the application of the results of R&D in economic activity. It is anticipated that a variety of instruments will be applied, that provide support both in the form of subsidies and financial instruments (e.g. credit guarantees, loans). This type of actions will be realized with the use of capital instruments (with the involvement of seed capital funds, venture capital funds or business angels) and lending instruments (supplementary capital support), and – to a limited extent – subsidies for the financing the costs of consultancy services related to the acquisition of capital from regulated and alternative markets. This program also finances consulting services connected with internationalization of firms and programs promoting Polish product brands. The aim of these activities is to provide comprehensive services to SMEs in the process of internationalization, starting from providing basic information on specific markets, through supporting the initiation and development of cooperation with foreign partners, to assistance in the foreign market.

In case of the use of guarantees, acceptance and evaluation of applications can be carried out in cooperation with financial institutions which have the necessary capacity and experience in offering this type of instruments. In Poland, this offer is under the competence of Bank Gospodarstwa Krajowego.

It is also planned to support innovative start-ups, i.e. young firms conducting R&D, engaged in the commercialization of the results of such work or implementing innovative ideas in their activity.

IV. Increasing the research potential

Within its framework research and development carried out by the scientific sector in partnership with entrepreneurs is financed.

It should be recalled that the share of enterprises financing R&D from their own resources in Poland is relatively small. According to a report of the consulting company Deloitte only 1/3 of enterprises in Poland spend on research and development more than 3% of their revenues, and the number of enterprises that have no development strategy increases. Additionally, during the year (2015-2016) the number of entities that spend 3% or more of revenues on research and development decreased from 48% to 33%. On the other hand, the share of companies which spent for this purpose more than 10% increased (from 13 to 17%). However, 44% of enterprises admit that they have no research and development strategy [Badania i rozwój w przedsiębiorstwach 2016, pp. 3–34].

This result significantly differs from the average for the countries of Central Europe (46%). More than half of the companies spent on R&D less than 5% of total investment expenditures. This means that from the point of view of enterprises research and development is still a growth area of little importance.

V. Technical Support

The part of this assistance financial support is granted to institutions involved in the management and implementation of the Smart Growth Operational Program.

It is implemented in the form of training and workshops providing knowledge and skills relevant to the specific tasks performed by a particular institution.

In the new perspective a change of the form of financing is introduced. The subsidy system, dominant in the Innovative Economy (2007–2013) is supplemented by repayable instruments, such as debt financing and equity financing [Kacprzak 2016, p. 46].

The repayable and non-repayable subsidies can be applied for, among others, by enterprises, including the SME segment, scientific and research units, consortia of enterprises and universities, public administration units, venture capital funds and business angel networks.

Conclusion

The conducted considerations reveal that in the present financial perspective the model of support changed - instead of „subsidy for implementation of innovation” a „subsidy for creation of innovation” was introduced. This is a challenge that is often combined with the change of the development strategy of the company.

Under the SG OP the funds will be used to support enterprises in the implementation of research and development projects within the „from the idea to the industry” model, and to provide the research and development infrastructure. The aim should be to concentrate support on the so-called smart specializations, that is selected fields of science and areas of the economy, which constitute the development potential of the country and the region.

Despite the efforts to build a knowledge-based economy Poland is considered to be a moderate innovator and the value of expenditures on R&D in relation to GDP is much below the EU average.

One of the instruments encouraging to increase expenditures on R&D are new tax regulations. In 2017 a relief for R&D was introduced, which is more beneficial for enterprises because it increases the limits of eligible expenditures and increases their scope (SMEs). The period in which the costs of research and development activity can be deducted was extended from 3 to 6 years. The taxation of the contribution of intellectual property to the company was abolished. The cash return to startups engaged in R&D activities was allowed .

At the enterprise level innovations cover all areas of activity: supply, production, distribution, marketing, and can cause changes in the entire business models, so the road to success is not short. The imminent part of the process of innovation is awareness that it is burdened with relatively higher risk for the entrepreneur than buying proven technology, which in turn may limit the interest in research and development activities.

At the current stage of economic development innovation should be an important factor in improving the competitiveness of enterprises, commercialization of results of research and effective cooperation between science and business.

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Self-confidence, Gender, Knowledge and Experience Impact on the Investment Effectiveness on Capital Market

Abstract: Purpose – this article is related to the behavioral factors that may influence investment decisions on capital market and therefore, rates of return. Authors have identified four characteristics that are likely to affect the efficiency of investment: self-confidence, gender, level of knowledge in the area of finance and experience in real investment. Methodology/approach – Authors verify the hypothesis: psychological factors [knowledge, self-confidence, experience and gender] affect the efficiency of stock market investment. The study is based on a behavioral experiment and statistical analysis of the results.

Findings – The results of experiment were divided for three groups related to the level of rate of return on investment achieved by experiment participants. The results show that in the lowest range of rates of return they are affected positively by gender and self-confidence. In the case of the mid-range of returns, they are affected by the level of knowledge in a positive way and experience in a negative way. For the highest rates of return, the authors did not identify a significant relationship between examined factors and dependent variables.

Key words: self-confidence, capital market, behavioral finance

JEL classification: G02, G11, G14e

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Introduction

Analyzing the process of investing we stumble upon variety of theoretical concepts related to the effectiveness of investing on the capital market. The most important theories in this area include: the theory of efficient portfolio, investor approach to risk, the theory of market efficiency, its anomalies and a description of interference in the investment process.

The purpose of this paper is to describe the relationship between knowledge, gender, trading in real life experience and self-confidence of investors with potential returns they may achieve. Authors verify the hypothesis that the psychological factors, characteristic to investors (knowledge, self-confidence, experience and gender) affect the efficiency of stock market investment. The features mentioned above contribute to the success in business or a personal life very often. The authors of this paper intend to check if a similar mechanism works in the case of investment decisions and their results.

Analysis of the literature

Economic psychology focuses on market participants behavior. These include for example everything that precedes and occurs during and after the purchase of goods and services by a consumer (Falkowski and Tyszka 2006). Behaviorism is strongly emphasized in the economic psychology and its influence can be recognized in the behavior of financial market participants, as well.

Neoclassical financial theories are based on the evidence of rationality. The development of behavioral finance has demonstrated that the investment decision process is affected by psychological and sociological aspects. In the behavioral finance overconfidence, financial cognitive dissonance, the theory of regret and prospect theory are examined the most often. Over time, it has turned out, that the classical theories often fail and some paradoxes appear, they are described for example by Veblen and Giffen theories or as the speculative or sheep behavior effects, affecting the rational process of investment.

The characteristic effects for the capital market are the paradox of the calendar or consistent stocks purchasing beside losing their value. The formation of paradoxes and anomalies in the behavior of market participants have led to the formation

of a behavioral finance. The pioneers of this approach, however, were at the beginning recognized as heretics. Although the controversy regarding how, when and why mentality affects economic decisions has not stopped, it is widely believed, that the granting of the 2002 Nobel Prize in Economics to the psychologist Kahneman and the advocate of experimental economics Smith, confirmed the validity of the behavioral finance. Vissing-Jorgensen [2003] proves the reasonableness of behavioral theories and the importance of this approach for the theory of finance. She also mentions that it is the behavioral theory that explains the economic anomalies.

The theory of perspective is often cited in the literature as an example of behavioral finance explaining some of the irrational behavior of consumers. This theory was developed by Kahneman and Tversky, as an alternative to the theory of expected utility. The theory explains human behavior under the risk and it shows how people evaluate and treat chances regarding the value [Kahneman and Tversky 1979]. The theory of perspective is often used in marketing, but it is also applied for explaining the behavior of investors.

At this point, we should also take a look at the several effects with the psychological impact on investment decisions. One of them is the effect of sunk costs that appears at a time when expenditures have been incurred in order to achieve a certain goal. Arkens and Blumer showed that it is the accuracy resulting from the desire to achieve the goal, not wasting a chance [1985]. To achieve profits investor will maintain the existing investment position rather than abandon it and start a new one.

In terms of the problems discussed in the article, there has been analyzed the detailed impact of selected features on the behavior of investors. One of the most cited research results are gender differences in risk perception and adoption of investment strategies. Lundberg et al. [1994] in their research found that when women and men are overconfident, men are more susceptible to the consequences. The differences between the genders in overconfidence are dependent on the task. Deaux and Farris [1997] stated that in general men see more opportunities than women, but these differences are related to the „male“ jobs. Several studies confirmed that the differences in self-confidence are greater for the tasks which are usually designed for men [Deaux and Emswiller 1974, Lenney 1997, Beyer and Bowden 1997]. Men are predisposed to feel more competent than women in financial matters [Prince 1993]. Indeed, observations show that men are better represented in the financial sector. It is expected, that men are generally more self-confident in their abilities as a financial decision-makers than women. Moreover, Lenney [1997] adds, that self-

-confidence based on gender is dependent on the absence of a clear and readable feedback.

Gervais and Odean [1998] developed a model, where investors' overconfidence is the result of selfishness. Investors in this model get their confidence from their successes and failures. They tend to take over the top of their abilities, so that they become over-confident. Deaux and Farris [1997] Meehan and Overton [1986] and Beyer [1990] found that selfishness is greater for men than women, and thus men are more overconfident than women.

Lewellen, Lease and Schlarbaum [1997] have taken into account the brokerage houses database from 1964 to 1970 for 972 individual investors. The researchers found, that men spend more time and money on security analysis. They rely less on their brokers, they do more transactions, believe that profits are more predictable and expect higher rate of return than women. In this case, men remain more over-confident than women.

Analyses of the subjective assessment of the probability have shown, that people tend to an overestimation of the precision of their knowledge [Alpert and Raiffa 1982, Fischhoff, Slovic, and Lichtenstein 1977, Lichtenstein et al. 1982]. However, overconfidence has been observed in many areas and many professions: in clinical psychology [Oskamp 1965], doctors and nurses [Christensen-Szałański and Bushyhead 1981, Baumann, Deber and Thompson 1991], investment bankers [van Stael and Holstein 1972], engineers [Kidd 1970] publishers [Cooper, Woo, and Dunkelberg 1988], lawyers [Wagenaar and Keren 1986] negotiators [Neale and Bazerman 1990] and managers [Russo and Schoemaker 1992]. There was observed the overconfidence in judgment in every case.

Varian and others have stated that [Varian 1989, Harris and Raviv 1993] rational investors trade and acquire information just to increase their expected utility [Grossman and Stiglitz 1980]. Overconfident investors on the other hand reduce their utility by trading frequently. They have unrealistic expectations about the rate of return and the precision of the self-valuations, moreover they expect too much in case of time and return [Odean 1998]. Overconfident investors hold riskier portfolios than other investors. Barber and Odean [2000] and Odean [1999] tested the investors in terms of reducing the expected utility by entering into too many transactions. By focusing on transaction costs, individual investors achieve noticeably worse results than comparable benchmarks. Anyone who trades frequently, usually has a much worse results and this is exactly what the overconfident investors anticipates.

Interesting research result indicating the effectiveness of the decision-making factors in the environment of incomplete information was presented by Brenner et al. [Brenner, Koehler, Tversky 1996]. The authors analyzed the estimates and judgments based on the certainty associated with the arguments of one side. According to what the authors say, people sometimes hear arguments for only one party and sometimes for two parties. Researchers have found that by reading the arguments of one side involuntarily occurs curvature of our judgment. The results show that people cannot compensate for the lack of information of others, even knowing about the curvature. Simple control, which causes the appropriate application of information and underline its importance, makes a person wince judgment in the case. Similar mechanisms work on the capital market. Accepting only the arguments for investment, the investor will automatically warp vision on this. Smith came to the same conclusions [2010] while investigated the impact of information on investors making decisions based on financial data. Trade strategy has been tested and the results highlighted the possible unintended consequences of increased disclosure and suggest directions for future experimental and archival data.

Authors of this paper will consider findings presented in above mentioned papers and propose an experiment connected to the relationship analysis between confidence, gender, experience, knowledge level and rate of return. This is the behavioral finance attitude that we are able to join the psychological and economic disciplines while explaining the investors behavior.

Behavioral experiment – methodology description

The study is based on a behavioral experiment where a group of respondents, consisting of students of economics at the University of Lodz, participated in a simulation of the stock market. Their task was to make investment decisions based on limited information concerning the stock selected for the study. Each potential investor received an anonymous questionnaire and declared its gender and subjectively evaluated level of knowledge in the field of finance on a scale of 1 to 5. The survey contained additional questions to facilitate the placement of respondents' knowledge within the scale.

Respondents also received a specially designed sheet where they recorded investment decisions. The decision was understood as a change in the structure of the

portfolio of assets. The possible choices were: increasing, reducing or keeping it at the same level. For the purposes of this experiment the authors selected three shares traded on the Warsaw Stock Exchange up to 2013 and the hypothetical security that yielded a fixed and risk-free rate of return. Participants had not been told what shares were taken into account in the study. In order to determine the initial composition of the portfolio they only were given information on historical rates of return and standard deviations. On the screen, in the interval of about one and a half minutes, all three companies quotations were displayed. Subsequent periods of study represented six months of trading. Surveyed investors needed to revise the amount of all securities in their portfolios only on the basis of new prices shown and their own feelings. They had to make decisions about the change in the structure of their portfolio twenty times.

When the experiment had been over, the results were collected for the evaluation. The authors focused on the analysis of the final rate of return on the portfolios in the context of the analyzed factors: self-confidence, knowledge, gender and experience in real investing. In order to analyze the sample the authors used the statistical modeling and comparing the central measures in the groups divided by the factors listed above. Authors made conclusions from the differences between average rates of return in the proposed groups and the statistical relationship conducted via modeling the rate of return with the subjective features of the respondents.

The results

In order to clarify the conclusions drawn from the experiment, the authors decided to divide the sample into three groups. The first one contains portfolios with a total rate of return up to 1,000% for the entire experiment. The second group is composed of the portfolios of profitability in the range of 1,000% – 2,000%, while the latter are portfolios that have reached 2,000% return and higher. The rates of return are impressive but they come from the artificial situation more than from the real investment possibility on the market. The division into groups is to clarify whether the studied factors have equal impact on investors in achieving weak or good results.

Firstly, the authors focused on extracting the key factors determining the results. The dependent variable is the total rate of return on the investment portfolio and the initial set of exogenous variables includes:

1. Gender – recognized as a binary variable assuming the value 1 for men and 0 for women ,
2. Self-confidence – variable taking values from 1 to 7 depending on the number of correct answers given in the relevant part of the survey,
3. Knowledge – subjectively perceived by the participants level of their knowledge in finances. The variable ranges from 1 to 5, respectively, leveling the knowledge from sufficient to outstanding. Investments – a binary variable assuming the value 1 in the case of an experience in investment and 0 in the absence of investment experience.

The model can be presented as follows:

$$R_i = f(G_i, S_i, K_i, I_i)$$

$$R_i = \alpha_0 + \alpha_1 * G_i + \alpha_2 * S_i + \alpha_3 * K_i + \alpha_4 * I_i + e_i$$

Where:

R_i – rate of return of the portfolio at the end of the experiment,

G_i – dummy variable representing gender of the participant. 1 for men, 0 for woman,

S_i – self-confidence – variable taking values from 1 to 7 depending on the number of correct answers given in the relevant part of the survey,

K_i – knowledge – subjectively perceived by the participants level of their knowledge in finances. The variable ranges from 1 to 5,

I_i – investments – a binary variable assuming the value 1 in the case of an experience in investment and 0 in the absence of investment experience.

A set of the above variables provides the basis for modelling in each of the analysed subgroups. In the first subgroup the final model featuring the best substantial and statistical correctness was characterized by results presented in table 1 and 2 with the regression model presented below:

$$R_i = 2.7271 + 2.2193 * G_i + 0.5081 * S_i + e_i$$

Table 1. Regression results for total return on the portfolio and a set of variables analysed in the group of portfolios up to 1,000% return

Endogenous variable: the rate of return on the portfolio				
	Coefficient	Standard error	t-Student	p-value
Const.	2.63957	1.46038	1.8074	0.07861
Self-confidence	0.518201	0.218186	2.375	0.0227
Gender	2.14416	0.896682	2.3912	0.02185
Knowledge	0.0716775	0.544274	0.1317	0.89592
Real investment	0.53881	1.1807	0.4563	0.65074

Source: own elaboration.

Table 2. Model characteristics

Mean dependent variable = 6.3176
S.D. dependent variable = 2.47875
Sum squared residual = 208.772
S.E. of regression = 2.34393
R-squared = 0.19099
Adjusted R-squared = 0.10583

Source: own elaboration.

The model shows, that in a group of portfolios with relatively low return self-confidence has played the greatest role and gender. The results allow to conclude that in the group of investors with basic financial knowledge and experience, the personal qualities and disregard for the fear of choices plays an important role. The survey shows that this feature is more common for men, and they achieved better investment results. It should be also noted that the proposed set of two variables describes the variability of endogenous variable in approximately 19%, and we can consider it as a very high score especially when taking into account the nature of the exogenous variables. Authors also believe that the rest of the variance is determined largely by the randomness, as investors possessed limited information that does not allow them to perform accurate assessments and predictions about future values.

Another group of portfolios, for the rate of return in the range of 1,000 – 2,000% was a subject of analyse presented below. As in the previous study, the authors carried out a number of modelling in order to identify the factors that significantly affect the results in this subgroup. The significant model results both in terms of content and statistic are presented in Table 3 with the model regression presented below.

$$R_i = 14.2877 + 0,1350 * K_i - 4.4484 * I_i + e_i$$

Table 3. Regression results for the total return of investment and a set of variables analysed in the group of 1,000% – 2,000% return

Endogenous variable: the rate of return on the portfolio				
	Coefficient	Standard error	t-Student	p-value
Const.	14,1265	1.30288	10.8425	<0.0001
Self-confidence	0,00725789	0.255224	0.0284	0.9774
Gender	0,156845	0.974241	0.161	0.8728
Knowledge	0.112613	0.388123	0.2901	0.7729
Real investment	-4.42833	0.727176	-6.0898	<0.0001

Source: own elaboration.

This model indicates that in the group of portfolios with medium profitability, significant behavioural factors related to the self-confidence do not matter. Objective factors, that is, financial knowledge and investment experience play a significant role in contrary. It is worth to pay attention to the type of relationship between the rate of return on portfolios and these two variables. In the case of financial knowledge we observe the collinear relationship, which means that people with better knowledge achieved better investment results. The authors argue that this is also the result in line with findings in the first group of portfolios. This is because the study participants had to weigh their skills in finance based only on secondary questions, rather than a clear test of competence. According to the proposed model, self-confident individuals investing their money in the real life, in fact, achieved slightly worse results. This is a result that is in contradiction to the claim that experience in the market activity will help to achieve better return. On the contrary, lower rates of return appeared due to their willingness to risk reduction. The structure of portfolios of these investors shows that in certain situations

they will give up additional risks and realize profits at lower levels by moving their money in risk-free instruments such as bonds. It should be stated that the real-life investors have greater respect for the profits. However, these are only suppositions as the study involved relatively few individuals investing. One should pay attention to a much lower coefficient R^2 in the model. It means that although the proposed variables significantly characterize the volatility of the total return on the portfolio but they are insignificant in the overall structure of the factors characterizing tested investment process.

The third group consisted of portfolios of profitability over 2,000% and they are recognized by the authors as portfolios with above-average profitability. Again, a series of econometric analyses have been done, but the characteristics of each variable in this group did not allow to obtain a model in a correct statistical form due to lack of normal distribution of the random factor that prevented inference of the estimated coefficients. For this reason, the authors were forced to describe this group of portfolios with a number of simple measures that describe the given population. They are aggregated in Tables 4, 5, and 6.

Table 4. Correlations of analysed variables with endogenous variable rate of return on of the portfolio

	Rate of return	p-value
Self-confidence	-0.0909	0.539
Gender	-0.0758	0.609
Knowledge	-0.1693	0.250
Real investment	-0.1665	0.258

Source: own elaboration.

Table 5. Basic statistical measures describing a group of portfolios 2,000%+ return

Average	5,629.72%
Median	3,197.29%
Skewness	2.82
Minimum	2,051.26%
Maximum	29,432.00%
Quartile I	2,734%
Quartile II	3,197%
Quartile III	5,009%

Source: own elaboration.

Table 6. Regression results for the total return of investment and a set of variables analyzed in the group of 1,000% – 2,000% return

Endogenous variable: the rate of return on the portfolio				
	Coefficient	Standard error	t-Student	p-value
Const	84.5562	35.0815	2.4103	0.0203
Self-confidence	-2.61967	7.6186	-0.3439	0.7326
Gender	-1.01139	25.0525	-0.0404	0.9680
Knowledge	-9.49965	8.47237	-1.1213	0.2684
Real investment	-20.4541	15.0996	-1.3546	0.1826

Source: own elaboration.

Referring to the correlation table, the authors conclude that each of the proposed variables have the opposite relationship to the results achieved by respondents. Both behavioral variables, such as self-confidence, as well as objective knowledge increase in the scale as the investment results are becoming worse, similarly remaining variables are behaving, so one can conclude that in the group with the highest profitability portfolios, none of the proposed features of the participants affected the results in a positive way.

It should be noted that the proposed variables behave in a way that the increase in value causes the positive growth of participant characteristics so when in a group of portfolios of 2 000% + return none of them increased as a result of the investment experience in real life, and it means that a group of investors' best features determinants of success are not knowledge, experience and positive attitude, but different, undefined variables. We cannot exclude the possibility that the negative correlation is due to the randomness in the distribution of variables, which may also be a factor in determining investment performance themselves.

Analysing the remaining measures, that define the surveyed population, we noted that there is a specific sub-group, which represents only a small percentage of the total population of respondents, which significantly differs from the others.

After first part of the study, estimations shown that in the group low rates of return, respondents that are more self-confident are getting better results in their investments. Also assuming that males tend to be more self-confident at this age, we can conclude that young and confident men have bigger chance of success in

this kind of activities. In the second part of the calculations authors did analysis of the average rates of return in the subgroups divided by the factors included in the survey. Table 7 shows their results in the first group of the investment results. It should be noted that not all subgroups were included in this part of the analysis due to the lack of sufficient number of observations.

Table 7. Average rate of return [nominal] in portfolios from group 1, with division by characteristics of participants

portfolio group 0-1000%		
women	men	difference test
5,80378	7,81233	$p = 0,01851$
confidence 1	confidence 2	difference test
5,97932	5,79366	$p = 0,8461$
market knowledge 1	market knowledge 2	difference test
5,8342	6,39767	$p = 0,5884$
market knowledge 2	market knowledge 3	difference test
6,39767	6,11113	$p = 0,7569$
market knowledge 1	market knowledge 3	difference test
5,8342	6,11113	$p = 0,8395$

Source: own elaboration.

The only difference that is statistically significant, due to the t-test, in this group of portfolios was noted between men and women. All the subgroups created with the self-confidence and market knowledge factors achieved same average rates of return in terms of conducted test. That means that the conclusion from the econometric modelling in this portfolio group is confirmed partially.

Mid-ranged portfolios were tested similarly with the t-test. Results of the calculations are presented in table 8.

Table 8. Average rate of return [nominal] in portfolios from group 2, with division by characteristics of participants

portfolio group 1001-2000%		
women	men	difference test
14,4128	14,7447	p = 0,7152
confidence 1	confidence 2	difference test
15,6108	14,3116	p = 0,3001
confidence 2	confidence 3	difference test
14,3116	14,3213	p = 0,9938
confidence 3	confidence 4	difference test
14,3213	14,217	p = 0,9423
confidence 4	confidence 5	difference test
14,217	14,6391	p = 0,7893
confidence 1	confidence 3	difference test
15,6108	14,3213	p = 0,442
confidence 1	confidence 4	difference test
15,6108	14,217	p = 0,2871
confidence 1	confidence 5	difference test
15,6108	14,6391	p = 0,6018
confidence 2	confidence 4	difference test
14,3116	14,217	p = 0,9284
confidence 2	confidence 5	difference test
14,3116	14,6391	p = 0,7968
market knowledge 1	market knowledge 2	difference test
14,6666	14,175	p = 0,641
market knowledge 2	market knowledge 3	difference test
14,175	15,0085	p = 0,4453
market knowledge 3	market knowledge 4	difference test
14,6666	15,0085	p = 0,7493

Source: own elaboration.

As authors previously noted, in this group of investment results, knowledge and experience in real life gave the participants additional profits. That conclusion seem not to be proved by this part of the analysis. The testing of the average return showed not significant differences between the proposed subgroups. Neither the self-confidence, gender, or declared knowledge resulted in significantly higher rate of return. Finally, the third group of the best portfolios have been tested. In this part authors had to change the methodology of the testing due to the negative results of the normality of the distribution of data. Authors compared the groups using the Mann-Whitney U-test. Results are shown in table 9.

Table 9. Average rate of return [nominal] in portfolios from group 3, with division by characteristics of participants

portfolio group 2000% +		
women	men	difference test
59,4570	49,34572367	p = 0,060
confidence 1	confidence 2	difference test
75,00535966	42,1682094	p = 0,401
confidence 2	confidence 3	difference test
42,1682094	79,63558438	p = 0,920
confidence 3	confidence 4	difference test
	40,85814606	p = 0,739
confidence 1	confidence 3	difference test
75,00535966	79,63558438	p = 0,849
confidence 1	confidence 4	difference test
75,00535966	40,85814606	p = 0,472
market knowledge 1	market knowledge 2	difference test
55,93868966	70,27466367	p = 0,564
market knowledge 2	market knowledge 3	difference test
70,27466367	32,7033473	p = 0,027
market knowledge 3	market knowledge 4	difference test
32,7033473	24,28018019	p = 0,089

Source: own elaboration.

In the first part of the study authors claimed that the highest rates of return are difficult to analyse due to the very unusual and extraordinary observations. It is highly probable that the highest rates of return are a result of a widely understood "luck". Modelling in this part was ineffective and the average testing shown there is a slight difference between declared knowledge in groups 3 and 4. As a result we obtain no clear pattern of connection between the investment results and the analysed factors.

Summary

To sum up the analyses, it can be seen that an experiment revealed a hierarchy of behavioural determinants of success in investing. Examination of the portfolios of the first group with a relatively low rate of return shows that personality factors are the most relevant there. A key role is played by confidence indicating that individuals are characterized by a higher degree of determination and better control

the feeling of fear associated with the investment and achieve better results. In addition, the experiment shows that this feature is greater for men than for women. It should be noted, however, that the selection of assets used in the experiment to a large extent determined the profit, so it should be explicitly stated that the investment profits can be determined solely by personal characteristics on a low level. Self-confidence is very important but not sufficient feature to make effective investment decisions. That conclusions were similar in both parts of the study.

Analysis of portfolios of the second group indicates that the increase in profitability portfolios is dependent on the knowledge in the field of finance. It means that having knowledge in finance and getting a better understanding of market mechanisms allow for efficient investment. It is a proposal which confirms the need for development of financial awareness so that investors can avoid unfavourable investment and financial losses. Finally, the third group, the portfolios with the highest profitability, resulted in extraordinary profits but authors were not able to identify factors related to such profits. Gender, factors of character or knowledge were not significant in this group. Unfortunately the second part of analysis did not result in the same conclusions.

General conclusion made by the authors is that there are important factors related to our gender and the general way of thinking and behaving that result in obtaining different goals, also in finance and investing. The general idea of analysing the behaviour of men and women is a simple check of the thesis that they may not act the same due to the different way of seeing the processes in finance. It should not be understood as proving that men or women are better at investing, but as an attempt to find if they act differently. Results obtained that they actually are, but not in a general way, but on a specific level which is less clear with the growth of self-awareness and knowledge. People that are more self-confident and have more knowledge [declared] have bigger chance of achieving success in our experiment. Despite that it should be noted that those factors are important, but not crucial for the result, what was shown in the results.

However, this analysis also shows that one should not underestimate the effects of random process, which is widely understood as luck. Results obtained from this study give ground for their future developments in order to confirm the authors' findings. It may be also determined whether they change over time as the exchange of generations that takes place.

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Economic Theories in Tax System

Abstract: The discussion presented in this article covers the general theory of taxation in the field of normative research in macroeconomic view of the tax system. The aim of this article is a subjective overview of theories related to tax system, according to the adopted assumption that without understanding the mechanism of tax and accompanying economic conditions included in the historical tax thoughts it is not possible to appropriately form new concepts in relation to their long-term consequences.

Key words: tax, tax justice, liberalism, keynesianism, monetarism

Introduction

The postulate that the economic theories would also acknowledge the long-term effects for the state and economy by predicting the potential consequences for the whole society instead of a certain group of the taxpayers is not new [Hazlit 2008, p. 5]. In economics every action entails a number of consequences, some of which have immediate effects, some are difficult to predict [Bastiat 2001, p. 1]. As G. Myrdal [1973, pp. 1–2] noticed the significant part of occurring, apparently progressive economic theories were in fact the next insignificant models, in particular in neo-classical eco-

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nomics dominating in the 70s of the 20th century. Barro and Sala-i-Martin spoke in a similar tone [1995, pp. 12–13].

In the contemporary theories of the economic tax thought the dominant trends are neo-classical and neo-Keynesian ones, which form the paradigm of economy [Bartkowiak 2010, p. 12], but the complexity of the processes increases the importance of such theories as: institutional historical and geographical approach.

The aim of this article is a subjective overview of theories related to tax system, according to the adopted assumption that without understanding the mechanism of tax and accompanying economic conditions included in the historical tax thoughts it is not possible to appropriately form new concepts in relation to their long-term consequences. The postulate of necessity of maintaining continuity in the tax sciences allows a proper valuation and verification of the proposed directions of changes in the tax system. The selected economic trends presented in this article concentrate around the question always asked by the economy regarding the tax system about which criteria should be acknowledged in systemic formation of tax burdens.

In economic theories, tax conditions the effective acquisition of budget income (fiscal goal). It is often also a tool of the interplay of taxpayer and state relationship forming the economic and social policy (non-fiscal goals). Taxes became the legal and economic category of minor division [OECD 1996, p. 3], system of theoretically infinite number of elements and relations occurring among them, which hasn't been finally defined [Kostka 2015, p. 624]. The challenge for the economic theories is not only the appropriate tax assessment. The economic aspect of taxes requires a detailed analysis of relationships with other economic (e.g. price, cost, remuneration, employment, national income) and social categories. This multi-directional trend in the taxation theories and practical system solutions can, and sometimes even needs to, be organised in some categories, like tax justice or economic tax assessment.

Economics of fair distribution of the tax burden

Economic criteria of fair distribution of burden in tax systems still are important and actual element of tax theories. In the classic theories, the justice covered rules of: uniformity and universality of taxation (A. Smith), Edinburgh (D. Ricardo), universality of taxation and tax progression (A. Wagner), equality of sustained sacrifice (J.S. Mill), marginal utility of the taxpayer's income (F.Y. Edgeworth). A. Smiths' uniformity and universality of taxation referred to a then breakthrough postulate of paying capacity [Kosikowski 2013, p. 186], i.e. everyone is subject to identical tax obligation excluding only income ensuring the minimum existence [Balza 2013]. The rule of Edinburgh po-

stulated rationality of the whole tax system, becoming a premise for taxation of each taxpayer without touching their sources of income [Gomułowicz, Małecki 2013, pp. 65–66]. Wagner's universality of taxation and tax progression with proportional tax height [Dolata 2013, p. 32] to eliminate excessive wealth diversification in social groups (the idea of social participation) questioned the historically postulated conception of neutrality of tax policy. The taxes were to include everyone who have the object of taxation, guaranteeing the state a high enough revenue and equal treatment of taxpayers by the law in force. The principle of equal treatment (equality of sacrifice) and of the marginal utility of income were concentrated around the height of tax burdens, so that with the same marginal utility of each taxpayer's income, regardless of their wealth level, the taxes would be imposed mainly on the people whose benefits lost after taxation would be lower than those of indigent people [Zagóra-Jonszta 2016, p. 418].

In contemporary theories it is assumed that the justice of the tax system is based on its diversity and individuality with acknowledgement of numerous factors affecting taxation [Wolański 2009, p. 52]. Significance of tax height, source of income, proper distribution of tax burdens and the way of taxation grow. Contemporary principle of justice shaped the division to vertical and horizontal justice (A. Atkinson, J. Stiglitz, R. Plotnick). Horizontal justice is based on moderate, proportional burdening of all taxpayers (tax system neutrality postulate). Vertical justice assumes that the better situated taxpayers should pay higher taxes. However, it is still necessary to define the criterion of better situated taxpayer and criterion of tax height. In the welfare economics the optimal tax system fairly reconciles the economic interests of the state and the taxpayer, so that with understanding of the Pareto efficiency [Stiglitz 2000, p. 57, 552], there was only one model of the tax system where tax preferences for anyone would not affect the deterioration of conditions for other taxpayers. Economics of sustainable development advocates justice within generations [Solarz 2008, p. 211], with an extensive scale of progressive taxation and the highest taxes for the wealthiest [Cieślukowski 2016, p. 88] while reducing the principle of horizontal justice.

Economic assessment of tax system

The formed canon of tax justice is based on two basic pillars, which are state's and taxpayer's economic safety and equal tax burden for everyone [Nita 2013, p.16], which justifies the analysis of economic theories of taxation in terms of economic tax asses-

sment and its long-term social and economic effects. The table below presents the most important conclusions.

Table 1. Economic tax assessments and long-term social and economic effects in selected economic trends

NEUTRALITY OF TAX SYSTEM TO ECONOMY – SELECTED TRENDS			
Selected economics trends	Selected authors	Economic tax assessment	Long-term effects
Classic trend	A. Smith (2007) D. Ricardo (2006) J.S. Mill (2006)	• neutral relation of tax system to economy • taxes don't restricts economic growth and allow accumulation of savings • in the system based on intermediate taxes the taxation burden is borne by everyone	• neutrality of tax policy perpetuates social and economic inequality • „the invisible hand of the market” and individualised needs of getting rich marginalise the regulatory role of the tax system • the influence of the real growth of income and neutrality of tax system on economic crises.
Neo-classical trend	A. Marshall (1997) F.P. Ramsey (1927) A.C. Pigou (2013) F.A. Hayek (1990) E.D. Domar (1944) R. Barro (1995) N. Kaldor (1964) J. Slemrod (2014)	• progressive tax system • incomes from tax sources should fully finance all regular cyclic (annual) budget expenses • higher taxes will not be a negative impulse to look for more efficient production methods • lowering taxes stimulates the growth of investment in the short term, does not influence growth over a longer period	• state fiscal policy becomes less predictable due to dynamics of changes in the economy and the attempts to restrict the growing inflation and recession periods in the economy with the use of taxes
New classical economy	J. Muth (1961) R. Lucas (1987) T. Sargent (1975) N. Wallace, (1975) J. Buchanan (2014)	• minimum tax assessment so that the tax payers would not look for solutions enabling its lowering • taxes have to contribute to the best economic results in the given period	• high inflation negatively affects the taxpayers' economic behaviours • taxpayers learn from their experience and adequately adjust their reactions and behaviours, which may determine the ineffectiveness of economic policy • governance in terms of office determines realisation of short-term tax goals
Fiscal conservatism - Monetarism	M.Friedman (1962 1967) G.Stigler (1971) J.Williamson (2004)	• low taxes become impulse activating the taxpayers to business • idea of lowering the highest tax rates and numerous incentives	• attempts to minimise the role of tax policy • not acknowledging taxes as effective instruments of economic and social policies.

TAX SYSTEM IN SELECTED TRENDS OF FISCAL INTERVENTIONISM			
Selected economics trends	Selected authors	Economic tax assessment	Long-term effects
Marxist economics	K. Marks (2014) F. Engels (2014)	• taxes are the tool of class struggle and instrument of fiscalism • excessive fiscal burdens through tax progression are to blur the class differences and bring the rule of proletariat.	• taxes become one of the important parts of administrative influence of the state in the economic and social aspect • high tax rates restrict economic growth and taxpayers' right of ownership • taxes become the tool establishing the acceptance to the socialist system by the poorest taxpayers.
National school and German school	A.Wagner (1877) A. Schäffle (2007)	• tax burdens justify fulfilling the needs of the society (idea of welfare state), • tax universality and fair progressive tax eliminate excessive wealth differentiation, • questioning of the idea of tax policy neutrality.	• taxpayers resistance against high taxes was not predicted • big influence on tax systems of the states financing the interventionist policy assumptions with taxes.
Keynes and Neo-Keynes trend	J.M. Keynes (2014) R. Hicks (1937) P.A. Samuelson (1954) F. Modigliani (1963) J. Tobin (1970) A.H. Hansen (1949) J. Stiglitz (2004, 2014) A. Atkinson (1976), A. Lerner (1944) J.A. Schumpeter (1992)	• taxes are the state's most important intervention tool in the situation of economic crisis • macroeconomic stabilisers of economic conditions	• tax system restricts the market mechanism of economics development and facilitates increase in state interference in economic processes, which can result in high inflation and unemployment level • reverse income effect • effective tools to actively co- interact high inflation were not developed • excessive fiscalism and bureaucracy whose costs are one of the reasons of increase of tax burdens
TAX SYSTEM IN SELECTED TRENDS OF FISCAL INTERVENTIONISM			
Selected economics trends	Selected authors	Economic tax assessment	Long-term effects
Sustainable development trend	H. Rogall (2010) M.S. Andersen (2007) B. Morley (2014) S. Abdullah (2014)	• taxes are a sustainable instrument of social and economic policy and natural environment protection • progressive taxation with developed scale (the highest taxes are paid by the richest) is proper • ecologisation of taxes	• there is no sustainable tax system sensu largo, changes of individual tax solutions are postulated, thus it is difficult to predict negative long-term effects

Source: own.

Dependency of taxation sources from the structure of the economic system is determined by the fact that they are not permanent, but more or less flexible. It impedes definition of universal level of income burden [Bas 2013, p. 339; Mirrlees, 1971, p. 207] in economically fair relation between state and taxpayer. In liberal doctrine the taxes were a neutral tool not interfering with the formation of real economic entities. A. Smith's initial values become the conception of the universal and proportional income burden (principle of equality). Legally regulated term and height of tax receivables (principle of certainty), the most comfortable way and place of their payment (principle of convenience) and minimisation of the cost of collecting the tax both for the taxpayer and the state (the principle of tax cheapness). A. Wagner's principle of economy of taxation with its roots in the interventionist doctrine protected the integrity of the sources of taxation (assets, capital), allowed taxpayers to enlarge their income (tax does not restrict economic freedom), so that the system changes allowed to avoid the risk of destabilisation of tax revenue in the absence of a long-term perspective [Sosnowski 2012, p. 63]. Along the development of economic theories, taxes became a significant instrument of economic and social policy used by the state to interfere with the economy [Gail 1992, pp. 57–58; Etel 2010, p. 95] with a clearly defined division of the tax system participants (technical functions) into taxpayers and fiscal apparatus who was assigned the role of the guarantor of the tax revenue to the budget [Gomułowicz, Małecki 2013, p.64]. By developing it with economic, social and political aspects, F. Neumark proposed the continuation of the historically settled principles. He divided the four tax principles into four basic groups: fiscal and budget, ethical and social, economic, and the rules of tax technique, so that the tax was imposed according to the principle of universality, uniformity and the principle of redistribution of revenue and wealth.

Economic assessment of contemporary tax system

The most basic division of modern tax theories is still based on the doctrine of J.M. Keynes' interventionism and neoclassical doctrine opposed to it. Keynes' model was a response to the economic crisis of the thirties of the 20th century, which on such a large scale confirmed empirically the cyclical nature of economic processes, undermined the effectiveness of the market mechanisms, and thus the classical theory of the neutrality of the state towards the economy. Assuming that an increase in taxes in the period of economic growth reduces the excessive purchasing power of taxpayers

and limits the increase in prices, and a reduction in tax rates in the recession stabilises the economy, Keynes proposed a return to the idea of state intervention and Wagner's right of permanent increase in public spending [Pietrzak, Polański, Woźniak 2008, p. 447]. During the domination of interventionism taxes took the role of situation stabilisers, inhibited consumption during the economic boom, and stimulated the economic activity of taxpayers during the slowdown [Ziółkowska 2005, s.33]. Practical application of the model brought the expected results in a short time [Page, Smetters 2016, p. 4]. However, it hasn't been acknowledged that lowering the tax rates with simultaneous activity of the state's redistribution policy also creates income effect with reducing taxpayers' activity [Gale, Samwick 2014, p. 11]. The result, which became apparent in a much later period, was a return to the high tax rates in low economic growth and high inflation and unemployment. Successors of Keynes, A.H. Hansen, J. Hicks, P. Samuelson, were not able to effectively counteract such an effect [Bohle, Greskovits 2015, p. 3]. A. Hansen proposed deceleration of inflation through introduction of consumption taxes as a source of financing public spending. During the recession the tax revenues were to be limited due to declining tax revenues, to next increase as a result of improving the economic situation of the taxpayers and, thereby, to reduce the public debt, which the state had to increase in the recession period for the necessary budgetary expenditure [Owsiak 2005, pp. 55–56].

A.Wagner's right of permanent increase in public spending used in the Keynesian model, became the greatest challenge to neoclassical economics, stating that the state's demand for the tax revenue is proportional to the degree of economic and social development, increase in social demand for goods, which cannot be secured through the market mechanism [Włodarczyk 2011, p.13]. In practice the long-term consequence of the increase in public spending has become a phenomenon of escaping the tax, whose effects in the longer term is W. Gerloff's law of increasing resistance to taxes [Owsiak 2005, p. 73]. J.A. Schumpeter's theory of crisis of the tax state [Backhaus 2012, pp. 74–76] points to the equally important long-term impact of the growth of expenditure from the state's budget - the increase of the tax burden and administrative costs of their service.

In the wake of the inflation crisis in the seventies of the 20th century there was a period of domination of monetarist theory. M. Friedman began profound structural changes in the economies of developed countries, criticising interventionism for reducing the development of market mechanisms in a situation of rising inflation and growing public debt [Appel, Orenstein 2016, pp. 327]. Monetarists withdrew from influen-

cing the economy with fiscal instruments, which resulted in the return to the concept of the lowest taxes and cheap state [Harvey 2005, p. 54]. The doctrine was closely associated with the so-called Washington consensus [Williamson 2004, p. 5], according to which the reform of the tax system requires broadening the tax base and cutting the marginal tax rates, thus fulfilling the primary objective, which is to strengthen the incentives and improve horizontal equity without lowering the realised progressivity. Improved tax administration, responsible economic policy have become a widely accepted postulate. The theory of rational expectations (J. Muth, R. Lucas, T. Sargent) and public choice theory (J. Buchanan), being the foundations of the new classical economy, are also based on a critique of interventionism. According to R. Lucas' theory the taxpayers adjust their behaviour based on predictions about the course of economic processes and activities of the government. Public choice theory, along the so-called. J. Buchanan's Leviathan hypothesis, postulates combining political science and economics, taking into account the fact that politicians take actions bringing the best economic performance in a given time due to exercised office tenure.

Severe criticism of neo-liberal doctrines and Keynesianism, which is the effect of the global financial crisis of 2008, gives grounds for the dynamic development of new economic trends, among which particular attention in terms of taxation draws the economics of sustainable development with the postulated paradigm of sustainable economic, socio-cultural and environmental order (ecological tax reform) [Doyle, Stiglitz 2014, p.8; Cieślukowski 2016, p. 84]. However, it does not present a complex tax system taxation theory, which makes it difficult to define potential long-term consequences of realisation of the postulated tax changes. The conception of the balanced tax is to guarantee the tool to achieve sustainable development with simultaneous realisation of economic, sociocultural, ecological and administrative goals for effective environmental protection without significantly affecting the size of budget revenues, but only on their structure.

Final remarks

A. Wagner's principle of economy of taxation and A. Smith's principle of justice are still the most frequently postulated principles in the contemporary tax theories. In each of the theories concentrating on the tax system a very important part is the issue of guaranteeing the fair taxation of their income to the taxpayers. Tax system stability

gives the taxpayers a sense of security they lose in the conditions of dynamic economic changes. Tax theories try to capture and analyse the tax system construction process in cyclically changing economic conditions. The aim is to adjust to the current social and economic situation of the state and international situation, while the historical tax thought indicates that in terms of economy of tax system the attempt to predict long-term consequences is equally important. The presented subjective survey of economic theories indicates that the most frequently used practice in tax system construction is the introduction of solutions for short-term needs of the state with limited long-term perspective taking into account periodicity of economy. Coherence of the postulated tax theories in terms of short- and long-term influence on economy should then be discussed in more narrow (tribute revenue) as well as wider terms by analysing their influence on socio-economic processes in the economy, taking into account the consequences of the fiscal burdens of a system character.

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Impact of Restructuring Act of 2005 to the Healthcare in Poland

Abstract: One of the most important pillars of social and economic life is health and its proper protection and the weight of organizing the healthcare system lies with the state authorities.

Polish health care system over the years underwent transformation which was the result of intervention by governing authorities in order to resolve the current problems.

Dynamically implemented changes in the functioning of health care negatively affected the entities participating in the system, which manifests in annual increase of total liabilities.

The aim of the following article is to verify the effect of the first statutory attempt to optimize the debt of hospitals in Poland in the light of valid method of financing medical services, which is based on a system of insurance against the performance of their tasks.

For this purpose, liabilities due and the total liabilities of the entire health sector were compared against the average length of stay in hospital and health spending in Poland.

Key words: health care system restructuration, financing medical services, health care system optimization

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Introduction

According to the art. 68 paragraph. 2 of the Polish Constitution, „citizens, irrespective of their material situation, should be provided by public authorities with equal access to health care services financed from public funds” [Journal of Laws of 1997, no.78, item 483].

Within the system changes that took place in Poland after 1991, it was necessary to adapt the health system to a free market economy and to meet the growing needs of society [Nęcki and Kęsy ed. 2013, 23]. Outside the successive changes the rules of financing medical services legislation had to come up with up-to-date interventions aimed at improving the functioning of the whole system. Since the establishment of the National Health Fund, i.e. since 2004 [Journal of Laws from 2016, item. 1793, with subsequent amendments], as the entity governing the functioning of the health care system three interventions have occurred:

1. Act of 15th April 2005, on public aid and restructuring of public health care (Journal of Laws, No. 78, item 684, with subsequent amendments), the so-called “Restructuring Act”;
2. Resolution of the Council of Ministers No. 58/2009 on the establishment of a multi-annual program called „Support of local government units in activities to stabilize the health care system”, so-called Plan B;
3. The Act of 15th April 2011 on medical activity (Journal of Laws from 2016, item 1638 with subsequent amendments) the so-called Commercialization.

The ultimate aim of all three interventions was the inhibition of the growing debt of the health care sector, which would further improve the quality of services offered.

Taking into consideration changes which should be implemented in 2017 concerning functioning of health care system in Poland linked to the restructuring of health care entities, the authors analysed the first attempt to restructure entities according to the Act of 15th April 2005 on public aid and restructuring of public health care [Journal of Laws, No. 78, item 684, with subsequent amendments].

This article is designed to verify the impact of financial solutions used between 2004–2008 on the debt of public medical entities in Poland in relation to the tasks executed by them. The conclusions from the past are essential according to future health care system restructuring planned in 2017.

Authors of the study decided to advance following hypothesis: The solutions applied in years 2004–2008 in order to improve the financial situation of medical en-

tities fulfilled their role in a short period of time, but failed to meet expectations to reduce debt of these entities in the long term.

The health care system in Poland

Polish health care system since the enactment of the Bill of 27th August 2004 on health care services financed from public funds [Journal of Laws from 2016, item 1638 with subsequent amendments] primarily has based on the model of insurance [Hady, Leśniowska 2011, p. 100]. Financing methods beyond the insurance model but directly from the state budget, through the Ministry of Health or Local Government Units are, for example, prophylactic programs, fighting against drug addiction or overcoming AIDS. NHF [Journal of Laws from 2016, item. 1793, with subsequent amendments] is responsible for managing funds collected from premiums of insured citizens. Amount of obligatory loads stemming from premiums is 9%, whereof 7,75% is deducted from income tax and 1,25% is covered by insured person. [Mikołajczyk ed. 2012, p. 59].

In order to satisfy local needs National Health Fund signs contracts with health care distributors after carrying out proceedings like competition for best offer or negotiations. Systematization of the agreements is the creation of a one-year National Plan for Security Health Services or the multi-annual program – The National Health Plan – which includes the priorities of health policy [Niżnik 2004, p. 182]. Within the framework of the health care system in Poland provided in Act of 15th April 2011 on medical activity (Journal of Laws from 2016, item 1638 with subsequent amendments) in article 4, paragraph 1, medical entities that can perform health care services are defined. Above mentioned Act does not dictate the form of ownership of the entity –public, budgetary or private - but regulates the rules for the implementation of their tasks. It is required that all of medical entities are registered in the Register of Entities Performing Therapeutic Activities, where 1 279 entities are recorded, out of which 1 068 have a contract with National Health Fund for hospital services, on the other hand according to Centre of Health Information System there are 934 entities providing hospital services – the figures from 31st of December 2015.

The following tabulation provides basic information on the attitude of the non-state actors [Mądrala 2014, p. 16].

Table 1. Comparison of public and private entities in 2014

Specification	Public entities	Non-public entities
The number of operating entities holding a contract with the NHF	467	601
Value of the contract with NHF (mIn PLN)	23 360,37	5 167, 3
The share of the contract with the NHF earmarked for hospital treatment	81,89%	18,11%
Number of hospital beds	183 040	18 507

Source: own study based on: http://www.szpitale.org/kongres2014/file/prezentacje/A.Madrala_szpitale%20prywatne.pdf (24.01.2016), CoHIS.

Despite the smaller number of entities operating in the public form – Independent Public Healthcare – they are responsible for 81,89% of the realized benefits within hospital treatment. Significant disproportion stems from shaping health policy in Poland which recently allowed to function in public medical health care entities both private or commercial owned by local government [Golinowska ed. 2012 p. 113]. As an evidence of marginal scale of operations of non-public medical entities can be used number of hospital beds owned by these entities, that make up only 9,18% of entire number of hospital beds in Poland [Golinowska ed. 2012, p. 113)].

The first statutory attempt to reduce the debt of medical entities in Poland

As a result of the dynamic changes carried out in health sector, in order to develop the optimum way of its functioning, there have been side effects manifested by a significant increase in debt of Independent Public Healthcare which ended in lawsuits and debt collection obligations.

There were many reasons behind worsening the situation of Independent Public Healthcare entities, most important presented below [Ministry of Health, pp. 38–43]:

1. The need for the provision of services irrespective of the value of concluded contracts which means that entity has no right to decline medical service even if it overgrows budget.
2. Act of 22nd December 2000 amending the Act on the negotiating system for the growth of average wages in enterprises and amending certain laws and the Law on Health Care (Journal of Law no. 5 item 45), colloquially known as „Act 203” pro-

viding workers of healthcare entities rise in the amount of 203 PLN without indicating the source of their funding [Kachniarz 2008, pp. 17–21].

3. Lack of proper supervision of founding bodies as well as the lack of effective accountability of centers and the founding bodies for the creation of liabilities;
4. Development of debt trading in the secondary market which involves additional costs of debt service;
5. Lack of consistency in financing, i.e. diversified contracting system in health-insurance fund, discrepancy between funds in evaluating the same medical benefits and after NHF came into existence evaluation of individual procedures below the actual costs of implementation.
6. Changes in VAT rates - which have not been correlated with an increase in revenues;
7. Legal restrictions of local government units in providing financial assistance for plants – art. 55 of the Act on health care of 30th August 1991 [Journal of Laws of 2007, no. 14, item 89, with subsequent amendments] enumerated objectives when health care entity may receive grants from the founding bodies, among which there is no possibility of providing grants for current activity;
8. Public payer monopoly – insurance companies, and the National Health Fund – and adopted structure of the system meant that the contract with the public payer has become a major source of revenue for hospitals [Rój and Sobiech 2006, pp. 164–165].

The problem of rapidly growing debt was serious enough to create a real threat to the continuity of the performance of health care services guaranteed to citizens by the Constitution of the Republic of Poland [Journal of Laws of 1997, no.78, item 483], thus work on creating a system solution aimed at optimizing debt of medical entities begun [Leszczyńska-Konczanin 2016, p. 236]. This established mechanisms for standardized restructuring included in Act of 15th April 2005 – On public aid and restructuring of public health care [Journal of Laws, no. 78, item 684 with subsequent amendments].

The only entities covered by restructuring were public healthcare and R&D units – currently known as Research Institutes, performing the tasks described in Article 1, paragraph 2, item 1 of the Law on Healthcare Institutions [Journal of Law of 2007, no. 14, item 89, with subsequent amendments].

According to Art. 4 [Journal of Laws no. 78, item 684, with subsequent amendments] financial restructuring could only be covered by the commitments known on 31.12.2004, resulting from:

1. the public liabilities;
2. civil liabilities;
3. individual claims of workers resulting from art. 4a of the Act of 16th December 1994 – On the negotiating system of growth of average wages in enterprises and amending certain acts [Journal of Laws of 1995 no. 1, item 2, with subsequent amendments].

Once the decision regarding conditions of restructuring was made by government authority, entities had 24 months to implement corrective action.

Reorganization could use financial mechanisms from:

1. Loan from Treasury through NEB ;
 2. The bond issue, which the organization and the service was entrusted to NEB;
- After receiving a favorable opinion of public administration, entity was entitled to redeem the public liabilities arising from:
- a. Taxes coming in the state budget and from custom duties;
 - b. social security contributions financed by the taxpayer and the Labour Fund (excluding pension contributions);
 - c. State Fund for Rehabilitation of Disabled Persons;
 - d. due to charges for the economic use of the environment and administrative costs associated with these charges;
 - e. perpetual usufruct to the State Treasury;
 - f. interest expense, prolongation fees, surcharges, costs of reminders and enforcement of arrears referred to in points a-e.

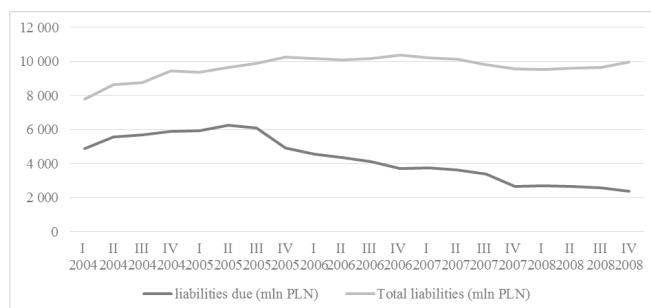
The Act also provided with the acquisition of grants to support activities involving: optimization of employment, changes in the structure of employment or other activities aimed at improving the economic situation and quality of health services for the entities without default in payment of liabilities known as of 31.12.2004, and is not subject to financial restructuring.

The expected result was to reduce the debt of the public health system. The following table presents the quarterly due liabilities and total liabilities of health sector, together with the dynamics of growth in the years from 2004 to 2008, i.e. the period before the introduction of the Act and the period directly influenced, and the chart below shows graphically the total liabilities in the reporting period.

Table 2. Commitments and total liabilities of health sector with dynamic growth on a quarterly basis – years 2004–2008

Date	Commitments (In mln PLN)	Growth dynamics	Total liabilities (mln PLN)	Growth dynamics
I 2004	4 896,8	-	7 791,6	-
II 2004	5 555,1	13,44%	8 624,5	10,69%
III 2004	5 684,5	2,33%	8 749,0	1,44%
IV 2004	5 872,3	3,30%	9 450,1	8,01%
I 2005	5 917,2	0,76%	9 348,4	-1,08%
II 2005	6 239,6	5,45%	9 646,2	3,19%
III 2005	6 086,7	-2,45%	9 908,2	2,72%
IV 2005	4 933,6	-18,94%	10 273,6	3,69%
I 2006	4 571,6	-7,34%	10 164,6	-1,06%
II 2006	4 344,7	-4,96%	10 093,4	-0,70%
III 2006	4 115,0	-5,29%	10 195,7	1,01%
IV 2006	3 723,8	-9,51%	10 384,2	1,85%
I 2007	3 728,6	0,13%	10 233,6	-1,45%
II 2007	3 621,0	-2,89%	10 139,6	-0,92%
III 2007	3 370,7	-6,91%	9 808,8	-3,26%
IV 2007	2 666,2	-20,90%	9 563,3	-2,50%
I 2008	2 683,5	0,65%	9 527,0	-0,38%
II 2008	2 636,8	-1,74%	9 627,9	1,06%
III 2008	2 559,7	-2,92%	9 653,3	0,26%
IV 2008	2 357,9	-7,88%	9 979,7	3,38%

Source: own study based on: <http://www.mz.gov.pl/system-ochrony-zdrowia/organizacja-ochrony-zdrowia/zadluzenie-spoz> (30.01.2017).

Figure 1. Graphical presentation of payables and total liabilities of the health sector in the years 2004 to 2008 on a quarterly basis

Source: own study based on: <http://www.mz.gov.pl/system-ochrony-zdrowia/organizacja-ochrony-zdrowia/zadluzenie-spoz> (30.01.2017).

Since the introduction of mechanisms for restructuring, significant optimization of payables was noticeable which was caused by the conversion of liabilities due to obligations falling due. Analyzing total liabilities reduction was practically unnoticeable, moreover upward trend was observed.

There were a few reasons for this situation. As the main one restructuring measures should be mentioned which largely relied on debt financial instruments -loans and bonds - while the scale of write-offs of public law liabilities was not so significant . It should be noted that in parallel there was not established any system to improve the operation of the entire health care system. Attempts for financial restructuring were considered only as temporary actions [Sieńko 2006, p. 116]. Of course, these actions have given a positive effect, even in the form of optimization of obligations due to cheaper-to-use falling due obligations which only cost is the mobilized interest rate on the financial resources.

Analysis of medical entities debt with efficiency of the operation as the background

The activities of medical entities should not be assessed solely at the background of their debt but also through additional qualitative criteria which define the efficiency of their operations.

Through the general meaning of efficiency we should understand a basic measure of the state analysis, way of functioning and possible development opportunities of different organizations [Rutkowska 2013, p. 439]. However, with regard to the principles of sound management, efficiency can be defined from two perspectives: productivity – maximise effect – and savings – minimizing effort [Matwiejczuk 2000, p. 27].

From the perspective of the health sector it could be assumed that efficiency should be expressed in the „production of health,” and this production can be expressed in the number of treated patients e.g. the minimized costs of this production expressed in shorter hospital stays.

The following breakdown includes data on the number of hospitalized patients, and the average length of stay in hospital of the patient in days in the period 2004 to 2008.

Table 3. Information on the number of hospitalized patients and the average length of stay of the patient in the years 2004 to 2008

Specification	2004	2005	2006	2007	2008
Number of patients	7 000 983	6 948 873	7 167 958	7 142 647	7 957 250
Average stay in hospital	6,90	6,70	6,40	6,20	5,90

Source: own study based on: Biuletyn Statystyczny Ministerstwa Zdrowia <https://www.csioz.gov.pl/statystyka/biuletyn-statystyczny/> (03.02.2017).

From the above data two important features of the development of the efficiency of the Polish healthcare system can be concluded:

1. „Production” increases which is evident by the increase in the number of patients treated (maximization effect);

2. The decline in the average length of hospital stay of the patient, which shows the minimization of effort, i.e. the payer, the health insurance or NHF finances medical benefits, not the time that has been devoted to their implementation, therefore the shorter the period of stay of the patient the higher the efficiency.

It should be assumed that the health sector in Poland in the described period tends to function effectively which means that it leads to maximize production while optimizing the investment.

Maximising the profits, that is a number of hospitalized patients, is not directly affected by therapeutic entities. These variables may be shaped by increased morbidity, healthcare awareness and necessity of preventive examinations. It is worth mentioning that in some way payer limits the growth of the number of hospitalized patients, since they limit contracts for medical services to the specified value. All services performed beyond the contracted limits are treated as exceeding target figures and remain contentious issue, in most cases the decision on financing such benefits are settled by court because payer prefers to avoid financing them, even though – according to Constitution – therapeutic entities are obliged to provide their service to every citizen.

At this stage of the research of the impact of Restructuring Act of 2005 on Healthcare Sector, it is already known that the sum of liabilities of the entire sector was growing every year with gradual increase of the number of hospitalized patients and decrease of the average length of patient's stay in hospital. In addition, attention should be drawn to the percentage of GDP allocated to the financing of medical services.

The following table presents data aggregated by the OECD regarding expenditure on the health sector in Poland, expressed as a percentage of GDP in the years 2004 to 2008.

Table 4. Information regarding expenditure on health in years 2004 to 2008

Specification	2004	2005	2006	2007	2008
Expenditure on health (% GDP)	6,20	6,21	6,20	6,43	7,01

Source: own study based on: OECD (2007), OECD Health Data 2009 r., Paris

With each passing year Poland is dedicating a larger percentage of generated GDP to finance the health sector.

To sum up: In the analyzed period sum of the liabilities of medical entities increased while the average stay of the patient in the number of days was reduced, moreover an increase in the percentage of GDP allocated to the financing of the health sector is observed.

Conclusion

Hopes put in Restructuring Act have not been met, it was expected that system solution developed over many months would improve Polish healthcare in one day, but truly it was just a form of converting existing debts [Sieńko 2006, p. 116]. Of course, the transformation of due short-term debt to long-term debt having preferential conditions offered by the State Treasury through NEB is a positive development, since it influences the optimization of the debt servicing costs – lower financial costs and avoiding possible costs of enforcement proceedings.

Cited efficiency is in this case determined by the average length of hospital stay – expressed in days – is characterized by optimizing the quantity value. The situation is similar in the case of financing the health care sector – its value is higher, comparing to the previous year.

The aim placed at the outset – verification of the impact of system solutions, which was affecting the health sector in years 2004–2008, premising the debt optimization, confirms the established hypothesis: Financial solutions used in period between 2004 and 2008, in order to improve financial situation of medical entities, fulfilled their role in a short period of time but failed to meet expectations to reduce debts in a long term.

It should be noted that the analysis has not taken into account immeasurable factor which is the annual increase of self awareness caused by greater influence of the mass media manifested in, for example, promoting healthy lifestyle or increasingly lar-

ger financial outlays for prevention – that is better than eliminating the effects of the disease, like introduced in 2008 governmental program „My Sports Field – Orlik 2012” [www.orlik2012.pl] indirectly intended to affect the physical activity of children and young people which in the future will result in a lower morbidity.

As indicated in the introduction since 2004 there have been three significant interventions of the central authorities in order to optimize the health sector debt. As part of future research the impact of these solutions should be verified.

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Innovative Forms of Investments and Modern Concepts of Management of Resources in the Real Estate Market

Abstract: The paper presents innovative forms of investment and modern concepts used in management of resources in the real estate market. The presentation showed how powerful instruments can be used by managers in the real estate market, with particular focus on modern networks of the entities connected with this risk including agents, appraisers and real estate managers. The emphasis was also on innovations in the financial services market and contemporary concepts of innovation management. The study supported the hypothesis that innovative forms of investment in the real estate market and effective procedures of modern management concepts represent key factors in both European and world economic development.

Key words: innovations, investing, contemporary concepts of management

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Introduction

The economic history of Poland has been marked by incessant economic growth observed since the beginning of transformation. The perspective of the membership in the European Union inspired building new institutional and legal governance. The ineffectively planned economy was transformed into the competitive market economy integrated with the West Europe. Poland's accession to the European Union in 2004 confirmed the success of Polish transformation and highlighted new objectives: to catch up with the most advanced European economies.

Poland is a country with huge developmental potential, which can be used by overcoming growth barriers or by limiting the risk and costs of business activities. The key importance in the process of further economic transformation is from diagnosis of the weaknesses of the Polish economy [Ziółkowska, Sitek 2016, pp. 43–61]. Such activities will improve the chances for intensification of innovativeness as the basis factor in economic growth.

Modern Poland means innovative economy. With increasingly strong competition and quick pace of knowledge and technology ageing, business entities are forced to constantly search for new solutions and implement innovations.

The problems concerning real estate are very important in the reality of the market economy. The role of this good as a component of the national property, its market nature and specific characteristics as a commodity or the object of investments cause that real estate has a major place in each market economy.

With respect to the real estate market, the driving force for the European economy is its construction sector [Bunikowska 2010]. It should be emphasized that the construction sector has potentially the greatest effect on innovativeness in the real estate sector, which results from the method of design, construction and functioning of buildings (technological, process and product innovations) [Brzeziński 2001, Pys-trom 2012].

The goal of the study was to present new forms of investing in the real estate market with the focus on innovations in the financial services market and contemporary concepts of innovation management. The research problem was to verify the hypothesis that innovative forms of investment in the real estate market and effective procedures of modern management concepts represent key factors in economic growth (both European and world growth). The hypothesis will be analysed using the

example of observation of developed markets and the data from a Polish online platform [Róziecki 2016].

The paper is of review character and uses the available literature concerning innovations and results of empirical studies in this area conducted by research institutions. The paper also uses research methods in the form of descriptive methodology, data presentation and data analysis.

Short review of innovations in the real estate market

The financial crisis of 2008-2012 forced banks to tighten the criteria and procedures for granting loans to both entrepreneurs and consumers. With the lack of access to financing, the investment expenditures were reduced, salaries decreased, employment rate was declining, leading consequently to social unrest and shaking the political stability in many EU countries [Thompson 2012]. The post-crisis policies imposed by the European Central Bank have a noticeably negative effect on economic growth. Facing this challenge, the European Commission prepared a political solution for the idea of innovativeness and competitiveness, termed the Europe 2020 strategy and the Horizon 2020 flagship initiative to implement its assumption. The leading concept of the activity of the Council of the European Union is to build a stable and creative economy and to stimulate its innovativeness (knowledge triangle).

Therefore, the basic key factor in the economic growth (also for the real estate market) is innovativeness.

According to Brzeziński [2001] and Prystrom [2012], depending on the activity conducted by the business entities in the real estate market, the innovation groups can be characterized as:

- technological innovations, which include modern solutions used in the construction sector, including the design, project implementation and its exploitation.
- process and organizational innovations connected with implementation of technological innovations, any legal changes and their adjustment to the needs and requirements of the contemporary customers in the real estate market,
- marketing innovations as those concerning the strategy of sales and distribution of products and services in the real estate market. They include networking and new methods to present real estate offers,

- financial innovations that allow the entities in the real estate market to start investments through application of modern financial instruments based on the real estate market (derivatives, covered bonds, reverse mortgage, energy-efficient mortgage, bancassurance, and new insurance products, dedicated to specific entities in the real estate market).

The above presentation shows that innovations, with particular focus on technological innovations in the real estate market, are based on innovative solutions in the construction sector, which results from the methods used to design, construct and functioning of the buildings. Implementation of product and process innovations is accompanied by organizational innovation which is the effect of these changes [Baran, Ostrowska, Pander 2012]. Also changes in the legislature, both in the area of the requirements (sustainable building) and the use of modern mobile applications to present offers and transactions in the market have the character of process, organizational and marketing innovations.

Innovations in the real estate market also include legal and financial solutions which allow market participants to implement modern solutions for education and technology. These include EU and governmental programs to finance such solutions mainly in the housing sector, e.g. Operational Programme: Innovative Economy (2007-2013) , Programme of the National Fund for Environmental Protection and Water Management , Regional Operational Programs and Operational Programme: Development of Eastern Poland [O programie 2013].

The insurance solutions used in the real estate market are also innovative, including bancassurance or new insurance products dedicated to the entities acting in this market. The role of the escrow agent is also included in the group of innovations of organizational processes or financing mezzanine. Furthermore, the activities with marketing character, such as mobile applications used for presentation of the offers and implementation of transactions in the market used in the agencies should be approached as marketing innovations. Their objective is to fully satisfy the needs of the customers who seek real estate and development of new range of services and image of the enterprise to increase sales.

Financial innovations include the instruments available in the market that allow for investing in real estate. These include derivatives, covered bonds, reverse mortgage or energy efficient mortgage.

Real estate broking also uses innovative solutions [Musiał, Nitychoruk 2015] such as using drones or emergence of a profession of home-stager and new direction (not only in the real estate market): sharing economy.

The innovations include new types and forms of investing in the real estate market. These include first and foremost construction of buildings for rent.

New technologies are also emerging, concerning presentation of the videos on TV and screens (Virtual Reality), network infrastructures for spatial and network data of geoinformation services [Chojka 2012, pp. 35–36] and cloud processing - cluster processing [Komisja Europejska 2010, p. 19] and processing services [Ogórek 2010]. These technologies represent marketing innovations in real estate broking and are one of the most important tendencies in the development of the IT sector.

The experiences of more developed countries and the situation in the Polish market as well as the findings of direct studies concerning the perception of such services in Poland can be very useful in the definition of strategies of innovation managements in the institutions that offer the services. Furthermore, they emphasize their role as economic growth factors.

Presented as innovations implemented in the real estate market, they can become the catalysts of permanent changes which will allow for a more effective utilization of current resources and improve the competitiveness of entities, thus building a stable and creative economy and ensuring its fast growth.

Innovative forms of investing in the real estate market

One of the methods to maximize profits while minimizing risk, leading to the achievement of measurable benefits by the investor is flipping [Zakręć 2010, pp. 49–60].

In general, flipping means a bargain purchase of assets and its immediate re-sale at a profit. This tool is popular in the American real estate market, especially facing its current situation. Investors purchase the real estate at a bargain price (40 to 50% of the market value for similar real estate), especially because the real estate needs to be renovated or modernized or its legal status has to be cleared, e.g. mortgage clearing. After completion of the necessary legal formalities and works connected with modernization (around 2 to 3 months), the real estate is re-sold at a profit, but still below its market value. Flipping can be used to earn even up to 20-30% of the selling price. Obviously, the rate of return depends on the choice of concrete real estate and evaluation of the effectiveness of a specific investment. In this case, the value added, termed the economic profit, is based on the principle of obtaining the rate of return on the whole capital invested, with its value exceeding its cost.

Reverse mortgage is another innovative form of investing in the real estate market. This service is dedicated to the population with poor incomes but high capital. The innovation is mainly addressed to senior citizens. It consists in allowing individual customers to utilize their assets with substantial value and replacing them into the streams of payments that allow for improving their income situation [Styś, Łyszczak 2013, pp. 112–122].

According to Buszko [2011, p. 445], reverse mortgage is an instrument which has a potential to exist in the Polish market and represents the desired solution to implement within the service offered by financial institutions that operate in Poland due to the low efficiency of the pension system, an increasing number of single-person households and, due to the needs of financing health care and palliative care that are increasing as a person ages. This instrument may become an important source of alternative financing for senior citizens, especially those who live alone.

Product innovations in the form of reverse mortgage have been present in the developed market for many years. In the US market, reverse mortgage (RM) is understood to mean an innovative financial product for the group of people who are defined as house rich – cash poor, with their house approached as a form of „insurance” for the old age.

According to the National Reverse Mortgage Lenders Association (NRMLA), the organization whose members include bidders for the reverse mortgage in the United States, three types of customers who use RM services can be emphasized:

- people who need supplementation of the income after starting the retirement and seek the ways to obtain cash by deciding to release the capital from the real estate they have,
- seniors who want to insure against various events, both predictable and unpredictable. Necessary repairs at home, adjustment of the place of residence to the needs of tenants, regular purchasing of expensive drugs and paying for the health care can be supported by the resources obtained within the reverse mortgage.
- the third group is people who convert the real estate value into cash in order to consume it and follow their own dreams.

Furthermore, a survey conducted by Martill [2011, pp. 7-11] concerning the perception of the reverse mortgage by the people who use such instruments showed that 67% of the respondents assessed the reverse mortgage as higher than 8 to 10 points. Over half of the respondents (~52%) would recommend such services to friends.

In the EU countries, banks are responsible for over 40% of the overall sales of reverse mortgages in the area of the member countries. The most developed reverse mortgage market is the British market [Waterson 2016], with over 40 companies offering the services of reverse mortgages. The studies have demonstrated that this solution is mainly used to repay the standard mortgage started during the professional work and to finance the renovation of the real estate.

In Spain, reverse mortgage was unpopular due to the family tradition of caring for older people in exchange for inheriting the real estate [MISSOC 2007].

In Germany [Biuro...2013], reverse mortgage has also been used. This instrument has been implemented by merely several financial institutions.

The reverse mortgage market in Poland virtually does not exist. However, the survey on the opinions of the recipients of innovations in financial services with the example of the reverse mortgage indicated the innovativeness of this instrument. However, the services do not show opportunities for being popular. Therefore, this innovation in financial services should be created by entrepreneurs since they create markets by stimulating the demand and changes.

Apart from the instruments available in the market, financial innovations also include energy-efficient mortgage. Energy-efficient mortgage (EEM) is a loan that grants finance for equipping a house in solutions that enhance its energy efficiency, complementary with the banking loan for the purchase/building of the real estate secured with mortgage. Energy-efficient mortgage represents an example of product innovation in terms of financing of real estate and environmental protection [Green Mortgages 2014].

Other financial innovations include new types and forms of investments, with particular focus on construction of various buildings for rent.

In Poland, a new phenomenon in the market of investment innovations is development of the market of condo hotels and apart-hotels. Condo-hotels operate in the same way as conventional hotels, with the only difference being that the owners of the rooms are individuals. They rent the rooms to hotel operators who are responsible for the whole organization and marketing. The room owners obtain in advance the rent or profits depending on the income generated by the hotel.

Furthermore, the apart-hotels offer apartments (with kitchens), which typically perform the role of the holiday homes. It is investor who decides whether and in which dates the apartment should be rent to other people. The profit on this investment depends on many factors. Obviously, the location, purchasing price, standard

and the managing entity are of key importance. The predicted profits on rent are around 6 to 10% annually, as estimated by the president of Gerda Broker consulting company, Łukasz Lefanowicz. – for the owner of the studio-type apartment, this means the annual profit of 25 000 to 27 000 zlotys a year. Two-room apartment should generate around 30 000 to 35 000 zlotys a year - adds Marlena Kosiura, expert in the web portal InwestycjewKurortach.pl This means that more and more companies offer purchasing the rooms or apartments in hotels termed condo hotels or aparthotels since low percentage rates discourage people from keeping money in conventional bank saving accounts.

With new solutions and technologies, innovations in real estate broking also allow for a professional presentation of the sold real estate. The real estate brokers seek more and more modern solutions and tools to offer professional services to their customers. These include the virtual walk in the offered real estate, using a new profession of home-stager who prepares the flat for sale in order to attract interest of the biggest group of customers. The assumption of home staging is to ensure the attractive look of the flat at the lowest possible costs.

The professional investors have more and more ideas concerning the investment companies and crowdfunding. Crowdfunding means a practice of financing a project or initiative by adding a great number of small amounts of money from a substantial number of people, typically using the Internet. There are two types of investments in real estate through the mechanism of crowdfunding:

- dividend-based projects, with the investor earning a fixed annual dividend guaranteed by the company,
- share-based projects, where stakeholders participate in the profit generated by the company.

Depending on the level of resources and preferences, portfolios can be diversified by investing a part of capital in secure dividend-based projects or more risky but more profitable share-based projects. In the USA and the West European countries, the greatest popularity is observed for the projects that assume investments in the best locations of the urban complexes.

Real estate crowdfunding has caused that many developers who invest in new real estate are willing to share their profits and encourage the internet communities to finance the investments. This situation causes that all the parties of the transactions are satisfied: the enterprise receives capital without interest rates and the necessity to pay instalments, whereas investors have the opportunities of investing the

capital in something which is more profitable than bank deposits. This offers opportunities to eliminate banks by crowdfunding and using the capital that can be obtained from the Internet community.

Crowdfunding in Poland is preferred by investors. Contrary to its conventional form, where an initiative can be supported in exchange for special gadgets, the investment crowd funding consists in paying the specific amounts of money that are the equivalent of participation in specific business projects.

ShareVestors.com website has been operating since October 2015 as the first website to offer real estate crowdfunding in the clear form i.e. the opportunities for investments made from home, online, without problems and in several seconds. The accumulation of capital from small investors for specific developer initiatives was also observed in the past. One example is MzuriCFI, the company which, in the beginning of 2015, collected 1.5 million zlotys from small investors to finance flipping of a townhouse in Łódź. There are many similar entities that operate in Poland. However, the main problem is high levels of entry to the projects, starting mainly from 100,000 zlotys. Real estate crowdfunding and the solutions offered cause that the investments and multiplication of the free capital can be available to average investor [Róziecki 2016].

The analysis of the data concerning developed markets and the Polish online platform shows that innovative forms of investment in the real estate market and effective procedures of modern management concepts represent key factors in economic growth (both European and world growth).

Contemporary concepts of management of innovative forms of investments in the real estate market

After the period of systematic transformations, the Polish real estate market became an independent branch of the national economy. This led to the creation of a modern network of entities connected with this market, especially real estate brokers and real estate managers.

Implementation of innovative forms of investing in the real estate market, such as flipping, reverse mortgage and energy-efficient mortgage, condo hotels and apart-hotels, crowdfunding and homestaging concerns especially contemporary management concepts which are characterized by the cross-sectional approach that merges

various areas of enterprise activities, stimulate new ways of thinking and acting. Consequently, it is difficult to define them precisely and, first and foremost, implement them [Grudzewski, Hejduk 2004; Zimniewicz 2000; Martyniak 2002; Brilman 2002].

Selected contemporary strategies and management methods that refer to the real estate market, especially to innovative forms of investing, include:

- Customer Relationship Management (CRM). This concept involves orientation towards customers, development of relations with customers and adjustment of the organization to their needs,
- Project Management (PM), understood to mean a process of controlling the mutually interrelated processes which are necessary for complete implementation of the project,
- Total Quality Management (TQM), quality management, emphasis on the quality of management in the context of the management system, costs with respect to the culture of quality, principles and effects of TQM in the operation of organizations,
- Time Based Management (TBM) (the method connected with rational time management). Apart from physical, financial and human resources, time represents a specific resource in the organization.
- Outsourcing, being a lean management tool, concerning mainly subcontracting certain functions and using external services. Outsourcing is the most rapidly developing business model in the 21st century
- Benchmarking is a method that assumes learning from others and using their experience.

All these strategies and management concepts concern management of innovative forms of investing, marketing, communication through the Internet services and IT sector for the real estate market. The choice of the strategy used in real estate management is also essential [Zarządzanie... 2000]. Marketing strategies for the real estate market are used in particular by the companies present in the markets with high competition intensity. An integral part of the marketing strategy is personal strategies that express the change in the basic principles of approaching human resource management with respect to innovativeness and financial strategies concerning the increase in the value of real estate investments and increasing their efficiency.

In conclusion of the present analysis of innovative forms of investing in the real estate market and contemporary management concepts, it is worth emphasizing that the evaluation is most often based on the concept of value management, with its source of income being value added. The value added, resulting from the study aim, is offered by knowledge in this area, used as:

- innovative activities using mobile applications,
- IT sector (technologies of Building Information Management, BIM),
- marketing innovations,
- organization innovations,

This represents a substantial contribution to the knowledge about the real estate market presented after analysis of innovative activities in this market and contemporary concepts of innovation management. Gross value added in the construction sector and activities connected with services for the real estate market in 2016 accounted for 6.8% and 5.3%, respectively, in total gross value added for all the sectors, which was assumed as 100% [Spotdata 2016].

Continuation of the investigations of innovative forms of investing in the real estate market and effective procedures in modern management concepts needs more extensive implementation of knowledge and science in order to utilize different areas of enterprise activity through introduction of new ways of thinking, acting, organizing and marketing.

Depending on the type of real estate (mainly capital real estate and speculative real estate) [Trojanowski 2002]), the most frequent strategy used in the case of the real estate that generates income, such as flipping investments, rent, condo system and crowdfunding, is preservation strategy (concerning the improvement in the quality of using and at least maintaining the value of the real estate at its previous level).

With real estate considered as an object of management, it should be emphasized that the management method depends on the type of real estate, performed functions, opportunities to generate incomes and objectives of the owner, whereas contemporary concepts and appropriate management strategies represent the key factors of the economic growth.

Conclusion

The innovative forms of investing presented in the paper and the contemporary concepts of resource management in the real estate market show how broad range of instruments should be employed by managers and the modern network of entities connected with this market, including real estate brokers, appraisers and real estate managers. The focus of the study was on:

- presentation of new forms of investment in the real estate market, with the emphasis on innovations in the financial service market,
- presentation of the contemporary concepts of management of innovations in the real estate market,
- the study also emphasized value added to science, resulting from the achievement of the study aim and the role of innovations as an economic growth factor.

Analysis of the results of the empirical studies presented by NRMLA, Martill and Waterson supported the thesis that:

- innovative forms of investing in the real estate market
- and
- effective procedures of contemporary management concepts, represent key factors to stimulate growth in Europe and all over the world.

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Entrepreneurial Economy – Conditions, Classification and the Level of Diversification of the EU Member States

Abstract: The aim of this study is to evaluate the gap which divides the Polish economy from the modern knowledge-based economy (KBE) of other EU member states. The article consists of two parts: theoretical and empirical. The first part was characterized by the notion of a knowledge-based economy in the theory of economic and social development. Described were stages of transition from a capital-intensive economy to knowledge-intensive economy. In the second part of the article analyzed were the statistical data, determining the level of development of the knowledge based economy in the EU. Author, tried to emphasize the factors of the development of knowledge-based economy, such as expenditure on R&D, the percentage of the workforce, employed in science and high-tech technology and others variable in the field of science and technology. According to author, investments in the above mentioned areas will allow countries, with a similar level of economic development to Poland, to catch up the countries, in which KBE is functioning properly.

Key words: knowledge-based economy, the European Union, hierarchical agglomeration method, method of k-means, innovation ranking

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Introduction

Knowledge-based economy (KBE) is the hope for the development of a knowledge society. An important criterion for the development of knowledge-based economy is knowledge management, which creates conditions for the development of innovation, competitiveness and creativity. To KBE could grow, they must be met financial and institutional terms. The development of knowledge-based economy is a key challenge for countries, including Poland. It is now known, that in the modern world, socio-economic development is increasingly dependent on knowledge and innovation. Therefore, in the EU's growth strategy for the next decade – Europe 2020 – the role of innovation has been recognized as key to building sustainable growth. The result of this strategy is a knowledge-based economy that promotes environmentally friendly technologies. Achieving the goals requires significant expenditures on R & D and to develop ways of knowledge rapid transfer into economic practice. The Innovation Union is one of the basic instruments for achieving the objectives of the strategy. It assumes improvement of conditions for the creation and development of innovations and their use in solving the most important economic and social problems. Progress in implementing the objectives of the strategy, the European Commission monitors using Innovation Union Scoreboard, as well as indicators for the improvement of conditions for conducting research and development activities and the amount of expenditure on R & D [European Commission 2010, pp. 13–15]. The aim of the article is to show the essence of KBE, its conditions in Poland and the European Union, as well as the present results of the statistical data analysis, determining the level of the knowledge-based economy development, using cluster analysis methods and K – medium. Due to the current efforts of the European Community, to increase innovation among the Member States, such as allocated funds for the years 2014-2020, this article is part of the trend of innovation research in the economy.

1. The modern knowledge-intensive economy

In theory of innovation, which in the 1930s was formulated by J. Schumpeter, the activities of entrepreneurs, are based on the „creation of new combinations of existing factors of production in the conditions, when the result of this process cannot be predicted” [Schumpeter 1960, p. 141]. In the literature, the concept of innovation

is not clearly defined. Innovations are considered to provide solutions to problems that change the current status quo and introduce novelties. Propensity to innovate is associated with the operation of the market mechanism, which supports the economic policy of the state. The use of innovation is associated with the existence of free competition and the use of technical achievements, research and the pursuit of rational. One of the attempts to define the economy (based on measurable characteristics) is contained in the report of the OECD experts [2000, p. 48], who rely on the belief of the 1990s, that in the quality of US fixed assets, accounted for 20% of book value of companies, while the rest was the human capital and intangible assets. Most attempts to define the knowledge economy based on attributes immeasurable. B.A Lundvall [1992, p.15] define the knowledge-based economy, in which the most important resource is knowledge, and the most important process is learning. A. Kuklinski [2001, pp. 18–19] believes that the theory of knowledge-based economy was introduced to economic sciences so as to highlight new emerging paradigm of sustainable development, whose strong features are innovation and knowledge. The process of creating knowledge-based economy is a group of phenomena, among which include more efficient and more dynamic capital markets, increased economic activity and entrepreneurial, or globalization, which causes increasing competition in the international arena [Poplawski 2004, p. 29].

The basis of the knowledge economy is human capital. The concept of human capital in economic theory introduced in the second half of the twentieth century T. Schultz [1981, p. 21]. The concept of human capital can be understood by the characteristics of the population that have value and can be enriched with the appropriate investment. In economics, human capital is the kind of capital that cannot be traded. It is embodied in a person applies to qualifications and skills. It is defined as the ability to produce of economic value, which depends on tradition, culture or skills and knowledge. The quality of human capital has an influence on investments in the dissemination of health care services, expenditure on research and learning. Human capital is growing with the development of society. In social terms it is defined as the ability to create increasingly more perfect cultural sphere, based on social bonds and a sense of usefulness for other people [Marciniak and others 2002, pp. 11–12].

Necessary for the construction of KBE is the cooperation of scientific – research centers with small and medium-sized enterprises. Dissemination of scientific knowledge is done by books, scientific articles and publications. Distribution of knowledge also takes place through discussion or teaching. Knowledge can be divided into two

types: codified knowledge, which is transmitted freely through reports, publications, and tacit knowledge, which is part of human capital accumulated on unit [Chojnicki 2001, p. 81]. Knowledge-based economy is identified with information and communication technology and innovation. The most important characteristics of KBE consider the development of knowledge and science. In such economy, observed is growing demand for knowledge and skilled work force. All these features affect each other and contribute to the creation of a modern knowledge-intensive economy.

2. The level of development of the knowledge-based economy in the European Union

EU member states have been grouped based on factors, which determine the growth of the knowledge economy, such as:

- the percentage share of expenditure on R & D in GDP;
- the percentage share of expenditure on R & D, funded by industry in total expenditure on R & D;
- the percentage share of budgetary expenditure on R & D in GDP;
- expenditure on R & D per capita (in Euro);
- participation of human resources in science and technology, as a percentage of the labor force;
- the percentage share of employed in the industry of high and mid-high technology in total employment;
- the percentage share of employed in services, with high knowledge content in total employment;
- the percentage share of high-tech export in total export;
- the number of patent applications, submitted to the EPO, per million inhabitants.

The development of knowledge-based economy, to a large extent, depends on national circumstances, favorable public policies and public awareness in this regard. An important factor, which influences the development of the economy, is a society. It creates conditions for the economic, social and cultural growth.

2.1. Classification methods

Cluster analysis, is a concept, characterized by the study of data. The method is meant separation similar properties of the groups and connecting them. With this method,

can be received a group of homogeneous subsets of a heterogeneous set of data. Objects that are in the same group are treated as similar to each other, and objects from different collections are regarded as dissimilar. The cluster analysis includes different algorithms that can be divided into hierarchical methods and non-hierarchical methods [Gantar 1998, pp. 78–81]. The methods of hierarchical cluster analysis, include the method of agglomeration. Agglomeration algorithm can group objects in larger collections, and the result for such a grouping is a hierarchical tree. The distance, between the clusters, can be calculated as the distance between the nearest and farthest representatives of separate clusters or at the average or median of gravity cluster. Agglomeration method, is not often used in grouping more objects, as it must be calculated the distance matrix between the investigated objects. To determine the correct number of elements, in the analysis of agglomeration, may be applied as the quotient of the maximum distance agglomeration, used in two close agglomerations [Gantar 1998, pp. 100–103].

The basic hierarchical clustering methods include: nearest neighbor, farthest neighborhood, median, average group, the center of gravity and Ward's methods. The nearest neighbor method is a classification method of observation, based on their similarity to other observations. This has been developed, in teaching engineering, as a way to recognize data patterns, not necessarily providing exact compatibility with any of saved patterns or observations. Similar observations are close to each other, and unlike – far away. Hence the distance between two observations is a measure of dissimilarity. The farthest neighborhood method, distance between clusters is determined by the farthest distance, between any two objects, belonging to different clusters. This method usually works well, in those cases where objects form a naturally separated „tufts“. It is not suitable, when focus is in any way an elongated or form nature of the „chain“. The method of gravity, center of gravity concentration is a medium point in the multidimensional space, defined by the dimensions. In this method, the distance between two clusters is defined as the difference between the centers of gravity. Median method is better, than the above method, when there are (or suspect that there are) significant differences, in the sizes of clusters. In the average group, method achieved an average distance, representing the average distance between all pairs of objects, belonging to the compared groups. The Ward's method is to combine such clusters, which provide a minimum sum of squares, the distances from the center of gravity and a new focus, that create. As a result, the group will include those objects that are the least differentiated by describing these

variables. In the analysis the dendrogram is created, which is a graphical interpretation of the results [Sokolowski 1992, pp. 19–20].

These methods are different from each other in a way which determining the distance between groups. All of the above agglomeration process can be described by a general scheme, which is considered the central agglomeration procedure. It is based on the distance matrix between two objects. General formula for converting the distance matrix, when connecting groups A_p and A_q , in a new group A_r for hierarchical agglomeration method has the following form [Ostasiewicz, 1998, p. 95]:

$$d_{ir} = a_p * d_{ip} + a_q * d_{iq} + b * d_{pq} + c * |d_{ip} - d_{iq}|$$

where:

d_{ir} – the distance between the groups A_i and A_r ,

d_{ip} – the distance between the groups A_i and A_p ,

d_{iq} – the distance between the groups A_i and A_q ,

d_{pq} – the distance between the groups A_p and A_q ,

a_p, a_q, b, c – the transformation parameters specific to the different methods of creating groups.

The main non-hierarchical method is k - medium method. In this case, it is necessary to present a volume of groups, which will be divided into the source data set. One variant of this method is based on a random choice of k - objects from the collection and to recognize them as a means k - groups. Each of the following objects is assigned to a group with the closest center. Later, it is calculated, measures subgroups, based on the arithmetic mean of the coordinates of objects contained in them. Then, the transfer is shown for each object group, that is the closest center. A weakness of this method is the need to determine the number of clusters in the data, so be sure to repeat the method for different values - k and use the one for which the data set is best divided [Zelas, 2000, p.156].

2.2. Classification in the SPSS program

Before performing the classification of the variables, they are normalized, by the application of standardization. The variables, have been organizing k - medium method into 4 groups. The volume of selected clusters is not accidental, because in the European Innovation Scoreboard 2016, EU member states were also divided into four groups:

- innovation leaders are classified as those countries, whose total innovation rate has a value greater than 120% of the average rate for the European Union, such as: Sweden, Denmark, Finland, Germany, Netherlands;

- innovation followers are those countries whose total innovation rate has a value in the range of 90%–120% of the average rate for the European Union, such as: Ireland, Belgium, United Kingdom, Luxembourg, Austria, France, Slovenia;

- moderate innovators are countries, whose total innovation rate is between 50% and 90% of the average rate for the European Union, such as: Cyprus, Estonia, Malta, Czech Republic, Italy, Portugal, Greece, Spain, Hungary, Slovakia, Poland, Lithuania, Latvia, Croatia;

- modest innovators are those countries, whose total innovation rate is below 50% of the average rate for the European Union, such as: Bulgaria, Romania [European Commission 2016, p. 6].

The results of the analysis carried out: K1 {Ireland, France, Luxembourg, Malta, Netherlands, United Kingdom}; K2 {Bulgaria, Greece, Croatia, Cyprus, Latvia, Lithuania, Poland, Portugal, Romania}; K3 {Czech Republic, Estonia, Spain, Italy, Slovenia, Slovakia} {K4 Belgium, Denmark, Germany, Austria, Finland, Sweden}.

Table 1. Membership in clusters

observation number	country	clusters	interval
1	Belgium	4	1,671
2	Bulgaria	2	,943
3	Czech Republic	3	1,992
4	Denmark	4	1,920
5	Germany	4	2,895
6	Estonia	3	1,940
7	Ireland	1	1,319
8	Greece	2	,913
9	Spain	3	1,551
10	France	1	1,772
11	Croatia	2	1,016
12	Italy	3	1,209
13	Cyprus	2	2,606
14	Latvia	2	,993
15	Lithuania	2	1,036
16	Luxembourg	1	2,376
17	Hungary	3	1,414
18	Malta	1	2,801
19	Netherlands	1	1,373
20	Austria	4	1,981
21	Poland	2	1,284
22	Portugal	2	2,041
23	Romania	2	2,062
24	Slovenia	3	2,204
25	Slovakia	3	1,861
26	Finland	4	1,500
27	Sweden	4	1,478
28	United Kingdom	1	1,048

Source: own elaboration based on the Eurostat data.

In order to make the characteristics of the resulting groups, one should look at their centers of gravity (Tab. 2). Cluster four is characterized by the highest values of such as the level of expenditure on R & D as a percentage of GDP, the level of expenditure on R & D incurred by business in GERD expressed as a percentage, expenditure on R & D per capita in Euro, the volume of patent applications to the EPO, per million inhabitants. The highest values in the third cluster take: employment in services with high knowledge content, expressed as a percentage of total employment and budgetary expenditure on R & D, as a percentage of GDP. Countries, classified in the first group, are characterized by high values, such as the share of exports of high technology in the total export and employment in the industry of high and mid-high technology, expressed as a percentage of total employment. The countries, qualified for the second class, have the lowest values in all fields.

Table 2. The final cluster centers

Variable	Cluster			
	1	2	3	4
Stand expenditure on R & D as percentage of GDP	-,03985	-,93982	-,01652	1,46885
Stand participation of HR in S & T as a percentage of labor force	,81498	-,74345	-,42671	,79804
Stand participation of high-tech export in the export total	1,49960	-,79121	-,17819	-,10490
Stand: the share of employment in services with high knowledge content as a percentage of total employment	-,47355	-,73080	,96517	,44372
Stand expenditure on R & D financed by business in GERD [%]	,34750	-1,07359	,17366	1,06028
Stand employment in the industry of high and medium-high technology in general employment	1,10669	-,82984	-,56173	,79343
Stand budgetary expenditure on R & D in percentage of GDP	-,26278	-,33304	,48451	,19709
Stand expenditure on R & D per capita in Euro	,32231	-,87428	-,46196	1,52806
Stand: The volume of patent applications to the EPO per million inhabitants	,21385	-,79057	-,51923	1,57777

Source: own elaboration.

The analysis of final distance between cluster centers demonstrates the degree of diversity between the clusters. The most dissimilar groups are the fourth and second, while the most similar are the first and fourth aggregation.

Table 3. The distance between the final cluster centers

Cluster	1	2	3	4
1		4,095	3,309	3,134
2	4,095		2,597	5,374
3	3,309	2,597		3,879
4	3,134	5,374	3,879	

Source: own elaboration.

Table 4. The variance analysis

Variable	Cluster		Error		F	Salience
	mean square	df	mean square	df		
Stand expenditure on R & D as percentage of GDP	6,969	3	,254	24	27,444	,000
Stand participation of HR in S & T as a percentage of labor force	4,685	3	,539	24	8,686	,000
Stand participation of high-tech export in the export total	6,472	3	,316	24	20,478	,000
Stand: the share of employment in services with high knowledge content as a percentage of total employment	4,618	3	,548	24	8,431	,001
Stand expenditure on R & D financed by business in GERD [%]	6,018	3	,373	24	16,145	,000
Stand employment in the industry of high and medium-high technology in general employment	6,511	3	,311	24	20,925	,000
Stand budgetary expenditure on R & D in percentage of GDP	1,096	3	,988	24	1,110	,365
Stand expenditure on R & D per capita in Euro	7,669	3	,166	24	46,084	,000
Stand: The volume of patent applications to the EPO per million inhabitants	7,574	3	,178	24	42,501	,000

Source: own elaboration.

F - Tests should be used only for descriptive purposes, because the aggregation has been chosen so as to maximize the differences, between elements belonging to different clusters. The observed significance levels are not adjusted, and therefore should not be construed to test the hypothesis, that the average clusters are equal. Statistics F illustrates the relationship of intergroup and intragroup variation. The higher value of this statistic, the greater is the importance of the variation, in the creation of clusters. In the analyzed example: the volume of patents to the EPO and expenditure on R & D per capita in the euro to a large extent contributes to the formation and differentiation of classes.

Subsequently, was carried out clustering, by using hierarchical agglomeration procedures. Ward's method was chosen for determining the distance between the clusters. Order to determine the matrix of distances between objects selected Euclidean method. Necessary is to standardize the variables, leading to the receipt of the standardized variable.

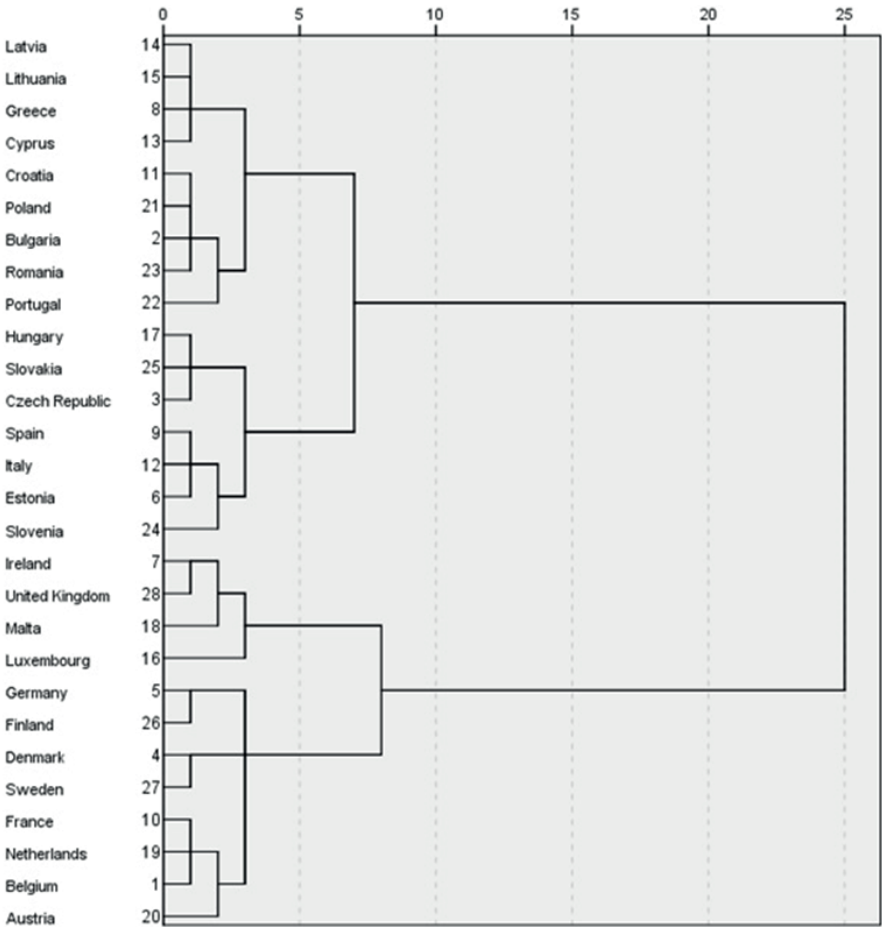
Table 5. Membership in clusters

Observation	The volume of clusters: 4
1:Belgium	1
2:Bulgaria	2
3:Czech Republic	3
4:Denmark	1
5:Germany	1
6:Estonia	3
7:Ireland	4
8:Greece	2
9:Spain	3
10:France	1
11:Croatia	2
12:Italy	3
13:Cyprus	2
14:Latvia	2
15:Lithuania	2
16:Luxembourg	4
17:Hungary	3
18:Malta	4
19:Netherlands	1
20:Austria	1
21:Poland	2
22:Portugal	2
23:Romania	2
24:Slovenia	3
25:Slovakia	3
26:Finland	1
27:Sweden	1
28:United Kingdom	4

Source: own elaboration based on the Eurostat data.

In the group K1 were qualified countries, such as {Finland, Sweden, the Netherlands, Austria, France, Germany, Denmark, Belgium}, the group K2 {Romania, Portugal, Poland, Croatia, Greece, Bulgaria}, the group K3 {Slovakia, Slovenia, Hungary Italy, Spain, Estonia, the Czech Republic}, the group K4 {United Kingdom, Malta, Luxembourg and Ireland}.

Figure 1. Dendrogram generated by using Ward’s method



Source: own elaboration.

A detailed description of the different stages of the procedure agglomeration, is included in a table below.

Table 6. An overview of individual stages of the agglomeration

Stage	Combined aggregation		factors	The stage at which for the first time appears cluster		Next step
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	14	15	,225	0	0	4
2	11	21	,714	0	0	7
3	7	28	1,315	0	0	19
4	8	14	2,117	0	1	15
5	4	27	2,930	0	0	20
6	9	12	3,770	0	0	13
7	2	11	4,929	0	2	10
8	10	19	6,165	0	0	11
9	17	25	7,760	0	0	12
10	2	23	9,855	7	0	16
11	1	10	12,212	0	8	17
12	3	17	14,985	0	9	23
13	6	9	17,964	0	6	18
14	5	26	21,461	0	0	24
15	8	13	25,244	4	0	22
16	2	22	29,590	10	0	22
17	1	20	34,009	11	0	20
18	6	24	38,882	13	0	23
19	7	18	44,036	3	0	21
20	1	4	52,387	17	5	24
21	7	16	61,065	19	0	26
22	2	8	69,838	16	15	25
23	3	6	78,699	12	18	25
24	1	5	89,615	20	14	26
25	2	3	116,171	22	23	27
26	1	7	144,193	24	21	27
27	1	2	243,000	26	25	0

Source: own elaboration.

Through this analysis, it can be stated, that countries such as Belgium, Denmark, Germany, Austria, Finland, Sweden were considered as strong innovators, the second group of countries catching up innovation leaders were qualified: France, Netherlands, Ireland, Luxembourg, Malta, Netherlands, Britain. The third group of moderate innovators includes Slovakia, Slovenia, Hungary, Italy, Spain, Estonia, the Czech Republic. In the group four of poor innovators were classified countries, such as Bulgaria, Greece, Croatia, Cyprus, Latvia, Lithuania, Poland, Portugal, Romania. The results, for the two most vulnerable groups, in the case of both methods, were identical and the results of the other two groups, differed place to qualify of France and the Netherlands. In the case of cluster analysis, method k – medium, was randomized to catch up innovation leaders.

Conclusion

Poland, over the last few years, recorded a growth of most distinguished indicators, as well as promotion to the group of moderate innovators. The key factors, behind these results, were increased by employment in highly advanced technology and the development of human capital in science and technology. Regardless, Poland position is not at a satisfactory level of development of innovation against the other European Union member states. Existing barriers to innovation activities can be divided into economic and related to use of knowledge. The first group concerns the difficulty of obtaining financing innovations, as well as too low expenditure on R&D. Among the barriers associated with knowledge can be distinguished limitations resulting from the lack of qualified personnel, insufficient flow of information on technologies and the difficulty in establishing cooperation for innovative activity. Social and economic growth in Poland largely depends on the level of development research and science, as well as the use of its results, as a force driving the economy. Currently, Poland is facing a challenge, designed to increase competitiveness and innovation in the economy. Our country has pledged to increase expenditure on research and development to 1.7 percent of GDP in 2020 year. Stimulation of R & D and innovation can certainly provide the basis for improving the competitive position of companies in the domestic and international market. Research and development should be one of the main sources of knowledge in enterprises, which awareness should lead to the concentration of activities in this area. Identification of innovation barriers can be helpful in determining the policy tools. It is not always enough to optimize the innovation policy, which is often necessary also to take into account the innovation strategy, as other measures that influence indirectly innovative activities.

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Discounts and Increases against the Base Premiums Increases in the Motor Third Liability Insurance in Poland

Abstract: In the year 2015 in Poland a record loss on the technical result in motor insurance of more than one billion zlotys has been reported. The low premiums resulted from the “price war” ongoing since the year 2003. Since the year 2016 in Poland an increase in premiums for civil liability insurance of motor vehicle owners is observed, and analysts predict further growth. Despite the price increases in motor insurance, Poles are paying one of the lowest premiums of this kind of insurance in Europe. For several years on the Polish insurance market there are observed numerous and multidirectional changes in the bonus-malus system, which directly affect the level of premiums. In the paper the extent to which discounts and increases resulting from the bonus-malus system are apparent was assessed, taking into account the increase of the basic premiums. The conducted study was based on the data obtained from one of the insurance companies operating on the Polish market.

Key words: motor third liability insurance, bonus-malus system, net premium rate, estimation

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Introduction

The concept of motor insurance defines all types of insurance that relate to motor vehicles, in particular to the owners of these vehicles. These include, among others, motor hull insurance and the liability insurance of motor vehicles associated with the movement of these vehicles, called motor third liability insurance. In Poland, according to the statutory classification [Ustawa z dnia 11 września 2015 r. o działalności ubezpieczeniowej i reasekuracyjnej] motor insurance belong to Section II of Other personal insurance and property insurance, where motor hull insurance and the motor third liability insurance are respectively a 3rd and 10th group of Section II. Motor third liability insurance of vehicle owners and motor hull insurance are frequently concluded insurance in Poland, as evidenced by participation of premiums for this type of insurance in the property insurance premium. According to the data about the property insurance [Report on the state of the insurance sector after the first half of year 2016] in Poland assigned gross premium from motor third liability insurance and motor hull insurance represented 56,93% of the premium of Section II insurance, of which 34.77% is the motor third liability insurance premium, and 22,16% motor hull insurance premium.

In the motor liability insurance premium calculation process consists of two stages. In the first one, the premium called prior is determined by use of actuarial methods based on certain risk factors, known as the basic ratemaking variables [Ostasiewicz (red.) 2000]. The premium so defined and increased, among others, by the costs of insurance operations and the security addition is known as the base premium. In the second stage, called the posterior ratemaking, the base premium is corrected by taking into account the increases and discounts dependent on the individual risk factors of the insured to get the so-called assigned premium. One of the elements of the posterior ratemaking, commonly used in Europe are bonus-malus systems. The bonus-malus systems [Lemaire 1995] differentiate the premium, with respect to the number of claims reported by the insured in the previous insurance period. On the Polish market the bonus-malus systems which differ in terms of the number of classes, premium rates and the rules of the transition between the classes of the system are available [Szymańska 2014]. In addition to the bonus-malus system insurance companies may use other discounts and increases of the premium dependent on the additional ratemaking variables, such as the age of the insured, the time of holding a driving license, possession or not of

children under 12 years old, the profession of the insured, the age of the car, using the car for business purposes, possession or not of other insurance in the same company, continuation of insurance, etc.

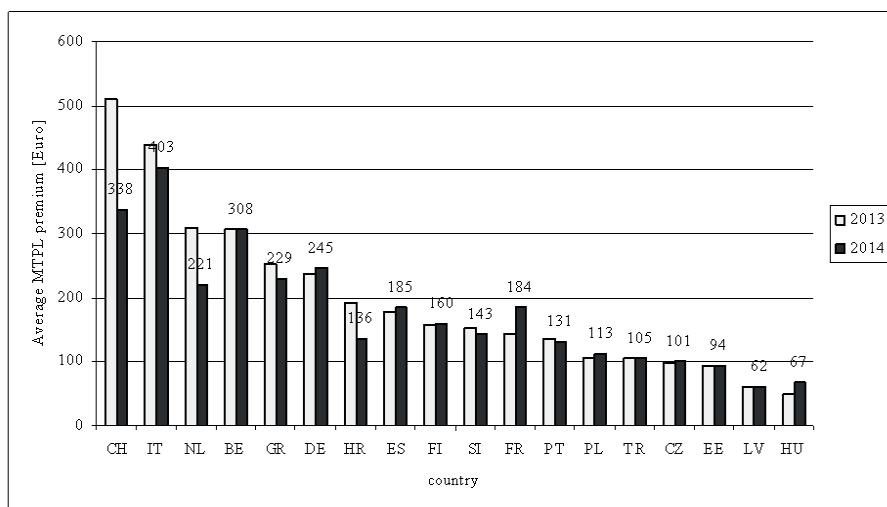
The aim of the paper is to present the changes in the amounts of average premiums on the Polish motor third liability insurance market in recent years and to estimate the real discounts and increases in these insurance resulting from the bonus-malus system in the context of premiums ratemaking changes. It may be suspected that the discounts are only apparent, and increases actually higher than those resulting from the bonus-malus system due to the observed increase in the basic premium. The conducted study is based on the data obtained from one of the insurance companies operating on the Polish market, which has reserved the right to stay anonymous. A random sample of several thousand policies was available. The data included information on the amount of the basic premium, the assigned premium and the bonus-malus rate in the portfolio of motor third liability insurance of vehicle owners in a period of four years. In this paper the algorithm has been proposed which allows to determine the level of real increases and discounts, taking into account the premium and the bonus-malus system rates. On the basis of the average actual premium increases and discounts calculated from the sample the real increases and discounts of the premiums in the portfolio were estimated by means of the interval estimation method. Additional source of data were the reports and studies of PIU (Polish Chamber of Insurance), the KNF (Financial Supervisory Commission) and the Insurance Europe – European insurance and reinsurance federation. In the reports of PIU and the KNF the quarterly, semiannual and annual data are available. However, it should be noted that not all detailed data from the motor insurance range are available. The last detailed report of Insurance Europe is from the year 2015 and covers the year 2013, for 2014 the EU published a condensed statement. Recent annual reports of PIU and the KNF are for the year 2015, for the first half of the year 2016 all the data are not given.

Premiums in the motor third liability insurance in Poland

Motor third liability insurance is mandatory all over Europe, and revenues from the motor third liability insurance premiums constituted in 2013, 57.9% of total insurance premiums. It should be emphasized that the extent of the motor third liability

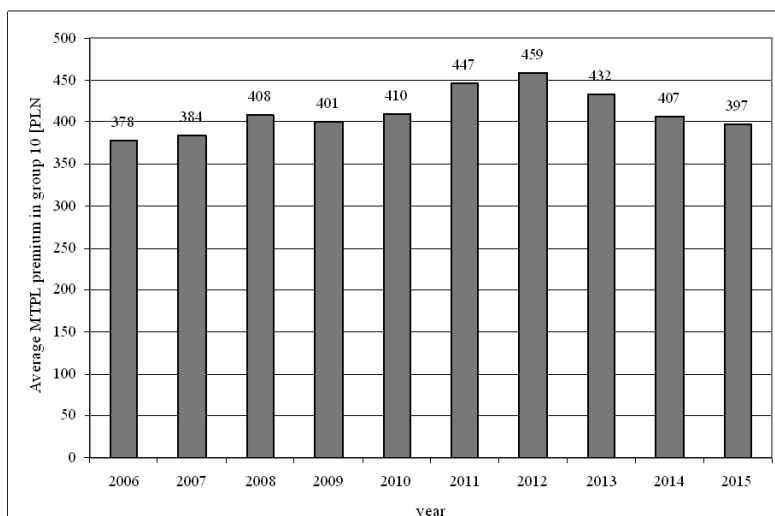
insurance is unified by the regulations of the European Union, and that is the reason why competition between companies is not based on the product modification, but mainly on the price of insurance and customer service quality. Not in all European countries the motor third liability insurance and the motor hull insurance policies are sold separately, but they are sold in the form of package, such as for example in the UK. In June of 2016 Insurance Europe published a report [European Motor Insurance Markets. Addendum 2016], presenting in a shortened form the state of the motor insurance market in Europe in 2014, being a supplement to the full report [European Motor Insurance Markets 2015] from the year 2015. Fig. 1 shows, the average premiums in the motor third liability insurance in Europe in 2013 and 2014. The report indicates that the average premium for an active policy in European countries was on average varied. The highest contribution in 2014 was paid by the citizens of Italy (an average of 403 euro for the policy), the lowest in Lithuania (on average 62 euro), the average premium in Europe was 180 euro by the differentiation ratio of 53.46%. It may be noticed that the premiums were higher in Western Europe, and their value was below the European average in the countries of Eastern Europe. Premium values in motor insurance, according to the authors of the report, depend on many factors, such as internal regulations, road safety, loss adjustment expenses, insurance fraud, taxes and the number of uninsured vehicles.

Figure 1. The average premium for an active policy in Europe in the years 2013 and 2014



According to the report in Poland motor insurance prices in 2014 belonged to the lowest ones in Europe. The average premium for an active policy in the motor third liability insurance amounted to 113 euro (PPP adjusted premium amounted to 199 euro), which accounted for 63% of the European average. It should be noted that the average premium for an active policy in Poland in 2013 amounted to 106 euro, which accounted for 45% of the European average. The reason for such low premiums in Poland is the “price war” waged by insurance companies, which dates back to 2003. Then Link4 entering the Polish market started selling insurance by telephone and the Internet, which allowed to reduce the cost of running business and thus the product price. For other insurers operating on the Polish market this meant the need to adapt to market prices by lowering the amount of premiums for the motor third liability insurance or to keep them on the same level despite the increase in the value of claims and benefits paid, in particular due to personal injury (see Figure 2). In the years 2006–2015, the average premium for an active policy in motor insurance was increased by an average of 3% each year until year 2012. In 2012–2015 it was decreasing on average by 7% yearly. The real average assigned gross premium for the policy group 10, taking into account inflation (deflation in the last year) in 2011–2015 decreased on average by 3.5% yearly [Motor insurance market in Poland. Review of data from 2013–2015].

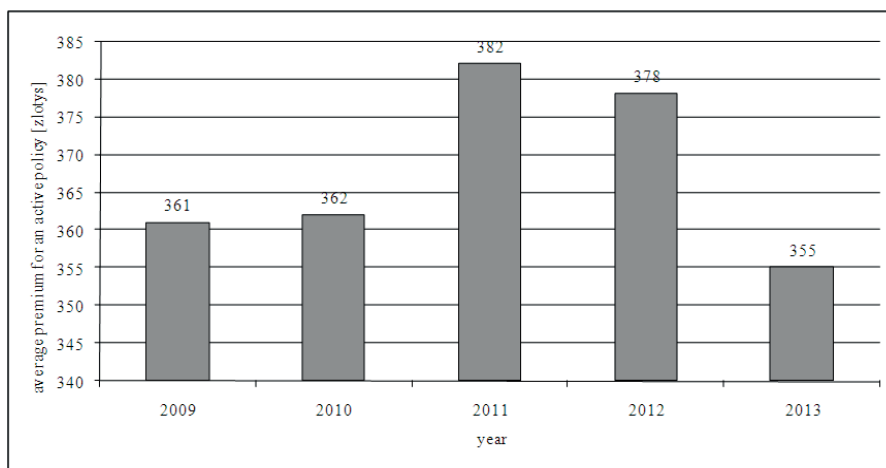
Figure 2. The average premium for an active policy in motor insurance of group 10 in Poland in the years 2006–2015



Source: Insurance in Poland. Statistics of property insurance market 2006–2015.

In the segment of individuals the average premium for an active policy in the motor third liability insurance of motor vehicle owners in 2009–2013 was decreasing on average by 2% yearly (see Figure 3). In the five year perspective lowest value of the average premium, equal to 355 zlotys, was recorded in 2013. The median of the average value of premium in the group of individuals in 2013 amounted to 415 zlotys, and premiums of most insurers with the largest participation on the motor third liability insurance market were located in the area between the first and third quartiles, respectively equal to 270 zlotys and 420 zlotys [Motor insurance market in Poland. Review of data from the years 2009–2013]. Unfortunately there is no data on the amount of the average premium in a group 10, of individuals for 2014–2015 [Motor insurance market in Poland. Review of data from 2013–2015] because of the lack of data on the number of insurance policies by companies.

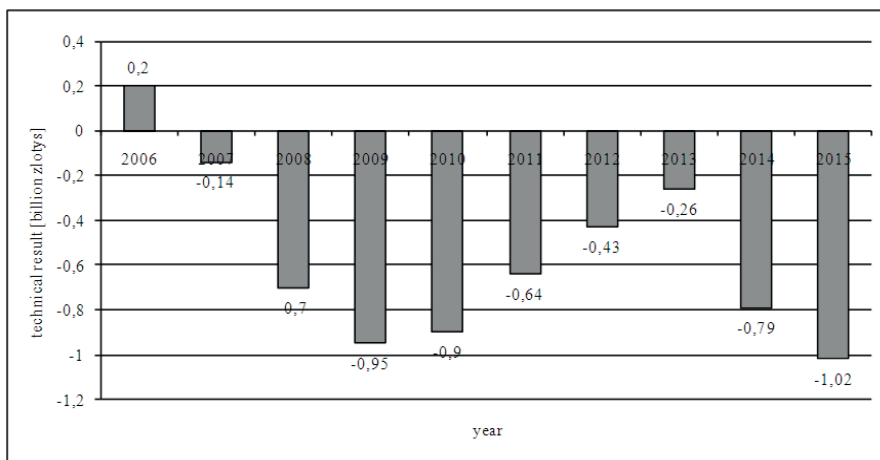
Figure 3. The average premium for an active policy in motor insurance of group 10 of individuals in Poland in the years 2009–2013



Source: Motor insurance market in Poland. A review of data from 2011–2013.

However, after a few years of “price war” on the Polish market it can be concluded that offering “cheap motor third liability insurance” has led to a situation in which insurers must make a contribution to this product. This is evidenced by the financial results of the insurance group 10, of insurance companies operating on the Polish market (see Fig. 4), with the highest loss recorded in the history, at the end of 2015, of more than one billion zlotys. After the second quarter of 2016, the loss amounted to more than half a billion (-0.61 billion. zlotys).

Figure 4. The technical result in the motor third liability insurance of vehicle owners in Poland in the years 2006–2015 [billion zlotys]



Source: Insurance in Poland. Statistics of property insurance market 2006–2014, The report on the state of the insurance sector in 2015 r.

In September of 2015, in a letter sent to insurers KNF chairman Andrzej Jakubiak appealed to raise the prices of motor insurance, arguing that the fact that the premium rate should be adjusted to charges resulting from provided service [KNF to insurers: raise the prices of motor third liability and motor hull insurance 2015]. Also, according to PIU, premiums of the motor third liability policies will increase taking into account the growing range of liability of insurance companies due to this insurance and in relation to the statutory obligation of determining by the insurers premium appropriate to the risks involved [PIU: motor third liability insurance premiums must be increase]. According to the PIU report, the current difficult situation in the motor insurance sector is the result of '...extension of the scope of liability of insurance companies in connection with new types of damages and law changes, as well as the stable premium level, which affects the strong price pressure and strong competition'. In the PIU report summarizing the fourth quarter of 2015 we read: 'the KNF guidelines regarding the loss adjusting and a large increase in payments in personal damages, contributed to the largest losses in the motor third liability insurance market in history. The motor third liability insurance prices recently increase, but the companies introduce increases slowly. Any too sudden movement could cause an outflow of customers to another insurer, which of course every company wants to avoid. It will be very difficult to regain balance on the motor third liability insurance market, as the amount of payments will continue to grow,

and without adequate regulatory decisions, this will happen in an uncontrolled and unpredictable way. The more anxious are the announcements of a new tax, related to the treatment of accident victims' [The results of the motor insurance market after the fourth quarter of 2015]. PIU analysts predict a further increase in prices of these insurance. The KNF guidelines of 16 December 2015, regarding loss adjusting from the motor insurance and related risk and the appearance from March 2015 of the motor third liability insurance policies with direct loss adjusting service (BLS) caused that, in 2016, the average price for the motor third liability insurance policy increased on average by 15% compared to 2015 [CUK insurance: motor third liability insurance prices grow 2016]. According to the research of multiagency AB Port in 2015, the average premium for an active policy in the motor insurance of group 10, of individuals amounted to 552 zlotys, and in January 2016 increased to 659 zlotys [We know who offers the cheapest motor third liability insurance 2016]. In the PIU statistics [Results of the insurance market after the second quarter of 2016], the vice president of PIU Andrzej Maciążek wrote: 'For the first time in many years on the motor third liability insurance market strong increase in premium is visible, and with it also a large change in unearned premium reserve... The increase in premiums, in turn, indicates the consequence of insurers in pursuing to restore the motor third liability insurance market balance'.

The bonus-malus systems in the analyzed insurance company

The bonus-malus systems used by insurance companies in the motor third liability insurance ratemaking process can be very diverse. Even on the domestic European markets many bonus-malus systems are used at the same time, with the exception of countries where this system is implemented statutorily, such as in Belgium. In Poland, in the ratemaking process, the insurance companies use quite a variety of increase and reduction systems [Szymańska 2014]. As a rule, the system has 13 classes, the maximum discount is 60% of the premium, the maximum increase is about 160% of the premium, for each year without damage the insured person obtains an additional 10% discount in the premium in the following year.

Table 1 shows the bonus-malus system of the insurance company investigated (slightly modified in order to preserve the anonymity of the insurance company). This system consists of 10 classes, including three with an increase in the premium and six

with a discount in premium. The insured are assigned to particular classes in a given year by the number of damages reported in the previous year.

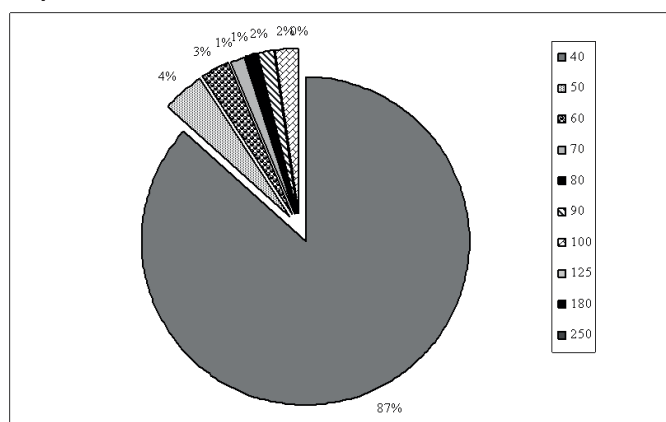
Table 1. The bonus-malus system of the investigated insurance company

BM class	Premium rate [%]	BM class depending on the number of claims during a year		
		0	1	≥2
1	40	1	3	10
2	50	1	4	10
3	60	2	5	10
4	70	3	6	10
5	80	4	7	10
6	90	5	8	10
7	100	6	9	10
8	125	7	10	10
9	180	8	10	10
10	250	9	10	10

Source: insurance company.

Figure 5 shows the average share of the insured in particular bonus-malus classes, in the years examined. The largest group (87%), in the analyzed period, were the insured holding a 60% discount in premium (who were assigned to the first class of the system, in which the premium rate amounted to its 40%). In the second and third class there were, respectively, 4% and 3% of the insured. In each upward class, the participation of the insured in each of the studied years accounted for less than 1%.

Figure 5. The structure of insured in the motor third party liability insurance with respect to the bonus-malus classes [%]



Source: Motor insurance market in Poland. A review of data from 2011–2013.

Empirical study

Observing the increase of premiums in the motor third liability insurance and changes in the bonus-malus systems on the Polish market real increases and discounts in insurance premiums arising from this insurance have been estimated.

Let us denote the four consecutive studied years by I, II, III, IV. As mentioned in the introduction of this work, for the needs of the analysis, a few thousand random sample has been drawn from the motor third liability insurance portfolio of one of the insurance companies operating on the Polish market. Data on individual policies included, among others, the amount of the basic premium, assigned premium and the bonus-malus class number. In the analyzed insurance company in period II, the base premiums in the motor third liability insurance increased on average by 1% compared to the year I, in year III base premiums decreased by an average of 6% compared to the year II, while in year IV base premiums increased by an average of 8% compared to year III. Thus, in the analyzed period of time in the insurance company investigated, the base premium in the motor third liability insurance on average increased by 0.08% from year to year.

An attempt to assess changes in discounts and increases in premiums for the calendar years in which there was increase in the basic premium, was made, using the following algorithm, which is the author's own proposal:

1. From the sample (the motor third liability insurance portfolio of individuals) the policies for which there has been a change in the bonus-malus premium rate in year t compared to the year $t-1$, were selected.

2. For each of the policies the difference between the premium earned (assigned) in the year t and $t-1$: $z_i = s_i^p(t) - s_i^p(t-1)$ was calculated, where $s_i^p(t)$ - premium earned for i -th policy in year t .

3. If $z_i < 0$, the percentage of discount was calculated from the equation: $x_i = 1 - \frac{s_i^p(t)}{s_i^p(t-1)}$. If $z_i > 0$, the percentage of increase was calculated from the equation:

$$x_i = \frac{s_i^p(t)}{s_i^p(t-1)} - 1$$

4. For each policy the difference between the rate of s_i premium in year t and $t-1$: $y_i = s_i(t) - s_i(t-1)$ was defined (if $y_i < 0$, the discount from the BM system followed).

5. For each policy, for which $z_i < 0$ and $y_i < 0$ the difference $u_i = |y_i| - |z_i|$ was calculated. For each policy, for which $z_i > 0$ and $y_i > 0$ the difference $u_i = |y_i| - |z_i|$ was calculated. If

$u_i > 0$, then the discounts and increases differ from the discounts and increases resulting from the bonus-malus system. In the case of the bonus-malus discount, the actual discount is lower, and in the case of the bonus-malus increase the actual increase is higher;

6. For policies where $u_i > 0$, the arithmetic means of differences of discounts and increases were calculated:

$$\bar{r}_{zn} = \sum_{i=1}^k \frac{u_i}{k} \text{ oraz } \bar{r}_{zw} = \sum_{i=1}^l \frac{u_i}{l},$$

where k - number of policies for which $z_i < 0$ and $y_i < 0$ and l - number of policies for which $z_i > 0$ and $y_i > 0$.

Using the algorithm proposed, the mean discounts and increases in the premiums have been obtained during periods: II to I and IV to III. Then, there were estimated the average increases and discounts in the motor third liability insurance of individuals of the analyzed insurance company in the II and the IV period by means of interval estimation [Domański (ed.) 2001]:

$$P \left\{ \bar{x} - u_{\alpha} \frac{S}{\sqrt{n}} < m < \bar{x} + u_{\alpha} \frac{S}{\sqrt{n}} \right\} = 1 - \alpha \quad (1)$$

where: m - population arithmetic mean, $\bar{x}$ - sample arithmetic mean, s - sample standard deviation, n - sample size, u_{α} - the value read from the normal distribution tables for the accepted level of confidence.

At 0.95 confidence level one can state that the average discount in the premium of the motor third liability insurance of individuals portfolio of the company analyzed was higher than the one resulting from the bonus-malus system in period II as compared to period I by, from 4.65 p.p. to 10.69 p.p., and in period IV as compared to period III by, from 7.03 p.p. to 10.15 p.p.. While the average increase of premium in this portfolio, estimated at 0.95 confidence level, was in period II, when compared to period I higher by, from 33.6 p.p. to 39.51 p.p. and in period IV when compared to III period higher by, from 23.22 p.p. to 29.18 p.p. The reason for lower discounts and higher increases than those resulting from the bonus-malus system was the increase in the basic premium. When calculating increases and discounts, as the ratio of the assigned premium and the base premium, the percentage increases and discounts resulting from the bonus-malus system are preserved.

Summary

On the Polish market premium increase is inevitable because of the increase in the number and value of the claims paid, resulting primarily from the extension of the scope of insurance company liability and the increase of insurance awareness of Poles. National courts order increasingly high compensations for personal injury caused by traffic accidents (even after 16 years after the occurrence of the damage), and insurers are losing more and more on car insurance. The increase in the basic premium results in the "apparentness" of increases and discounts resulting from the bonus-malus system. The algorithm presented in the paper allows to estimate the actual increases and discounts of the motor third liability insurance premiums.

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Evaluation of the Financial Condition of Territorial Self-government Units by means of Financial Ratios as Exemplified by the City of Łódź

Abstract: One of the fundamental issues with regard to the functioning of the territorial self-government is its capability of financing tasks. The ability to implement public tasks, which are addressed to the local community, is of great significance. One of the reasons for this salience is the fact that in the recent years a deterioration in the financial situation of territorial self-government units may be observed, which is caused, among others, by the effects of the economic slowdown. The paper is devoted to evaluating the financial condition of territorial self-government units carried out with the application of financial ratios as exemplified by the city of Łódź. In order to assess the financial situation, the author of the paper applied the ratios which belong to the sets of ratios concerning: financial liquidity, financial autonomy, indebtedness and attractiveness for investors.

The research methods employed in the paper are based on the study of the literature on the subject as well as on the analysis of particular sets of ratios. For this purpose, the financial data set forth in the budget of the city of Łódź were used, as well as the reports of budget implementation for the years 2011–2015 and the Long-term Financial Forecast for the years 2016–2017.

The findings of the conducted research indicate that ratio analysis is a vital tool which facilitates efficient management in territorial self-government units. The application of this kind of analysis may considerably contribute to improving the planning process of public expenditures. It also enables territorial self-government units to allocate public financial means in a more effective.

Key words: local government, financial ratio analysis

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Introduction

In order to ensure efficient functioning of the territorial self-government, which primarily consists in the competent fulfilling of public tasks at the local level, it is necessary to properly manage available funds. Financial management, with regard to territorial self-government units, should lead to rationalization but also to increased effectiveness in spending the financial resources at the disposal of the territorial self-government. Obtaining the most relevant and accurate information plays an important role in this case, which enables making correct decisions in terms of managing funds [Cf. Filipiak 2004, Kożuch, Mirończuk 2005]. Therefore, the state of finance of territorial self-governments is thoroughly analysed. Thanks to it, territorial self-government units are able to make decisions affecting the economic situation of the subjects who reside there.

An attempt is made in the paper to evaluate the financial condition of territorial self-government units carried out with the application of financial ratios as exemplified by the city of Łódź. In order to assess the financial situation, the ratios which encompass the sets of ratios concerning: financial liquidity, financial autonomy, indebtedness and attractiveness for investors were applied. The research hypothesis adopted in the paper is as follows: a comprehensive analysis of the financial statements of a given territorial self-government unit (which in this case is the city of Łódź), encompassing all the four aforementioned sets of ratios, influences the financial assessment of the said unit carried out by potential investors. The research methods employed in the paper are based on the study of the literature on the subject as well as on ratio analysis. The reports of budget implementation for the years 2011–2015 and the Long-term Financial Forecast as well as the budget of the city of Łódź for the years 2016–2017 constitute the primary sources.

The paper focuses particularly on the significance of ratio analysis as a tool applied in carrying out evaluation of the financial situation of a given territorial self-government unit as well as analyses the financial situation of the city of Łódź. It is worth stressing that Łódź is one of the most indebted cities in Poland. Its population is decreasing at the fastest rate. It is struggling to find a new place for itself in the new reality. In the wake of the collapse of the light industry, Łódź is searching for a new conception for pulling investors as well as for effective methods of increasing its attractiveness, encouraging its residents not to leave the city and prompting tourists to pay a visit. Łódź relies on structural investment and thus ratio analysis is of particular importance to it.

The findings of the conducted review show that ratio analysis is a tool which supports the process of management in territorial self-government units. Applying this kind of analysis is supposed to support the decision making process as well as help to plan, procure and rationally spend funds, at the same time preventing loss of financial liquidity.

1. Ratio analysis as a tool for evaluating the financial situation of territorial self-government units

“Economic slowdown, increasing risk pertaining to functioning and fulfilling tasks in the changing environment, growing demands of local and regional communities... require not only enhanced interest in the financial phenomena occurring in territorial self-government units but also very good quality information which will be adequate to the needs” [Filipiak, Dylewski, Gorzałczyńska-Koczkodaj 2011, p. 7].

Budgetary revenues accumulated by territorial self-government units as well as the tasks implemented pursuant to the spending policy set forth in the development strategies require profound knowledge. This knowledge should regard the budget balance and preferred expenditure trends of budgetary means, but additionally it should concern the plans and forecasts outlined in particular sectoral policies of the territorial self-government. It means that the accuracy of generated information considerably impacts the effectiveness and efficiency of the decisions made in territorial self-government units [Filipiak, Dylewski 2003, p. 14]. Ratio analysis is one of the elements of this process. It is vital in order to adequately assess the functioning of entities on the market. This method of evaluation enables accurate identification of the processes and phenomena which affect revenues and expenditures. Ratio analysis is not only applied to business entities (in their case an expanded analysis is used) but to public entities as well. The territorial self-government unit is one of such entities.

“The financial analysis carried out in territorial self-government units differs from that conducted in enterprises. The difference, first and foremost, results from the fact that territorial self-government units fulfil the tasks connected with satisfying the needs of local communities, which means that they are not oriented towards gaining profits, in contrast to enterprises” [Hałaburda 2009, pp. 151–152]

Generally, it may be stated that the functioning of the territorial self-government is inextricably linked to undertaking tasks which are aimed at serving the local com-

munity. A detailed analysis, which will enable the assessment of the financial condition, is crucial, particularly nowadays when the budgetary means are limited. The evaluation of the financial condition of territorial self-government units is carried out in four dimensions and the subject of analysis encompasses the following aspects:

- financial liquidity,
- the level of indebtedness,
- financial independence,
- attractiveness of the territorial self-government.

When evaluating the financial liquidity of territorial self-government units, financial liquidity ratios are analysed in terms of planning as well as with reference to day-to-day data. These both ratios reflect the real condition of the functioning of a given territorial self-government unit since they determine the ability of a given territorial self-government unit to achieve cash flows which will enable it to settle accounts payable and to cover unexpected expenses [Wędzki 2002, p. 34].

In order to fulfil the tasks assigned to the territorial self-government it is often necessary to incur new liabilities. Therefore, the assessment of indebtedness along with the ratios which make it possible to evaluate the level of financial independence constitute a crucial element of a comprehensive evaluation of the financial condition of territorial self-government units [Art. 243 of the Act on Public Finance]. In the face of a chronic lack of financial means to perform own tasks as well as delegated task, competent management of financial resources is growing in significance. The set limits of indebtedness make it impossible to answer the question how territorial self-governments cope with the problems such as public debt and budget deficit [Kto tonie w długach Ranking zadłużenia samorządów, p. 7]. Only the possibility of evaluating the situation by means of indebtedness ratios enables adequate assessment of the state of finance of the territorial self-government. These ratios are vital for territorial self-government units but also for other institutions usually perceived as a part of the public finance group [<http://drawskopomorskie...>], which is manifested by the fact that they were included in the Long-term Financial Forecast. Generally, it is possible to distinguish in this set of ratios such ratios which enable the evaluation of the extent to which the budgetary revenues of the territorial self-government unit are burdened with the cost of debt servicing. The aforementioned ratios, first and foremost, indicate a potential risk of insolvency of the territorial self-government unit.

The assessment of the level of financial independence is another element which affects efficient management of public funds. Several factors of a legal, economic, property and financial character determine the financial independence of territorial self-government units [Patrzalek 2010, p. 55]. The rate of public finance decentralisation plays an important role in evaluating the level of financial independence of territorial self-government units. Its basic elements are stipulated in Art. 15 of the Constitution of the Republic of Poland. Basically, the main function of this set of ratios is to indicate the degree of freedom in disposing of revenues, which is inextricably linked to incurring expenditures. Financial independence ratios encompass the following:

- ratios which evaluate revenue independence, and
- ratios which may indicate the degree of freedom in the decision making concerning revenue allocation, i.e. expenditure independence ratios.

The analysis of the attractiveness of a given territorial self-government unit is predominantly based on assessing the development strategy adopted by the said unit. The investment policy pursued by the said entity, which is primarily targeted at improving the quality of life of the local community, is also evaluated.

To sum up, a comprehensive evaluation conducted with the application of all the aforementioned sets of ratios provides territorial self-government units access to the information which will enable them to verify whether the expenditure trends are consistent with the adopted development strategy.

2. Evaluation of the financial condition by means of ratio analysis of the City of Łódź

The examination of the financial condition of territorial self-government units is crucial and its significance is constantly increasing, especially when the access to funds is limited. Łódź as the third most populous city in Poland, where the number of residents amounts to almost 700 000, is developing at a very rapid pace. It is the city which pursues a particular strategy of development targeted at improving the living conditions of the local community. It is the city where major investments are carried out, which are financed predominantly from public funds. Therefore, in order to efficiently evaluate the financial and economic situation as well as the potential possibilities of financing further development, accurate interpretation of the data set forth in the city budget is needed.

The evaluation of the liquidity rate of a given territorial self-government unit plays a significant role in the comprehensive assessment of the financial state of territorial self-government. Detailed information for Łódź is presented in Table 1 and Table 2.

Table 1. Ratio of planned financial liquidity in the city of Łódź in the years 2011–2017

Years	Specification				
	Planned budgetary revenues*	Planned budgetary expenditures*	Planned budgetary incomings*	Planned budgetary outgoings*	Ratio of planned financial liquidity
2011	2,867,174,674.33	3,241,595,042.33	727,096,187.00	352,675,819.00	1
2012	3,149,554,063.00	3,508,996,270.00	742,435,849.00	382,990,278.49	1
2013	3,623,955,598.64	4,036,616,569.64	592,973,010.00	179,764,436.00	1
2014	3,443,716,059.30	4,064,276,554.30	783,746,533.00	163,186,038.00	1
2015	3,851,992,863.55	4,255,435,576.55	614,568,191.00	211,125,478.00	1
2016	3,836,803,666	3,991,547,264	391,960,482	237,480,614	1
2017	3,752,570,054	3,886,256,865	313,941,479	180,254,668	1

* planned amounts after making adjustments in the budget as at 31 December

**Source: compiled by the author of the paper on the basis of the budgets of the city of Łódź as well as the reports of budget implementation for the years 2011–2017, <http://bip.uml.lodz.pl/index.php?str=11>.

It is generally very important as regards territorial self-government units to ensure that the aforementioned ratio amounts to 1, which means that, in accordance with the plan, this entity will always enjoy financial liquidity. In the case of Łódź, regarding the examined period, the analysed ratio amounts to 1 and due to this fact it may be stated that planned expenditures and outgoings are covered by budgetary revenues and incomings. It is particularly important since the adjusted budgetary values as at 31 December were assessed.

Table 2. Ratio of actual financial liquidity in the city of Łódź in the years 2011–2015

Years	Specification				
	Budgetary revenues	Budgetary expenditures	Budgetary	Planned budgetary outgoings*	Ratio of planned financial liquidity
2011	incomings	Ratio of actual financial liquidity	759,524,688.06	1.15	1
2012	3,030,272,014.00	3,322,647,851.00	744,887,656.81	1.14	1
2013	3,574,739,989.80	3,807,249,715.58	527,926,006.81	1.08	1
2014	3,396,633,989.89	3,837,982,694.69	820,433,775.63	1.10	1
2015	3,841,403,448.09	3,997,451,848.33	628,384,865.46	1.12	1

* compiled by the author of the paper on the basis of the budgets of the city of Łódź as well as the reports of budget implementation for the years 2011–2017, <http://bip.uml.lodz.pl/index.php?str=11>.

When analysing the data set forth in Table 2, it may be noted that in the years 2011–2015 the incurred budgetary expenditures and outgoings have been fully covered by the budgetary revenues and incomings, since their value exceeds 1. It points to fiscal consideration when planning the budget, taking into account the actual financial situation (including the increase in value of the investments implemented in the city) and being able to settle liabilities.

Apart from the ratio which makes it possible to evaluate the rate of financial liquidity of the territorial self-government unit, the assessment of the rate of indebtedness of the said unit is considered as a very important element of the ratio analysis, thanks to which the condition of the unit may be forecast. Table 3 itemises the relevant data.

Table 2. Ratio of actual financial liquidity in the city of Łódź in the years 2011–2015

Years	Specification				
	Planned amount of debt in PLN	Share of total liabilities in total revenue	Debt servicing burden	Planned budgetary outgoings*	Ratio of planned financial liquidity
2011	1,563,587,200	58.3	14.9	21.7	1
2012	1,869,119,866	60.6	15.1	22.6	1
2013	2,245,141,326	59.3	7.0	10.4	1
2014	2,703,722,453	78.3	6.9	10.5	1
2015	2,899,848,540	73.5	7.4	11.9	1
2016	2,793,768,524	-	-	-	
2017	2,899,726,513	-	-	-	

* compiled by the author of the paper on the basis of the data presented in the Long-term Financial Forecast for the city of Łódź for the years 2011–2017 <http://bip.um.lodz.pl/index.php?str=11> as well as Ratios for evaluating the financial situation of territorial self-government units for the years 2011–2015, <http://www.finance.mf.gov.pl/budzet-panstwa/finance-samorzadow/opracowania>.

When interpreting the data set forth in Table 3, it may be noted that the situation is improving slowly in terms of the amount of debt and liabilities ratios. Ratios regarding the debt servicing burden on total revenue and on total own-source revenue, thanks to which the rate of insolvency risk of the territorial self-government unit may be estimated, have been decreasing since 2013, which is a very positive trend for the city. Nevertheless, Łódź is ranked third in Poland in terms of indebtedness. In 2011 the amount of debt totalled approximately 1.55 billion PLN, whereas in the budget plan for the year 2017 it was projected to reach the target of 2.9 billion PLN, which means that the debt servicing cost per resident has increased from 1.8 thousand PLN to 4 thousand PLN. Currently the rate of debt accounts for almost 75% of the yearly

revenues of the city. It may be reassuring that as of the beginning of 2017 the indebtedness of the city is supposed to stop growing [Draft of a resolution...].

"When evaluating revenue independence, it could be helpful to use the ratio indicating the share of own-source revenue of the territorial self-government unit in its total revenue, which, in a synthetic manner characterises the possibility of conducting revenue policy by particular tiers of territorial self-government. The aforementioned ratio indicates the scope and extent of power vested in territorial self-government units with regard to generating own-source revenue (e.g. creating unique sources of revenue) which are directly or indirectly dependent only on it" [Ślebocka 2013, p. 294]. Table 4 presents the data concerning the said ratio.

Table 4. Revenue independence ratio in the city of Łódź in the years 2011–2017

Years	Specification		
	Own-source revenue excluding the share in taxes which constitute state budget revenue	Total revenue	Revenue independence ratio
2011	1,096,332,178.26	2,748,093,571.53	39.89
2012	1,214,778,367.18	3,030,272,013.69	40.09
2013	1,595,036,034.57	3,574,739,989.80	44.62
2014	1,353,679,483.56	3,396,633,989.89	39.85
2015	1,455,300,984.35	3,841,403,448.09	37.88
2016*	2,438,487,669.00	3,836,803,666.00	63.56
2017*	1,438,951,282.00	3,752,570,054.00	38.35

* compiled by the author of the paper on the basis of the budgets of the city of Łódź as well as the reports of budget implementation for the years 2011–2017, <http://bip.uml.lodz.pl/index.php?str=11>.

When analysing the data set forth in Table 4, which concern the ratio of revenue independence in the examined years, it may be noted that:

- a gradual increase can be observed in both total revenue as well as in own-source revenue. In 2015, in comparison to 2011, total revenue rose by as much as 39.78%, whereas own-source revenue increased by 32.74%,
- in the years 2016–2017, the analysis covered the amounts of revenue which were projected in the budget resolution and not those which were actually executed. It was assumed in 2016 that there would be a considerable increase in own-source revenue, particularly as regards revenues from taxes and local fees as well as shares in taxes which constitute state budget revenue,

- the largest share of own-source revenue in total revenue was noted in 2013 and amounted to 44.62%, whereas the smallest was reported in 2015. Nevertheless, its level is still satisfactory and proves that the rate of independence of the city is considerable.

The ratio of expenditure independence I and II indicates the extent of freedom the territorial self-government enjoys with regard to spending the accumulated funds. Detailed information is presented in Table 5.

Table 5. Rate of expenditure independence of I and II degree in the city of Łódź in the years 2011–2017

Years	Specification					
	Own-source revenue excluding the share in taxes which constitute state budget revenue	Revenues which constitute the share in tax revenues of the state budget	Total revenue	General subsidy	I degree ratio	II degree ratio
2011	1,096,332,178.26	781,013,181.58	2,748,093,571.53	533,635,469.00	68.31	87.73
2012	1,214,778,367.18	808,098,563.62	3,030,272,013.69	566,049,221.00	66.76	85.44
2013	1,595,036,034.57	820,702,321.93	3,574,739,989.80	561,718,132.00	67.58	83.29
2014	1,353,679,483.56	865,284,065.87	3,396,633,989.89	567,665,860.00	65.33	82.04
2015	1,455,300,984.35	931,482,412.77	3,841,403,448.09	577,316,019.00	62.13	77.16
2016*	1,475,104,376.00	974,317,416.00	3,836,803,666.00	598,076,226.00	63.84	79.43
2017*	1,438,951,282.00	1,036,500,905.00	3,752,570,054.00	615,748,425.00	65.97	82.38

* compiled by the author of the paper on the basis of the budgets of the city of Łódź as well as the reports of budget implementation for the years 2011–2017, <http://bip.uml.lodz.pl/index.php?str=11>.

When analysing the data presented in Table 5 it may be noted that:

- the ratios of expenditure independence of I and II degree remain on a similar level. The I degree expenditure independence ratio amounts to 65%, whereas as regards the II degree ratio, it totals 80%,

- the highest value of the I degree expenditure independence ratio was reported in 2011, whereas the lowest in 2015. In the case of the II degree expenditure independence ratio, the values were similar,

- there is a noticeable difference between the values of the I degree expenditure independence ratio and the values of the II degree expenditure independence ratio. However, it may be reassuring that the disproportion is gradually diminishing, which may mean that the significance of the share of the revenues obtained from the gen-

eral subsidy in the catalogue of budget revenues is decreasing and the significance of own-source revenues is growing.

Apart from evaluating the level of indebtedness, the rate of financial liquidity and financial independence, it is also important to analyse the attractiveness of a given territorial self-government, which enables the entity to attract potential investors. The data concerning the volume of investment calculated per resident in Łódź are presented in Table 6 hereunder.

Table 6. The volume of investment per resident in Łódź in the years 2011–2017

Years		Specification		
		Total revenue	Revenue independence ratio	Volume of investment per capita
2011	Plan	642,671,351.00	725,055	886.38
	Amended budget	541,036,821.00		746.20
	Implementation	409,216,489.20		564.39
2012	Plan	811,464,796.00	711,332	1,140.77
	Amended budget	653,171,654.00		918.24
	Implementation	531,564,232.00		747.28
2013	Plan	1,316,352,370.00	718,960	1,830.91
	Amended budget	1,142,651,269.00		1,589.31
	Implementation	999,692,573.48		1,390.47
2014	Plan	1,315,429,859.00	706,004	1,863.20
	Amended budget	1,174,520,601.00		1,663.62
	Implementation	1,020,428,695.62		1,445.36
2015	Plan	1,300,753,646.00	700,982	1,855.62
	Amended budget	1,308,495,695.00		1,866.66
	Implementation	1,104,392,254.00		1,575.49
2016	Plan	623,231,847.00	698,688	892.00
2017	Plan	597,595,756.00	686,704	870.24

* compiled by the author of the paper on the basis of the budgets of the city of Łódź as well as the reports of budget implementation for the years 2011–2017, <http://bip.uml.lodz.pl/index.php?str=11> and the information presented on the following website: www.demografia.stat.gov.pl/bazademografia/Prognoza.aspx,

When analysing the data set forth in Table 6 it may be noted that:

- the projected volume of investment per resident in the city of Łódź was increasing gradually until the year 2015. In the first analysed year it amounted to 886.38 PLN, whereas in 2015 it totalled 1,855.62, which means that there was an increase by 109.35%. The situation looks different in the years 2016-2017. Far less funds have

been allocated in the budget for investment expenditure. According to the adopted budgetary guidelines, the gap between the present value and that from the year 2015 is supposed to be plugged by means of the European Union funds [www.dziennik...],

- moreover, the reduction in investment expenditures, which is noticeable in the budget adopted for the year 2017, constitutes a part of the investment policy pursued by the city of Łódź, which stipulates that the investments which have already been started should be completed in the first place and new investments should be projected in the budget for the year 2018,
- the volume of implemented investments, similarly to the volume of planned investments, was increasing gradually from 564.39 PLN in 2011 to 1,575.49 in 2015, which means its value was three times higher,
- although the amount of funds spent on investments is rising year-on-year, the implementation thereof is lower pursuant to the adopted guidelines (both in the initial version as well as in the amended version including adjustments as at 31 December).

Conclusion

The comprehensive examination and constant monitoring of the financial situation, carried out by means of particular financial ratios, is crucial for effective functioning of territorial self-government units. The significance of the said financial situation is growing, especially when taking into consideration the fact that the financial instruments at the disposal of self-government units may exert only a limited impact (eg, tax policy, indebtedness) [Krakowiak-Drzewiecka 2011, p. 801]. Therefore, a duly conducted ratio analysis makes it possible to accurately recognise the processes and phenomena which affect budgetary revenues and expenditures [Filipiak 2014, p. 69]. It enables the assessment of potential threats ensuing from the decisions made in the territorial self-government and the formulation of the coherent development strategy. Thus, when only individual sets of ratios are taken into consideration, the financial situation of the territorial self-government unit may be evaluated incorrectly.

Łódź is one of the three cities, along with Toruń and Wałbrzych, with the highest level of indebtedness. Łódź, which has a particular pool of resources at its disposal, is not able to implement all the planned actions using exclusively its own-source funds and therefore, when executing projected investment expenditures, it relies on credits

and loans. It means that when implementing infrastructural investments Łódź uses external sources of finance. "Although gminas as entities using debt instruments are regarded as reliable partners, the cost of incurred loans increases along with a lower rating given before the granting of a loan or issuance of bonds" [Standar 2013, p. 227]. Such a situation may entail a negative rating of the financial condition of the self-government. Fortunately, the rate of financial liquidity is satisfactory, which means that budgetary expenditures and outgoings are fully covered by budgetary revenues and incomings, and the risk of insolvency is low, which means that it does not pose a threat to the macroeconomic stability of the city [Kto tonie w długach..., p. 4].

In the analysed period, Łódź displayed independence from the external sources of finance, which is proven by the revenue independence ratio. In the said period its value amounted to 45%. Łódź also enjoyed a high level of freedom regarding expenditures as it had the full and unlimited discretion in this regard. Considerable leeway in decision making concerning its spendings encourages the self-government to launch new investments targeted at improving the quality of life of its residents.

When analysing the rate at which the funds allocated for investments increase, we may get the impression that Łódź is a dynamically developing city. In the analysed period, the volume of investments per resident increased almost three times. Undoubtedly, the general subsidy played an important role in maintaining investment expenditures at a high level in Łódź as well as an accelerated influx of funds from the European Union in relation to the previous years [Cf. Kogut-Jaworska 2011, p. 329]. The main trends in spending public funds were investments concerning the construction and modernisation of roads and tram trackages and the construction of the New Centre of Łódź. In 2015 most funds were spent on, among others, the construction of the East-West Road (489 m PLN) and the Łódź-Fabryczna railway station (213 m PLN). Generally, the level of investment expenditure was determined, first and foremost, by the amount of funds available to the gmina as well as by the current needs of its residents. Therefore, the main trend in the spending policy of Łódź is the regeneration of degraded urban space. Undertakings aimed at revitalisation constitute the primary investments carried out in the city. In the budget of the city of Łódź for the year 2017 a particular amount of funds – almost 21.7 m PLN – were allocated for local urban areas revitalisation in the centre of Łódź [www.portal...].

To sum up, the findings of financial analysis conducted by the author of the paper indicate that the financial condition of Łódź is satisfactory despite the high level of indebtedness. The city has a coherent vision of its development, which defines the

long-term challenges the self-government has to face up to [Strategia...]. It primarily focuses on improving the standard of living of the residents by means of using the infrastructural potential in economic terms to the fullest.

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Participatory Revitalisation as the Determinant of Changes in Urban Policy Financing

Abstract: The aim of revitalisation is permanent economic recovery of degraded areas. Revitalisation processes are of special nature, due to their complex character, combining different aspects of urban policy, as well as due to the unpredictability of time and finance determinants. It is this unpredictability which forces the need to secure long term funding for these processes.

The article presents the problems of public participation in the revitalisation as conditioned by the need to ensure the safety of financing of this process in the long term, not only from public sources, but mainly from private ones. The article points to the public participation in the revitalisation as a challenge facing local government. Public participation is a condition for obtaining EU funds, but also legally regulated obligation of local authorities. Opening on a wide participation may lead to changes in exercising public powers and financing of urban policy.

Research methods include primarily one of the main methods in legal sciences, i.e., the method of construction (dogmatic). The study analysed the documents and acts adopted at national and EU level, and selected literature. Moreover, the conclusions were based on the experience of the author in consultations of the revitalization program and the national and international projects and training.

Key words: revitalisation, financing of urban revitalisation, public participation, local government

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Introduction

With the coming into force of the Revitalisation Act of October 9, 2015, and the adoption of the National Urban Policy (NUP) on 20 October 2015, a long period of work aimed to regulate urban revitalisation processes came to an end. The debates among the representatives of the interested communities went on, though, because the National Revitalisation Programme, a key regulation on the sources of funding and mechanisms of urban revitalisation, has not become operational yet and the existing regulations entail many challenges, including financial, for local governments.

This study seeks to evaluate the following research hypothesis: the challenges faced by local authorities with respect to urban revitalisation can change the way of exercising public powers and of financing urban policy.

As well as testing the above hypothesis, the study analyses also selected local governments' problems related to revitalisation and its financing. The primary research method is the review of national and EU-level documents and legislation and of the pertinent literature. The findings of the study are enhanced by the author's hands-on experiences that she has gained as a consultant for revitalisation programmes and during international and domestic projects and training.

Participatory revitalisation and its aims

The Revitalisation Act and the National Urban Policy adopted in 2015 extended the Polish definition of urban revitalisation, making it similar to that used in the EU legislation and documents and in the operations run by many European towns and cities. Urban revitalisation as understood before 2015 was practically limited to construction and repair activity. Sufficient to successfully seek revitalisation funds from the EU sources, the approach was widely criticised by many stakeholder groups, mainly urban planners [Billert 2010].

The NUP and the Revitalisation Act require that urban revitalisation simultaneously pursue a range of goals, including social, economic, cultural, spatial (also technical) and environmental goals. Repairs and technical improvements to the existing infrastructure are viewed as a means of revitalisation rather than its purpose. The NUP provides that revitalisation should primarily strive to „ensure permanent

economic and social revival of the degraded area, to make it more attractive to its residents and entrepreneurs, and to improve the quality of living" [National Urban Policy 2015, p. 64].

An important aspect of the NUP is its emphasis on making local authorities more aware of the paramount goal of revitalisation, as they tend to confuse the participatory aspects of revitalisation (see below) with its social aim and consequently concentrate on the latter. The author of this study has observed that because of the specific goals of revitalisation, mainly its social goal, local authorities may come under strong influence from the non-governmental organisation advocating the use of EU funds that the organisations have raised specifically to finance the social activities of a revitalisation project. Conforming to these expectations may, in extreme cases, lead to the distortion of the existing and long-accepted functions of the area being revitalised. The risk of this happening is higher in large cities where revitalisation involves central areas with multiple urban functions, one of which is the 'landmark' function. It is critical that the function be protected while the social problems are being solved. The author of this study believes that the process for creating a vision for an area to be revitalised must take account of its social, economic, environmental, and spatial potentials, etc. It is also worth bearing in mind that while the specific goals of revitalisation are explicitly defined for that area, they are also parts of a broader urban policy. Last but not least, the role that the area has played through history, as well as its potential for contributing to continued development of the city must be considered. The handling of the area's social problems may prove crucial to restoring its potentials.

In presenting the goals of urban revitalisation, the NUP highlights the need for different entities to work on a collaborative basis and for thorough cooperation between local governments and local communities (participatory arrangements). Public participation is explained in terms of the overall urban policy, without narrowing its scope to revitalisation alone [National Urban Policy 2015, p. 31]. The issue of public participation is also widely covered in the literature of various scientific disciplines, including land planning and use, where its special characteristics are stressed [Siemiński 2015, pp. 49–51]. The Revitalisation Act regulates public participation with respect to the special demands of revitalisation, coming up with a process that can rightly be called 'participatory revitalisation'. The Act builds on the assumption that public participation should extend to as many entities and activities as possible. Of particular importance is that it requires all stages of a revitalisation process to have

a participatory element, starting from planning through implementation and evaluation. A major step towards ensuring wide public participation is the identification of eligible stakeholders. These are, in addition to companies carrying on business activity in the municipality and entities that intend to do so (art. 2 item. 2 pt. 3), also entities acting on behalf of the local community, including non-governmental organisations and informal groups of citizens, as well as entities that plan to engage in such activity (art. 2 item 2 pt. 4). Given that the municipality's residents living outside the area of revitalisation are also eligible stakeholders (art. 2 item 2 item 2), the stakeholder status is practically available to all interested persons. Interestingly, on the list of stakeholders the municipality has the same status as all other entities, despite its leading role of a public entity in charge of revitalisation (art. 2). Another participation-enhancing solution provided in the Revitalisation Act is the institution of the Revitalisation Committee (art. 5 item. 1) that has been added to the existing forms of participation, such as public consultations. The Revitalisation Committee is intended as an advisory and consulting body to the mayor (art. 7), but it is also an attempt at giving a formal structure to revitalisation stakeholders. The Revitalisation Act specifically names the representatives of the three major community groups indicated in its art. 2 item 2 pts 1, 3 and 4, as the mandatory members of a Revitalisation Committee [The Revitalisation Act 2015].

The present regulation of public participation seems to correspond to the needs raised by authors such as Waldemar Siemiński, who has stated that the social partners' participation in land planning and use processes initiated and coordinated by public authorities social partners is nothing else as public consultation on projects [Siemiński 2015, pp. 49–51, Siemiński, 2007, pp. 37–59]. As the author of this study has observed, the Revitalisation Act allows also other forms of public participation, for instance joint-decision making, even though it does not specifically refer to it. The NUP emphasises that the purpose of public participation in urban renewal should be consensus (the reconciling of the interests of different stakeholders (i.e. partnership)) and not confrontation. According to the author, this is certainly the reason why the Revitalisation Committees have been introduced. Participatory revitalisation facilitates the creation of social capital, which is at the core of partnership and consensus. Consequently, participatory revitalisation may ultimately reshape public governance and give a new quality to local authorities' dialogue with local communities, thus piloting changes in other parts of the city or in other segments of urban policy.

Participatory revitalisation and changes in financing urban policy

As of now, the key provider of revitalisation funds in Poland is the EU. In the new programming period 2014-20 revitalisation activities will be able to use at least PLN 25 bn, which accounts for ca. 9-10% of all funds available to national operational programmes and regional operational programmes [National Revitalisation Programme 2022, 2014], the latter being the main channel for distributing EU funds.

Revitalisation funding can also be sought from the Integrated Territorial Investments facility financed under the Operational Programme 'Technical Assistance' and from the European Territorial Cooperation programmes. Another source is Territorial Contracts for voivodeships, which are supplied by the national budget. All funding institution evaluate revitalisation projects for eligibility for financial assistance based on their compliance with the extended definition of revitalisation, according to which social, economic, spatial, and environmental goals should be pursued through social participation.

This substantial financial support from EU sources follows the Community's policy on financing urban renewal. The Leipzig Charter states that by making the major programmes of integrated urban development eligible for European structural funds the programmes' long-term feasibility has been ensured. Pointing to the insufficiency of public money as a source of revitalisation funds, the Charter emphasises that integrated urban development, especially integrated urban revitalisation, can use the money more effectively as it reconciles stakeholders' interests [Leipzig Charter, 2007, p.8]. The bottom line of this is that the Charter both appreciates the role of public funds and EU's financial assistance and recommends that the available resources be spent through a participatory process. In its part on participation, the General Regulation refers to the so-called partnership principle (art. 5 item 1) which requires the involvement of private partners in revitalisation projects carried out in relation to operational programmes and a consistent, open and ongoing dialogue with entities to be influenced by revitalisation [Regulation (EU) No 1303/2013].

The "Guidelines on revitalisation under operational programmes 2014-2020" of 3 July 2015 state that the instruments of public participation should be more advanced (e.g. joint-decision making or citizens' control) than merely the provision of information by local authorities or consultations [Guidelines on revitalisation under operational programmes 2014-2020, 2015, p.24]. Even though the Guidelines had

been adopted before the Revitalisation Act was enacted, they seem to be more progressive in their treatment of public participation.

The NUP that also gives a central role to public money as the source of revitalisation funds refers to the cities' budgets as the „primary source of revitalisation intervention serving the public interest“ [National Urban Policy 2015, pp. 59–60]. It notices, though, as the Leipzig Charter did, that the cities' financial potential with respect to revitalisation is limited compared with the scale and capital intensity of such projects. It recommends therefore that local governments secure funding necessary to finance projects pursuing public goals in their multiannual financial forecast and put up contingency funds to cover unexpected expenses related to the renewal of decaying built-up areas. The NUP makes it also possible to seek finance from the competent bodies in charge of national funds to pay for certain components of revitalisation projects (social goals, heat-insulating works, housing, support for entrepreneurship, etc.) [National Urban Policy, 2015, pp. 59–60].

According to the author, the conclusion that can be drawn from these documents is that public money (the city's budget) should be the first, but not the only source of revitalisation funds. They also imply that being the first source of funding the city's budget is not necessarily the main one, particularly that the long-term-financial capacity of municipalities may vary depending on the circumstances. Even so, public money remains an important source of finance for revitalisation projects as it ensures the success and stability of ongoing processes. Moreover, the NUP's reference to the multiannual public financial forecast raises some doubts, as the legal determinants of the forecast's functioning are arguable [Franek, 2012, pp.251-259]. Nevertheless, the role of this planning tool is worth being enhanced, not only with respect to revitalisation projects pursuing public goals, because the stability of public funding is a strong argument when private funds are being sought (see below). It is also worth noting that the issue of regulating the public financing of urban renewal was a long-time obstacle to the enactment of the Revitalisation Act. The Act's draft provided that „the projected act shall not contain solutions directly providing revitalisation processes with the sources of funding. It is projected as a set of tools allowing the processes to be carried out in an effective and optimal manner, and its purpose is to create a legal framework for these processes to encourage various entities (public and private) to concentrate their resources on the degraded areas and to cooperate for increasing their financial leverage“ [Guidelines for the Revitalisation Act, Draft, 2015, Skalski, 2015]. The Revitalisation Act as enacted does not indicate from what sources revitalisation projects should be funded.

The prospect of limited availability of revitalisation funds after the last period of EU's financial assistance and the shortage of public funds make it necessary to start seeking funds already now. The NUP addresses the problem by emphasising the importance of financial engineering encompassing public and private capital (contributed by enterprises, residents, homeowner associations, banks), of the creation of conditions enabling cooperation, and of financial incentives (hybrid projects). It is the author's opinion that the NUP's reference to public-private partnerships (PPP) as the recommended vehicle for the revitalisation of cities' centres on account of their ability to create opportunities for the commercial use of projects is interesting, but arguable [National Urban Policy 2015, p. 68]. The controversy over PPP's greater role in financing revitalisation projects arises from the private entities' low interest in this solution, which is largely determined by the legislation in force. The situation may change, however, as the government is developing incentives to increase private entities' contribution to revitalisation projects, including financial support [Diver City 2 – City for All 2016, Herbst 2010, pp. 156–159].

In the author's opinion, it is the local authorities' greater openness to wide public participation in revitalisation projects that will determine the future use of private funds, because participation is the only way to obtain long-term financial commitment from private partners. Local governments tend to disregard this fact and consistently resist dialogue with local communities and, particularly, the use of advanced participatory methods [Herbst 2015, pp. 8-9]. Local governments' unawareness of the need for wide social participation appears also to delay the use of other mechanisms available under the Revitalisation Act (Special Revitalisation Zones, local revitalisation plans, etc.). Article 52, item 1, of the Act allows municipalities to run projects related to programmes that their councils have adopted by resolution to help the degraded areas recover from a crisis until 31 December 2023, without having to enact a municipal revitalisation programme. However, this solution blocks the possibility of designating the degraded area, the area for revitalisation, and the Special Revitalisation Zone, and prevents the adoption of a local revitalisation plan [Revitalisation Act 2015]. There is a risk that the concerns with the acceptance of wider public participation and the resulting insufficient use of the instruments of participation provided by the Revitalisation Act will cause that EU's funds will not be used as effectively as they could be.

However, because this period of EU's financial assistance is the last one, the biggest challenge for local governments undertaking to launch revitalisation pro-

jects will be to introduce mechanisms encouraging private entities to commit financially to their projects early enough [Skalski 2004, pp. 84–87].

Conclusion

According to the author's opinion, being open to wide public participation at all stages of the revitalisation process - planning, execution and evaluation - is the main problem to be tackled by local governments. The obligation to ensure public participation is regulated by the Revitalisation Act that lays special emphasis on the methods of public consultations and introduces the Revitalisation Committee, an organisationally separate consultation body dedicated to urban revitalisation. It is also of importance that public participation has been named as an obligatory element in the process of seeking European funds for revitalisation projects by both the General Regulation and the "Guidelines on revitalisation under operational programmes 2014-2020". The second of these documents even states that local governments should make efforts to implement advanced methods of social participation, such as joint-decision making or citizens' control. Thus, the Guidelines follow the participatory urban policy adopted by the EU. As far as the Revitalisation Act is concerned, it does not make direct references to joint-decision making and citizens' control, but it does not exclude them either.

The need of openness to wide public participation has to do with the need to have private entities as financial contributors to revitalisation projects. Public money, the first source of funding for revitalisation projects, and private funds have been assigned different functions. They are used, respectively, to ensure the financial security of ongoing processes and their long-term viability.

It is also worth noting that the need to provide revitalisation projects with solid financial foundations became more pressing after the definition of revitalisation was extended. With the long-term economic and social revival of the degraded area, its increased attractiveness to the residents and business and better quality of life being indicated as the priorities of revitalisation, it turned into a process the time- and capital-intensity of which are difficult to predict. However, as challenging as the priorities may seem, they also provide an opportunity to have the participation of private entities interested in creating a vision for the area designated for revitalisation.

According to the author, the probability that private entities will commit themselves to urban revitalisation is low, unless participatory methods giving them some control over this process and a say about its direction and shape are implemented. By extending the range of such methods to those that are more advanced, Polish legislation is giving local governments time to prepare for their use. The institution of the Revitalisation Committee has been designed as a vehicle for honest dialogue between the local government and the community, and to allow the parties to learn and find the areas of mutual understanding. Financial incentives for private entities are as important as joint-decision making, because it is up to them whether private entities will commit their resources. The incentives should be created as soon as possible, with due regard to individual needs and potentials of all parties. The challenges faced by local governments undertaking revitalisation projects and the interactions between them arise from Poland's urban revitalisation policy. The policy is consistent with that conducted by the EU and its aim is to change the way in which public authorities use their powers as well as the financing of urban policy. The changes are expected, respectively, to ultimately open local governments to participatory decision making and to ensure that participatory decision making and financial incentives attract private capital to urban initiatives.

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The Use of different Methods of the Tax Base Estimation in the Light of SAC Ruling in 2014

Abstract: One of the phenomena that can be observed in the economy is tax evasion. It has different forms like unreliable tax evidences. This problem concerns also income taxes. In order to protect the interests of the State Treasury and to ensure fair competition in the economy, measures must be available to prevent the occurrence of such attempts. The effect of unreliable tax evidences is estimation of the tax base. The provisions point out different methods of estimating of the tax base. Polish legislation provides tax authorities with a list of six tax base estimation methods they can use. In cases when none of these methods is applicable, tax authorities may use other methods serving the same purpose, but the law (the Tax Ordinance Act) does not indicate what these methods should be. The aim of the article is to evaluate the necessity of elaboration other methods of the tax base estimation than those indicated in the Tax Ordinance Act. The analyse of using the methods of estimating of tax base by the tax authorities was given. The scope of the analyse were different cases from the administrative court. The cases concerned different types of methods of tax estimation used by tax administration. In the majority of analysed cases the other methods than pointed out in the provisions or literature data were used. The implementation of rules concerning other methods of estimating of tax base was proposed.

Key words: tax fraud, the estimation of tax base, income taxes

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Introduction

An important element of the free market is competition. One feature influencing the free market is the amount of taxes the enterprises must pay. One of the phenomena existing in the economy are the tax frauds. There are different kinds of tax frauds, like the lack of registration of doing business or unreliable tax records. The effects of such activities concern also income taxes. In order to protect the interests of the State Treasury and to ensure fair competition in the economy, measures must be available to prevent the occurrence of such attempts. The effect of unreliable tax records is the estimation of the tax base. The tax base estimation is to calculate the tax liability as close as possible to the real value of the tax base but is not a punishment for breaking the tax law [Pietrasz, Siemieniako 2010a, p. 30]. The literature data concentrated on the problems in interpretation of this provisions [Huchla 1999].

The provisions point out different methods of estimation of the tax base. The Polish tax ordinance points out six methods of estimation of the tax base. In cases when none of the methods indicated in the provision is applicable, the regulations allow tax authorities to use other methods to estimate the tax base. So far part studies show that methods of estimation of the tax base pointed out in the provisions are used seldom [Witczak 2014, p. 330; Witczak 2015, pp. 181–185]. Moreover, the literature data indicates other tax base estimation methods than those pointed out in the provisions. The aim of the article is to evaluate the necessity of elaboration other methods of the tax base estimation than those indicated in the Tax Ordinance Act or in the literature.

The research hypothesis is as follows: The methods of the tax base estimation indicated in the Tax Ordinance Act or literature are used in a minor level. The application of estimation requires elaboration of other the methods than those indicated in the Tax Ordinance Act or in the literature data.

The estimation of tax base – basic rules

The provisions allow the tax administration to estimate the tax base in some cases. They describe the reasons for determining the tax base by the use of estimation methods. According to regulation, the tax base is estimated in case of no tax books or other data necessary to determine the tax base. Another reason for estimation is establishing that the tax records are kept unreliably or incorrectly. There are number

of literature on the interpretation of unreliability or incorrectness [Melezini, Zalewski 2011]. The next premise for tax base estimation is the fact that the data resulting from the tax records do not allow the taxable base to be determined. Also if the taxpayer has breached the conditions entitling him or her to lump-sum taxation may cause the tax base estimation [Adamiak et.al 2012, pp. 223–224].

However, the occurrence of the above-mentioned situation does not always mean the tax base estimation. The regulations obliged the tax administration to abandon the estimation of the tax base if there are other evidences collected in the course of the proceeding supplemented the evidence from tax records making it possible to determine the tax base [Dzwonkowski 2012; Dzwonkowski 2014].

The Polish regulations indicate the methods that the tax administration may use in order to determine the tax base by the estimation. These methods are [Tax ordinance, art 23 item 3]:

- the internal comparative method,
- the external comparative method,
- the inventory method,
- the production method,
- the cost method,
- the type of income as a percentage of turnover.

The internal comparative method consists in comparing the amount of turnover with the previous years' turnover figures in the same company. According to its legal definition, the external comparative method consists in comparing turnover figures of companies that are similar to the one audited in terms of business scope and conditions. In the inventory method, the value of the assets of the enterprise at the beginning and at the end of the period is compared taking into account the turnover speed rate. The production method estimates the production capacity of the taxpayer. The next method is cost method. It derives the turnover figure from a company's expenses based on a coefficient indicating their share of turnover. The last method pointed out in the provisions is the type of income as a percentage of turnover method. The amount of income is calculated from the sale of particular goods and particular services based on their share of total turnover [Tax ordinance, art 23 item 3; Dzwonkowski, Huchla, Kosikowski 2003]. However, applying these methods in practice can meet numerous obstacles like the comparability of enterprises, the use of comparable secret data. It may cause that these methods are not always possible to be used [Sowiński 2003].

However, tax authorities may use other methods to estimate the tax base. The law does not indicate what these methods should be. Following methods as 'non-statutory' methods are presented in the literature [Schneider, 223; Brzeziński B. et al., p. 242; Kosikowski]:

- determination the turnover figure from information sources,
- determination the percentages of particular products in total production,
- determination the percentages of some goods in the total turnover of the company,
- analysing the formulas used to make particular products,
- estimation business expenses in relation to turnover,
- examining the consumption of electricity,
- estimation a company's incomes based on its expenses,
- investigating net profits,
- utilising an econometric model of costs.

Those methods are shortly (usually 3–4 sentences) described in the literature. Pietrasz, Siemieniako indicate that the legislature left the tax authorities relatively freedom in choosing the method of tax bases estimation [Pietrasz, Siemieniako 2010b, p. 35].

3. The methods of tax base estimation used in SAC rulings – research findings

The empirical part of this article is based on the analysis of case studies derived from the rulings of the Supreme Administrative Court. All rulings that the Supreme Administrative Court made in 2014 and which were available in the Lex database on 18 April 2015 were analysed. The taxpayers challenging the tax authorities' decisions may lodge a complaint with the Voivodeship Administrative Court (VAC). VAC is competent to assess whether a particular decision taken by the tax administration is legally sound. The taxpayers may lodge a complaint to the tax administrations' decisions concerning the income estimation as well. A complainant (both taxpayers and tax administration) who disagrees with the ruling issued by the Voivodeship Administrative Court may submit a cassation appeal to the Supreme Administrative Court. By analysing court rulings concerning the income estimation the application of particular estimation methods by the tax authorities can be examined. As many as 219 rulings issued in connection with article 23 of the Tax Ordinance Act regulat-

ing the use of the tax base estimation rules were examined. The rulings of Supreme Administrative Court which were examined involved different types of taxes (see table 1).

Table 1. The types and numbers of taxes to which estimation methods were applied

Tax	PIT	PIT cases as a percentage of all rulings	CIT	CIT cases as a percentage of all rulings	Excise	Excise cases as a percentage of all rulings	VAT	VAT cases as a percentage of all rulings	Other taxes	Other taxes cases as a percentage of all rulings
No. of cases	142	65%	9	4%	29	13%	28	13%	11	5%

Source: developed by the author.

Approximately 65% of the analysed rulings (see table above) concerned personal income tax (PIT) and only 4% corporate income tax (CIT). Total the rulings on income taxes accounted for 70% of analysed rulings from the databases. Whereas, excise and Value-added tax were dealt with in 26% of cases. 11 rulings related to other taxes like lump sum turnover-based tax, environmental duties including fuel duties.

A more detailed analysis was applied to rulings made in cases where the provisions concerning tax base estimation in income taxes (both personal income tax and corporate income tax) were used. In most cases, the tax authorities did not use the estimation methods. (see Table 2).

Table 2. Numbers of rulings concerning estimation methods and other matters related to income taxes

No. of analysed rulings	No. of rulings in cases in which tax base estimation methods were used	No. of rulings in cases in which tax base estimation methods were used as a percentage of all rulings on income taxes	No. of rulings on matters other than the use of estimation methods	No. of rulings on other matters as a percentage of all rulings on income taxes
73,5%	40	26,5%	111	73,5%

Source: developed by the author.

The data in table 2 show that tax authorities did not use the tax base estimation methods in 73,5% of cases related to income tax. The reasons for the decision not to use a tax base estimation method were varied.

In some cases, the tax administration maintained the tax records to be unreliable or there were no tax books but not perform an estimation procedure under art. 23 item 2 of the Tax Ordinance Act, and used other sources of information, evidences instead. Another reason for the tax base estimation methods not being applied was the discovery that dummy invoices were used as a legitimate source of deductible expenses. Taxpayers lodged a complaint with VAC demanding using the estimation of the tax base to determine the challenged amount of expenses. However, in 40 analysed cases involving income taxes, tax authorities used different methods to estimate taxable income (see Table 3).

Table 3. No. of rulings on cases involving the use of particular tax base estimation methods

Method	The cost method	The cost method as a percentage of analysed rulings	The internal comparative method	The internal comparative method as a percentage of analysed rulings	The type of income as a percentage of turnover method	The type of income as a percentage of turnover method as a percentage of analysed rulings	Other methods	Other methods as a percentage of analysed rulings
No. of rulings	3	7.5%	1	2.5%	1	2.5%	32	80%

Source: developed by the author.

Tax authorities used the statutory methods in only 12,5% of cases. Similar results were obtained in earlier research on this issue. In 2013 tax authorities used the statutory methods in 20% of analysed cases [Witczak 2014, p. 330]. There was no information on applied method of income estimation in three rulings. Methods other than specified in the law were applied in 80% of analysed cases. Moreover, the methods of income estimation described in the Polish literature as alternative methods to those pointed out directly in provisions were used in minority of cases (see Table 4).

Table 4. Number of rulings concerning the use of estimation methods specified in the legislation, literature and other methods

Method	Methods specified in the law	Methods specified in the law as a share of all analysed rulings	Methods described in the literature other than specified in the law	Methods described in literature other than specified in the law as a percentage of analysed rulings	Other methods than described in literature or specified in the law	Other methods than described in literature or specified in the law as a percentage of all analysed rulings
No. of rulings	5	12.5%	2	5%	28	70%

Source: developed by the author.

There was no information on applied method of income estimation in three rulings. There was information in four rulings that the applied methods belong to other methods without specifications (descriptions) what kind of methods they were. In two cases more than one method of income estimation was applied. Both methods described in the literature and other methods than described in the literature or specified in the law were used in those rulings.

Methods described in the literature other than specified in the law were applied in two rulings. They concerned income estimation of the hairdresser. The tax authority named used estimation method as cost method with elements of the external comparative method. In fact, the tax administration applied analysing the formulas used to make particular products methods with elements of the external comparative method. For the income estimation following information was used:

- obtained from external sources: the structure of clients in respect of the length of hair (the proportion of clients with different length of hair were given by other hairdressers), the standards of using up the hair dye were given by the sellers of hair dye.
 - from internal sources: the cost of purchase the materials (like hair dye) used in performing the colouring the hair in the tax year; the average price of colouring the hair established on the basis of receipts from cash register given by the taxpayer.
- This information concerned the specific of doing business by the taxpayer.

Those evidences were used to calculate the level of selling and as a result the level of revenues. The hair dye purchase used to perform the services was the basis for establishing the level of revenues. Moreover, the external comparative method was used as well. Such "combination" of methods allows claiming that the tax administra-

tion applied analysing the formulas used to make particular products methods with elements of the external comparative method.

No other methods described in the literature other than specified in the law were used in analysed cases. By the way, it can be interested to analyse why such methods as estimation a company's incomes based on its expenses or utilising an econometric model of costs are not applied by the tax administration.

No use of the company's incomes based on its expenses method may be caused due to the fact that this method is foreseen as a method of determining the income in case of revenues from undisclosed sources. This is a special procedure to determine the tax base and tax liabilities when the property and expenditures of the taxpayer are higher than his income [Marciniuk, p. 246]. The Polish Personal Income Tax distinguishes different sources of revenues of the natural person. It includes for example revenues from doing business, employment relationship and other sources (including the revenues from undisclosed sources). So the tax authorities use this method only when the procedure involved with the revenues from undisclosed sources is carried on. It seems to be allowed using the company's incomes based on its expenses method also when the procedure involved with the revenues from undisclosed sources is not carried on. If the tax administration knows the sources of revenues (most common it is doing business) it should be allowed to establish the income of the taxpayer by the use of a company's incomes based on its expenses method.

However, the tax administration involves the company's incomes based on its expenses method. To change the attitude the amendments to the law may be required. It can be directly indicated in the tax ordinance that a company's incomes may be calculated on the basis of the taxpayer's expenses and properties.

Using the utilising an econometric model of costs requires the proper knowledge and the adequate temporal time series necessary for estimation. But the characteristic feature of income estimation is the lack of particular information of revenues or expenditures.

Moreover, methods described in the literature other than specified in the law are not described very precisely in the Polish literature. There is a lack of theoretical background for these methods. It may be the reason why the tax administration applies those methods so seldom. The officers of tax authorities could have too little knowledge of these methods. It is recommended to elaborate precise guidelines on those methods of income estimation.

The methods not described in the literature nor specified in the law were applied in 70% of analysed cases. The research shows that several methods of income estimation were used or a combination of several methods of tax base was applied in some cases. Following methods of tax base estimation were used in analysed rulings when methods not described in the literature nor specified in the law were applied:

- receiving the information from the taxpayer,
- receiving the information from taxpayer's employees, contractors,
- receiving the information from other entities,
- determination of average price,
- determination of average profit margin,
- the use of opinions of experts,
- determination of exact inputs and outputs on the taxpayer's banking account.

Determination of exact inputs and outputs on the taxpayer's banking account was used in three cases to estimate the income. This method is close to the estimation a company's incomes based on its expenses method. However, only the inflows and outflows on the banking account were examined. The increase of the assets (property) was not investigated by the tax administration. This is why we cannot call this method estimation a company's incomes based on its expenses.

For the tax base estimation, the information received from taxpayer was used by the tax authorities. They concern the prices, prices margins, the structure of purchase or selling. Other methods are the information received from taxpayer's employees, contractors, or information received from other entities like employees, other taxpayers doing business in the same branch. The income estimation is on the basis of determination of average price or the determination of average profit margin. The average numbers are established on the basis of taxpayer's tax records or information or data obtained from other entities or economical publisher. The use of opinions of experts was applied in some analysed cases. For the tax base estimation, a combination of several methods of tax base was applied in some cases.

Conclusions

The results of this study show that tax authorities estimated taxable incomes using statutory methods in minor extent. Such cases concerned only 12,5% analysed rulings. Moreover, the methods described in the literature but not specified in the

law were applied only in 5% of analysed cases. There is a high percentage of cases equalling 70% in which tax authorities estimated taxable incomes using different methods than statutory or described in the literature. So the hypothesis was hold true as the methods of the tax base estimation indicated in the Tax Ordinance Act or in the literature are used in the minor level.

The reason for it may be their lack of adequacy to the market economy. Another reason may be the lack of theoretical background for these methods. Next problem is treating determining a company's incomes based on its expenses method only in case of revenues from undisclosed sources.

The guidelines on some tax base estimation methods should be issued. They should concern at least the statutory methods and methods described in the literature. They could describe factors taking into consideration in income estimation. The methods could be described in secondary legislation or guidelines of Ministry of Finance. Additionally, a company's incomes based on its expenses method should be also indicated as tax base estimation method in Tax ordinance.

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Credit Information Databases in Enhancing of the Financial System Stability

Abstract: The course of real economic processes to a large extent depends on the proper functioning of the financial system. It has to provide the flow of funds from entities that have them to those who need them, providing security to both parties. In order to facilitate these flows while minimizing the risk, in the countries around the world there are developed both public and private credit registers. They enable the exchange of information between credit institutions, what brings many benefits, such as fraud reduction, credit quality improvement, increase in the borrowers' discipline, but also increased credit availability and lowering credit costs.

The aim of this study is to characterize various types of credit databases and to present the role of credit information sharing in shaping the stability of the financial system.

Key words: stability of the financial system, credit information, creditworthiness, credit information database.

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Introduction

The financial system is one of the key elements of the modern economy. Economic processes largely depend on its quality and manner of organization. The financial system is to provide a flow of funds from entities that have savings to those who need them. In the event of a malfunction it can lead to inhibition of growth or even serious economic crises.

Financial system must be both efficient and safe and therefore cannot function properly without modern infrastructure, covering systems of payment and transaction clearing and settlement, systems of market participants' protection (e.g. deposit guarantee schemes), and also the institutions increasing the transparency of information, such as e.g. various types of credit registers.

Credit risk and the stability of the financial system

The financial system is defined as a set of logically interrelated forms of organization, legislation, financial institutions and other components allowing operators to establish financial relations. The financial system forms the basis for all business entities which use the money, which consists in ensuring the uninterrupted flow of credit to the entities declaring the demand for money [Adamska 2008, p. 156].

The financial system is very important for the economic and social organization of modern society [Cavalcante at. al. 2016, p. 194]. Any disruption in the operation of the financial system and impaired effectiveness of the provision of financial services have a negative impact on the situation of both companies and households. For this reason, important is the stability of the financial system understood as a state in which the system performs its functions in a continuous and efficient way, even when unexpected and adverse disturbances occur on a significant scale [NBP, www.nbp.pl, 19/04/2016].

Of particular importance for the stability of the financial system is maintaining the stability of the banking sector, whose assets in Poland constitute as many as two thirds of the total financial system [Osinski at. al. 2016, p. 5]. Banks play a key role in financing the economy and monetary settlements. For these reasons, special emphasis is put on analysis and assessment of the risks for the stability of banks. The collapse of the bank will likely have a negative impact on other banks. This results from

the fact that due to the clearing relationship between the banks, problems of one of them will cause trouble of the other banks, i.e. the so-called domino effect. In turn, problems of the bank or of a part of the banking system may have disastrous consequences for the economy and people. Depositors may lose their money and trust in financial intermediaries [Ferretti 2010, p. 9]. What's more, the cost of any bank failure are largely borne by taxpayers, not by the owners, hence the stability of the banking system began to be viewed in terms of public good [Gradoń 2016, p. 254].

It should be noted that the profitability and solvency of the banking sector is dependent on bank lending, which of course is related to the occurrence of credit risk. Risk means the venture, the result of which is unknown or uncertain, or the possibility that something goes wrong. In the case of credit activities it means a risk (uncertainty) to achievements of planned profits from credits granted [Zaleska 2007, p. 275]. Credit risk is one of the basic types of banking risks. It depends both on external and internal factors.

Credit risk can be divided into [Jaworski, Zawadzka 2004, p. 660]:

- the active risk – the risk of credit default by the borrower on the dates and in amounts specified in the agreement,
- the passive risk – threat of earlier than resulting from the agreement withdrawal of deposited funds.

Credit risk can also be classified as at [Jaworski, Zawadzka 2004, p. 660]:

- individual risk – resulting from a single agreement,
- portfolio risk – constituting aggregated individual risks.

Skillful credit risk management plays an increasingly important role in the complex process of bank management. Actions taken by the bank, especially when it comes to lending, are aimed at reducing this risk. One of the primary ways to control risk and protect against the negative consequences is a comprehensive analysis of creditworthiness, or the ability to timely and complete fulfillment of the obligations and conditions of the credit agreement [Jaworski, Zawadzka 2004, p. 663].

Credit rating is a process designed to ensure the safety not only of the bank or the borrower, but also all the people entrusting their money to a given bank. Therefore, the accurate calculation of creditworthiness by banks is so important. Usually, to determine creditworthiness of borrowers, creditors ask for personal information, together with the relevant supporting documents. At the same time they try to collect information from their own database developed through years of experience and business practice in the credit market. This source of information is incomplete,

however, because it covers only their own customers and does not include data from relationships with other financial institutions, especially information about the actual debt or history of servicing previous credit products. Complementing the information on potential customers is made possible by development of increasingly advanced technologies for the collection and exchange of credit information [Ferretti 2010, p. 6].

Shaping a secure credit market through the exchange of information

Research shows that in recent decades the majority of failures in the credit markets can be attributed to the asymmetry of information between lenders and borrowers [Doblas-Madrid, Minetti 2013, p. 198]. Asymmetric information leads to problems of adverse selection and moral hazard in the credit markets. The inability of creditors to ex ante distinguish safe and risky credit applicants and ex post implementation of safe and profitable use of the allocated funds leads to credit rationing and insufficient allocation of capital [Behr, Sonnekalb 2012, p. 3017].

Exchange of information between credit institutions can enhance the performance of credit by improving the direct examination of the borrower and selection at the stage of approval of the decision on credit granting [Behr, Sonnekalb 2012, p. 3018]. Exchange of information also reduces corruption in crediting [Grajzl, Laptieva 2016, p. 3].

Three possible levels of exchange of information between credit institutions may be identified [Simovic, Vaskovic, Rankovic, Malinic 2011, p. 102]:

- the lowest level – means that there is no exchange of information. In these circumstances, financial institutions have only information about the users of their services;
- medium level – means the exchange of negative information between creditors; they have information on unsettled payments and debts of their customers;
- advanced level of exchange of information between financial institutions means the exchange of both positive and negative information on credit activities of their customers.

The higher the level of information exchange, the better the repayment of credit obligations. This is confirmed by, among others, research conducted in Argentina and

Brazil, which showed that the exchange of both positive and negative information between creditors leads to a reduction in credit default rates by 22% (in the case of Argentina) and 45% (in the case of Brazil), compared to a situation where creditors exchange only negative information [Simovic, Vaskovic, Rankovic, Malinic 2011, p. 102]. Individual countries decide to accept a certain level of information exchange. Even in European Union member states it is not uniform (see table 1).

Table 1. Type of credit information about individual customers listed in different European countries

Country	Positive and negative information	Only negative information
Austria (AT)	X	
Belgium (BE)	X	
Croatia (HR)	X	
Czech Republic (CZ)	X	
Denmark (DK)		X
Finland (FI)		X
Germany (DE)	X	
Greece (GR)	X	
Hungary (HU)	X	
Iceland (IS)		X
Italy (IT)	X	
Netherlands NL	X	
Norway (NO)		X
Poland (PL)	X	
Romania (RO)	X	
Slovakia (SK)	X	
Spain (SP)		X
Sweden (SE)	X	
Switzerland (CH)	X	
Turkey (TU)	X	
United Kingdom (UK)	X	

Source: Association of Consumer Credit Information Suppliers, ACCIS survey 2010; http://aei.pitt.edu/33375/1/ACCIS-Survey_FinalReport_withCover.pdf; 21.05.2016.

The exchange of information has become particularly important for the consumer credit sector, which has to deal with a large number of small sums, often unsecured (credit lines, cards, loans). It is widely believed that this sector profitability can only

be achieved by minimizing the risk. It should be noted that the recovery of the debts of small size may be unprofitable for the creditors. On the other hand, borrowers are aware of the usually small penalties provided for by law and can therefore decide not to pay off their debts. Therefore, facilitating rapid access to standardized information on potential borrowers is a response to the needs of banks and other financial intermediaries [Ferretti 2010, p. 6]. The exchange of credit information can alleviate a number of market failures, which are common in the financial markets worldwide [The World Bank, 21.05.2016]. It should be noted that in the situation of rapid spread of microfinance creditors also from outside the banking system, competition in the credit market needs to accelerate the process of granting credits and loans to individual customers which may generate additional risk [Doblas-Madrid and Minetti 2013, p. 222].

Most research confirms significant positive effects of sharing information, such as an increase in the supply of credit, a decline in credit costs, reducing default rates, and GDP growth. Exchange of information on borrowers has impact on the following:

- **reducing fraud** – survey of installment credits of nearly 4 000 US companies showed that the use of information from credit bureaus decreased the credit abuse by an average of 13% (and even up to 37%). This result can be largely attributed to the impact of disciplining the exchange of credit information [Dierkes, Erner, Langer, Norden 2013, pp. 2867–2868];
- **increasing the discipline of borrowers** – sharing of information has an impact on the discipline of borrowers. When they know that the information about them is divided between the creditors, they have a stronger motivation to make and maintain a good reputation [Grajzl, Laptieva 2016, p. 3]. Borrowers are therefore trying to reduce the likelihood of default by increasing the effort and giving up excessively risky projects. They are aware that through information exchange, negative credit history even with one creditor will be visible to all institutions providing loans and credits [Behr, Sonnekalb 2012, p. 3017]. Exchange of information promotes responsible “credit culture” by discouraging excessive debt and rewarding responsible borrowing and repayment [The World Bank, 21.05.2016]. Customers are beginning to be aware that building a positive credit history allows not only for easier credit obtaining, but also on better terms;
- **higher credit quality** – the exchange of information shapes the condition of the credit market – it has been systematically improving the quality of the new credits portfolio. Obtained information allows creditors to identify bad risks, which reduces

the problems of adverse selection [Grajzl, Laptieva 2016, p. 3]. In a situation where the lender is able to directly assess the situation of the applicant's creditworthiness and credit history, it is able to choose better borrowers *ex ante*. This in turn leads to a better quality of credits granted [Behr, Sonnekalb 2012, p. 3018]. Research conducted in 43 countries show that in countries where the credit registers are extensively used, default rates are lower, and the number of bank loans increased [Doblas-Madrid, Minetti 2013, p. 199]. Studies conducted in the United States on 28 thousands of credits and leases showed that the creditors' access to exchange information through the credit bureaus reduced the incidence of arrears in credit repayment. The creditor, which proceeded to exchange information noticed a decrease in the maximum delays in payments of installments from 29.65 days to 23.31 days. On average, the delay in payments to the creditors decreased from 6.58 days to 5.76 days [Doblas-Madrid, Minetti 2013, 199]. In addition, information exchange increases the rate of repayment [Grajzl, Laptieva 2016, p. 3];

- **increase in the number of credits** – better exchange of information is associated with a higher level of credits to individuals in the GDP in different countries, and these effects are statistically significant [Nana 2014, p. 323]. The availability of high-quality credit information reduces the problems associated with adverse selection and asymmetry of information between borrowers and creditors which helps to improve the allocation of new credits [The World Bank, 21.05.2016]. Love and Mylenko pointed out that the presence of credit registers in the country lowers the perceived incidence of financial constraints. Exchange of information between creditors can facilitate access to credit facilities for lower class borrowers, previously excluded from the credit market [Doblas-Madrid, Minetti 2013, pp. 199–202]. Collection of data on borrowers and sharing them facilitates access to credit also to persons without prior credit history, because inclusion of data from large databases into the evaluation of creditworthiness can fill the information gap about the financial risk for millions of people [ACCIS, 21.05.2016];
- **reduction of credit costs** – firstly exchange of information accelerates and simplifies credit procedures, which allows for reduction of operating costs in the processing of credit applications. Secondly, it should be noted that in the absence of exchange of information between lenders, the new lender does not know the "quality" of the customer and always will assess the higher risk associated with it than a bank with which the customer already had previous relationships [Egarius, Weill 2016, p. 155]. Thirdly, information exchange may also increase competition between creditors and thus

reduce the cost of credit [Behr, Sonnekalb 2012, p. 3018]. By sharing of proprietary information by the creditors on the quality of borrowers it is possible to reduce abuse and, consequently, lower credit rates which in turn promotes the development of competition [Doblas-Madrid, Minetti 2013, p. 202]. For this reason, the exchange of information between creditors consequently reduces the costs and expenses of borrowers and improves their access to financing [Grajzl, Laptieva 2016, p. 3].

Given the numerous benefits resulting from transparency of credit information, one can conclude that it is an essential condition not only of proper risk management, but also of the financial stability [The World Bank, 21.05.2016].

Credit Information Databases worldwide

Although progress in the field of information and communication technologies increases the ability of creditors to obtain information on borrowers, all the time there is a problem of information asymmetry. The solution may be to develop institutional arrangements through which creditors will share proprietary information with each other. Examples of such solutions are the public credit registers and private credit reference agencies that collect data about the credit history of companies and consumers and make them available to its members upon request [Doblas-Madrid, Minetti 2013, p. 198].

Credit registers are present in most EU Member States, but their institutional structure depends on the various policy goals and functions they perform in the economy and society. In terms of properties credit registers can be divided into the following [Ferretti, 2010, p. 7]:

- **private credit information systems**, also known as credit reference agencies (CRA);
- **public credit registers** (PCR) generally managed by central banks or other national supervisory authorities.

The main objective of public databases of borrowers is the stability of the financial system and the fight against over-indebtedness of consumers. Public databases act as "prudential supervision" [European Central Bank, 22.05.2016]. They are often oriented on collection of information for the whole of the financial system, for the purpose of macro-prudential policy [The World Bank, 22.05.2016]. They constitute one of the instruments that can reduce the excessive level of indebtedness by debt control [Simovic, Vaskovic, Rankovic, Malinic, 2011, 101]. Besides, through credit in-

formation the regulators can understand the interrelations between credit risks of systemic importance encountered by borrowers and may perform the basic supervisory function [The World Bank, 22.05.2016].

Basically, the financial institutions that are under the control of the central bank of a country or supervisory authority are required by law or other regulations to report certain credit data on a regular basis to the public credit registers. The national credit registers operated by central banks exist in 14 EU countries (Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Italy, Latvia, Lithuania, Portugal, Romania, Slovenia, Slovakia and Spain) [European Central Bank, 22.05.2016].

Compared to credit registers, credit reference agencies are relatively new institutions

Credit reference agencies are mostly privately owned, usually in the form of companies without any restrictions on the type of shareholders. These may be banks, non-bank financial institutions, as well as other operators in the market. They are for-profit companies, which are subject to the same rules and regulations as any company operating on the market [Ferretti 2010, p. 6]. Private credit bureaus meet the information requirements of commercial creditors. In general, they try to collect very detailed data on individual customers. Therefore, they tend to cover smaller loans than public credit registers, and often gather information from a variety of financial and non-financial entities, including retailers, credit card issuers and microfinancing institutions. As a result, the data collected by the credit bureaus are often more flexible and better suited to assess and monitor the creditworthiness of individual customers.

The commercial goal of credit information is:

- provision of tools for market risk management in order to increase economic efficiency and profitability of credit suppliers [Ferretti 2010, p. 6];
- allowing financial institutions to exchange information on borrowers. This reduces the problem of asymmetric information and eliminates the moral hazard;
- monitoring the financial (in) discipline of credit users, and thus contributing to making optimal credit decisions on the part of the credit institution [Simovic, Vaskovic, Rankovic, Malinic 2011, p. 101].

Using the private databases to check the credibility of the borrowers by the creditors is not required by law and is carried out on a voluntary basis. Data for databases

of borrowers are provided by the creditors on the basis of reciprocity, that is, creditors are able to get access to the database only when they provide information on their borrowers [Ferretti 2010, p. 7].

Both forms of credit registers i.e. private and public seem to be essentially complementary in terms of credit environment improvement [Nana 2014, p. 321]. The existence of public credit registers and private credit reference agencies have a positive impact on the development of the credit market in the economy, reducing credit risk [Simovic, Vaskovic, Rankovic, Malinic 2011, p. 101], the efficiency of the credit market and financial stability.

The European Commission's Expert Group on Credit Histories recognizes that the exchange of credit data between creditors is an important element of the financial infrastructure that facilitates access to financing for consumers. The use of credit data in assessing the creditworthiness of borrowers is the key to improve the quality of the loan portfolio of creditors, thus reducing the risk of lending activities [ACCIS, 21.05.2016]. Through the exchange of credit information the forecasting accuracy is improved and it is possible to achieve a better allocation of credit in the economy [Dierkes, Erner, Langer, Norden 2013, p. 2877].

Moreover, in its Principles for Sound Residential Mortgage Underwriting Practices, the FSB (Financial Stability Board) states that: the real income of the borrower is a key contribution to successful underwriting of loans. Therefore, provisions should ensure that creditors will check and document the current status of each applicant, the relevant employment history, income and other financial information that may affect the payment of liabilities [ACCIS, 21.05.2016].

In some countries, databases contain information on credit histories covering up to 100% of the population (Table 2).

Table 2. Percentage of population whose credit information can be found in private offices in 2015

Country	Coverage ratio Private offices	Coverage ratio Public offices	Credit Information Index
Austria	52.8	2.2	7
Belgium	0	96.3	5
Bulgaria	0	64.7	5
Croatia	100	0	6
Cyprus	67.3	0	6
Czech Republic	78.7	6.7	7
Denmark	7.7	0	6
Estonia	34.7	0	7
Finland	20.5	0	6
France	0	45.1	6
Germany	100	1.6	8
Greece	81.2	0	7
Hungary	88.6	0	5
Ireland	100	0	7
Italy	100	27.3	7
Latvia	0	80.8	6
Lithuania	79.3	33.9	8
Luxemburg	0	0	0
Malta	0	0	0
Netherlands	78.2	0	7
Poland	91.0	0	8
Portugal	16.1	100	7
Romania	50.1	15.9	7
Slovakia	67.3	3.2	6
Slovenia	100	3.1	4
Spain	14.1	49.8	7
Sweden	100	0	5
United Kingdom	100	0	8

Source: own study on grounds of: <http://data.worldbank.org/indicator/IC.CRD.PRVT.ZS>; 21.04.2016.

The Coverage Ratio is defined by the World Bank as an indicator which provides information about the number of persons mentioned by the public or private credit register with information on their credit history in the past 5 years. The number is expressed as a percentage. Credit reference agencies are defined as private compan-

ies or non-profit organizations that maintain a database on the creditworthiness. In turn, the public registers are defined as databases managed by the public sector, usually by the central bank or banking supervision, which collect information on the creditworthiness of borrowers in the financial system and facilitate the exchange of credit information among banks and other financial institutions (and their main objective is to support the banking supervision). If the public credit register does not work in a given country, the coverage is 0.0% [A World Bank Group Flagship Report, 19.05.2016]. A study by Deloitte in 2013 in Latin America showed that full coverage of the population increases the coefficient of credit availability of GDP by 47.5% as compared to the situation without the presence of credit databases in the given country [ACCIS, 21.05.2016].

The Credit Information Index measures the range, availability and quality of credit information in the public or private credit registers. The index ranges from 0 to 8, with higher values indicating the availability of larger quantity and more types of information about borrowers, which may facilitate the credit decisions. If the credit bureau or register is not working or covers less than 5% of the adult population, the result on the depth of credit information index is equal to 0 [A World Bank Group Flagship Report, 19.05.2016].

In 1990, the Association of Consumer Credit Information Suppliers was founded. Currently it brings together 46 credit information agencies in 28 European countries and 6 associate members in other continents (Table 2).

Table 2. List of credit information agencies in the EU associated in ACCIS in 2016

Country	Credit Bureau
Austria (AT)	CRIF GmbH KSV 1870 Information GmbH
Belgium (BE)	Banque Nationale deBelgique
Croatia (HR)	HROK d.o.o. Croatian Credit Information Registry
Cyprus (CY)	Artemis Bank Information Systems Ltd
Czech Republic (CZ)	Czech Credit Bureau, a.s. SOLUS
Denmark (DK)	Debitor Registret A/S Experian A/S
Finland (FI)	Suomen Asiakasteto OY
Germany (DE)	Creditreform Boniversum GmbH Bürge! Wirtschaftsinformationen GmbH & Co. SCHUFA Holding AG infoscore Consumer Data GmbH
Greece (GR)	Tiresias
Hungary (HU)	BISZ Central Credit Information Plc.
Iceland (IS)	Creditinfo Group
Italy (IT)	CRIF S.p.A.Experian Information Services S.p.A.
Norway (NO)	Experian Norway
Poland (PL)	Biuro Informacji Kredytowej S.A. Krajowy Rejestr Długów Biuro Informacji Gospodarczej SA
Romania (RO)	Biroul de Credit S.A.
Slovakia (SK)	Slovak Credit Bureau s.r.o
Spain (SP)	Experian Bureau de crédito S.A. Equifax Spain
Sweden (SE)	Creditsafe i Sverige AB
Switzerland	Schweiz Verband Creditreform
The Netherlands	BKR Stichting Bureau Krediet Registratie Experian Nederland BV
Turkey (TU)	Kredi Kayit Bürosu A.S.
United Kingdom	Callcredit Information Group Ltd Equifax Limited Experian

Source: own study on grounds of: <http://www.accis.eu/membership/list-of-fm.html?L=1>; 21.05.2016.

Some agencies also exchange credit information with financial institutions in other countries. With such an exchange creditors in a particular country gain a fuller insight into the debt of non-resident borrowers to other credit institutions of the EU. This allows for a better assessment of the credit risk of cross-border loans [European Central Bank, 2010, p. 2].

It should be noted that the provision of banking services, as well as other business activities, are subject to the process of globalization. These changes should be accompanied by the appropriate supervisory actions carried out in the international scale, and therefore the exchange of detailed credit data between institutions of individual countries will become increasingly important [Kruszka 2011, p. 50].

Credit Information Bureau in Poland

Biuro Informacji Kredytowej SA (BIK) in Poland was established in 1997 by Polish banks and the Polish Banks Association for the purpose of minimizing credit risk and enhancing the safety and security of cash transactions. The Bureau manages and develops an effective system of exchange of credit information by collecting, storing, processing and distribution of comprehensive information on the credit history of bank customers in the form of credit reports.

In 2017, BIK cooperates with all institutions of the banking sector in Poland [BIK, 17.03.2017]:

- 41 commercial banks,
- 558 cooperative banks,
- 40 Cooperative Savings and Credit Unions (together with National Cooperative Savings and Credit Union)

Databases of BIK provide information about 138 million accounts and 23 million people.

The main product of the Credit Information Bureau is a Credit Report. It is designed according to the principle "from general to specific" and contains a range of information about the customer and its liabilities, which can be divided into the following segments [Kisiel, 29.05.2016]:

- **data from the current query:** data from the application made by the inquiring bank (customer identification, and information of the requested liability, which were entered during the current query);
- **general aggregated data,** which contain a summary of the credit accounts and credit inquiries. Summary of credit accounts refers to all credits affiliated with the applicant, both open (under repayment) and closed (repaid, written off as losses etc.).

- **specific aggregated data** – in the first part represent the number of credits associated with the customer broken down by credits under repayment and already paid and by categories of delays in repayment.

Since 2001, BIK provided the banking sector with more than 318 million reports on the credit history of customers.

In response to the demand of the credit market, year by year the Credit Information Bureau expands its offer. Currently, there are the following products and services available through it [BIK, 28.05.2016]:

- Credit, Monitoring, Customer Management Reports - regarding individual customers and small and medium-sized enterprises,
- Scores (BIKSco Credit Risk, BIKSco ProCredit, BIKSco Mortgage),
- Reports of Customers Credit Activities (RAKK),
- services of viewing and validation of input data (Platform BIK),
- products allowing for monitoring the excessive debt phenomenon (BIK Debt Index, BIK Data Monitoring),
- access to information from external databases (BIG Info-Monitor, Documents Reserved System),
- intermediation in the provision of information about the credit history of persons in Germany (with the base of the German credit bureau SCHUFA Holding AG).

Polish system of exchange and access to credit information is estimated by the World Bank as one of the most developed in the world [BIK, 29.10.2016].

Summary

Stability of the financial system depends largely on the stability of the banks, in the complex process of managing which the increasingly important role is played by the skillful management of credit risk. One of the primary ways to control this risk is a comprehensive analysis of creditworthiness, which is based on the analysis of the information provided. In order to reliably assess the borrower the information provided by the person concerned is no longer sufficient, the exchange of information between institutions providing loans and credits is necessary. For this reason, all

over the world there emerge public credit registries or private credit reference agencies facilitating the exchange of information on borrowers. Exchange of information reduces the risk of banks by improving the quality of loans, increasing the discipline of borrowers and consequently improving the repayment obligations. The existence of public credit registers and private credit reference agencies brings benefits to the customers through better credit availability and reduction in their costs, has a positive impact on the development of the credit market in the economy, the efficiency of the credit market and financial stability.

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Tax Policy Versus Financial Exclusion

Abstract: The aim of the article is to present the relation of the type of taxation and financial exclusion in ten European countries with extremely different average tax rates. There is constructed a synthetic indicator, called the index of the financial exclusion. It is calculated as the arithmetic average of the eight selected variables, providing for the use of financial products in the countries. The results of the analyses show that societies with lower average income tax rate, have less financially excluded people. There is no such a clear conclusion in the case of VAT.

It seems that index of financial exclusion have a great relationship with the income tax system in selected European countries. The subject requires further research.

Key words: tax policy, taxation, tax rate, fiscal policy, financial exclusion

JEL classification: I31, I38, H2

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Introduction

A review of the literature shows that life satisfaction is affected by the following factors: the amount and type of tax rate, type of tax, the tax increase diversification in consumption tax, public spending, the level of income inequality and the age of the taxpayer. It seems that the financial exclusion is due to the factors mentioned above. The study "Tax Policy and the 'happiness index'" is shown the relationship between taxes rates and the index of happiness. Happiness index was constructed as the average of three indicators such as: GDP per capita, HDI index and Quality of Life in the EU countries and Norway. Using the method of ranking, the results confirm that the level of tax rates has less impact on 'luck' than the number of tax brackets. The more tax brackets in the tax system, the higher the index of happiness. In countries where tax progression based on at least three tax brackets, happiness index was higher than in countries where progression was limited. In the countries surveyed, an increase in diversification rates of tax on goods and services had a positive impact on social inequalities.

This article is the continuation of the above considerations. According to Professor Tatarkiewicz, who was a Polish philosopher, the road to happiness is through suffering. Is the tax measure affecting the happiness index, can affect the level of social suffering, only in the opposite direction? Assuming that "happiness index" pointed to the importance of tax progression then you can ask the question 'what is the relationship between the progressive tax and financial exclusion and the index of suffering?'. The scale of financial exclusion can be examined using traditional indicators of public access to banking services, for example by having or not having a bank account. The authors propose to use the indicator, supplementing measurement of the financial exclusion which is called: suffering index. Financial exclusion is a reality for many European citizens. Two in ten adults in the EU15 and almost half in the EU10 (47%) do not have a bank account, and many more have no savings or access to credit [European Commission 2010]. Financial exclusion significantly increases the risk of social exclusion and poverty. Fiscal policy should take into account all the aspects of financial exclusion – poverty, low income, lack of employment as these aspects are both major components of, and reasons for, social exclusion. The statements mentioned above make this study much more interesting and important for people with low income. Tax policy seems to be an important tool to prevent financial exclusion. The aim of the article is to present the relation of the type of taxation and financial exclusion index in ten European countries with extremely different average tax rates.

Tax measures versus satisfaction with life, social inequalities and financial exclusion

The diversity of research on the relationship of taxation and satisfaction with life and financial exclusion may be a signpost for changes in tax policy. Simple logic suggests that the low indexes of income inequality and financial exclusion favor the growth of satisfaction with life. So do governments through the appropriate tax structure may reduce financial exclusion? Social welfare function depends on the state redistribution. Social welfare depends on the redistribution function of the State. If the aim of the tax system is to maximize individual well-being, the scale of income taxation should be progressive. Progressive taxation reduces inequality [Bankman and Griffith in 1987, p. 1967]. S. Oishi [2011] using data from the Gallup Global Poll, examined the impact of progressive taxation on the sense of satisfaction of taxpayers [Oishi 2011]. It turned out that the relationship is positive. In the literature one can discern relationships of income inequalities to financial exclusion. A group of researchers from the Department for Employment and Social Policy at the European Commission confirmed a significant correlation between index / level of financial exclusion and inequalities on income which is in line with previous studies [Kempson, 2006]. In countries with high wealth (measured by GDP per capita), income inequality were low as well as indicators of financial exclusion. In that case, progressive taxation reduces income inequality and therefore increases satisfaction with life. You may find that financial exclusion and income inequality are linear

Is, therefore, satisfaction with life is inversely proportional to financial exclusion and income inequality?

Polish studies confirm the thesis, that the tax progression in income tax reduces the degree of social inequality. And in the consumption tax equally positive impact on social inequalities has the increase of diversification of taxation [Walasik 1998, p. 122]. The impact on social inequalities also have other types of tax, shown in Table 1 as special corrective factors (table 1).

Table 1. The impact of different tax instruments on the coefficient inequality of income distribution in society

Factor	The instrument of fiscal policy	The impact on the degree of inequality
Property	The increase in property tax rates	Reduction
	Zero rate of property tax	No effect
	The decrease in property tax rates	Increase
Income	Progressive taxation of income	Reduction
	Proportional taxation of income	No effect
	Regressive taxation of income	Increase
Consumption	Increase the diversification of consumption tax-repressive nature of excise duties	Reduction
	Flat rate of taxation in consumption	No effect
	The decrease in the consumption tax diversification	Increase

Source: A. Walasik, Political mechanism of income distribution in society, 'Journal of Law, Economics and Sociology', 1998, Issue 2, p. 122.

People who use public goods such as public transport or education, experience subjective satisfaction. Paying taxes in the context of progressive taxation has a positive effect on life satisfaction because it is associated with the possibility of using public goods and services. Similar research results were achieved by B.S. Frey [2009], S. Luechinger [2009], S. Luechinger and P.A. Raschky [2009]. Taxes are the main source of revenues in the public finance sector because higher tax rates lead to higher average consumption of public goods. People who use public cultural services at least once a month are more satisfied than people who do not use public cultural goods [Siegloch 2012]. High taxes often respond to high consumption of public goods, high satisfaction with life and low income inequality but are detrimental to the economic growth [Angelopoulos, Economides and Kammas 2007; Lee and Gordon 2005]. Tax policy by diversifying tax rates and tax titles can influence the degree of inequality decomposition wealth in society and financial exclusion. In search of optimal tax rates from the point of view of social welfare (wealth) also considered age. It is believed that the lowest tax rates should be for

the young [Kremer 1997] . It appears that one of the reasons for an increase life satisfaction is the decline in income inequality, resulting in a decline in financial exclusion.

Analyzing the academic achievements can be discerned several research trends. The first is a general cross-sectional analysis. They are represented by the reports prepared at the request of European institutions or financial information. The most important research in the field of financial exclusion was carried out by the European Commission [European Commission 2015]. It tries to determine a series of indicators of financial exclusion and it defines this concept in detail. Financial exclusion is strongly linked to social exclusion. Access to financial services has become a necessary condition of participation in economic and social life. The most important factors causing financial exclusion include social factors - that dominate, factors of supply and demand factors. A valuable complement to these analyzes is a very detailed report presented by the Foundation K. Adenauera [Foundation of Adenauer 2015]. The report provides a holistic approach to the problem of exclusion, together with the diagnosis and attempts to find solutions. Moreover, special attention should be paid to Drozdowska's study [Drozdowska 2010], associated with financial exclusion. In her analysis, she reaches similar conclusions. The report describes financial exclusion on a world scale is a publication of the World Bank's Asli Demirgüç-Kunt [Demirgüç-Kunt 2015]. It shows the causes of financial exclusion and its symptoms. It provides mainly reliable diagnostics. The authors of the report pay attention to the specific use of various financial products and the possible reasons for their unavailability for the excluded. The Public Opinion Report delivers the similar information about Europe [European Commission 2015]. At the same time it indicates the path of development of financial services in Europe and the major problems that are causing the financial exclusion. It turns out that the main factor in the reduction the financial exclusion is education. Financial Services [European Commission, 2008] presents a report analyzing the causes and consequences of the financial exclusion in Europe. The report by S. Collard and other [Collard 2001] tries to sum up the causes and specificity of the financial exclusion in the UK. James F. Devlin [Devlin 2009] performs analysis of the causes of financial exclusion in the UK. He concludes that the key is education and financial status, employment, age. The study has covered 15 thousand of households. Another author Yusuf I. Mugaloglu, analyzes the exclusion of companies from the SME sector. In his studies [Mugaloglu 2012], he concludes that the cause of exclusion is the lack of access to information.

Analysing data on exclusion in the Baltic Sea region, Sławomir Smyczek [Smyczek 2014] reaches the conclusion that the lack of work is conducive to financial exclusion, and also indirectly low income of household.

The second trend deals with general analysis of the phenomenon, which has the task of placing it in the typology of learning. Analyses carried out by Solarz [Solarz 2011] which is fundamental. The author defines and provides the necessary knowledge about financial exclusion. The research team of profesor Solarz focuses on interrelations between the social and financial exclusion. The authors point out that the relationship between financial and social exclusion have the opposite sign in Poland compared to Western Europe. This exclusion is the cause of financial exclusion. However, in Western Europe this financial exclusion is a cause of social exclusion.

The third area is the attempt to draw conclusions and propose the most effective solutions in this area. In this area fit analysis represented among others by Kempson [Kempson 2006]. They focus on how to enable financially excluded people, to the society and what you need to do in this direction. The author points to the major role of education and financial institutions that should act responsibly and supply the products more at affordable prices. Analysis of the causes of exclusion of people aged 50 plus has been made by Ziemia at all [Ziemia 2014]. It turns out that the basic cause of exclusion is the low level of financial education and the mismatch of offers of financial institutions to the needs of the elderly. To sum up the literature review and made analysis it can be concluded that financial exclusion is the cause or result of social exclusion and is an important factor affecting the quality of life of people.

Analysis on the type and diversification tax rates and the suffering index in European countries in the years 1995–2012

The study of the relationship between the type and diversification of tax rates and social suffering indicator included twenty-eight EU countries and Norway. Among this group of countries were selected two groups of countries with the highest average tax rate and the lowest average tax rate. A review of the literature shows that in countries with high wealth (measured by GDP per capita) income inequality were

low as well as indicators of financial exclusion and high taxes often respond to high consumption of public goods and low income inequality. [European Commission, 2008; Angelopoulos, Economides and Kammas, 2007; Lee and Gordon 2005]. Therefore, countries were divided into countries with high wealth and high tax rates and countries with low-wealth and low tax rates. Median of average tax rates for the years 1995–2012 amounted to 30.27. The countries with high tax rate are countries with tax rates above the median and the average tax rate in that group is 33.71%. The countries with low tax rate are the countries below the median. The average tax rate in the countries with low average tax rate amounted to 25.03%. Then using the method of the ranking, the positions of countries in the various groups have been determined. The next step in the study was to analyze the countries with the highest index of suffering (indicator of social suffering) in their groups due to the presence of tax progression and diversification in VAT rates. [Orlowski 2010, p. 160]. Ranking method helps determine the positions of countries with high and low average tax rates due to the volume index of suffering. Each country has a rank from 1 to 5 in the appropriate category. Highest rank is 1, the lowest rank is 5. Indicator of social suffering (C_i), the so-called suffering index is the arithmetic average of the three indices: the increase of income inequality in 2012, the average life expectancy in 2012, and the unemployment rate in 2012. All the indexes were normalized using unitarisation so that the best recorded value within each index is 1. The maximum value of the index suffering is 1, the lowest is 0. This can be represented as the following formula:

$$C = \frac{G + B + DZ}{3} \quad (1)$$

where,

C – an indicator of social suffering / index suffering (from 0 to 1) in the i -th year

G – normalized Gini coefficient distribution in the i -th year

B – standardized rate of unemployment in the i -th year

DZ – standard life expectancy in the i -th year

Table 2 presents European countries with the highest average tax rates, and standardized indexes of social suffering in 2012. The average tax rate is the arithmetic average of the rates in income tax and indirect tax on goods and services, which is VAT in the years 1995–2012.

Table 2. The highest average tax rates in the EU countries and Norway in the years 1995–2012 and standardized indices of social suffering in 2012

Rank tax	Country	The average tax rate in the years 1995–2012 (%)	G 2012	G i = 2012	B 2012	B i = 2012	DZ 2012	DZ i = 2012	C	Ranking
1	Denmark	39.6	28.10	0.42	7.50	0.37	80.20	0.82	0.539	5
2	Belgium	39.4	26,60	0.31	7.50	0.37	80,50	0.86	0.510	3
3	Germany	36.6	28,30	0.44	5.40	0.19	81,00	0.93	0.522	4
4	Netherlands	36.1	25,40	0.22	5.30	0.18	81.20	0.96	0.455	2
5	Norway	35.3	22.50	0.00	3.10	0.00	81.50	1.00	0.333	1

Source: Own study based on data from Eurostat [European Commission 2013c], www.pordata.pt.

Data in table 2 show that the dominant country in this ranking is Norway. You can see the relationship of low tax rates with the falling index value of suffering. An example for this is Norway and the Netherlands. In the case of transition countries there is no such obvious connection (table 3). The lowest suffering index is in the Czech Republic. At the same time this country has a high average tax rate, this is a little different than in the case of countries from table 2. This means that the suffering index not entirely is affected by collected taxes. They are a component thereof, but not a determining factor.

Table 3. The EU countries with the lowest average tax rate and standardized indices of social suffering in these countries in 2012

Country	The average tax rate in the years 1995–2012 (%)	G 2012	G i = 2012	B 2012	B i = 2012	DZ 2012	DZ i = 2012	C	Ranking
Latvia	20.9	35,70	1.00	15,00	1.00	74,10	0.00	0,667	5
Lithuania	21.65	32,00	0.72	13.40	0.87	74,10	0.00	0.528	2
Estonia	22.20	32.50	0.76	10.00	0.58	76,70	0.35	0.563	4
Bulgaria	23,08	33,60	0.84	12,30	0.77	74,40	0.04	0.552	3
Czech Republic	23.43	24,90	0.18	7.00	0.33	78.10	0.54	0,350	1

Source: Own study based on data from Eurostat (European Commission 2013c), www.pordata.pt, www.numbeo.com.

Analyzing the data in Table 4 by comparing the suffering index to the VAT rate, it is relatively difficult to grasp, the suggested relationship. Lesson here is that VAT or indirect taxation may have less impact on the index suffering.

Table 4. Suffering index C , the amount of tax brackets and diversification of VAT in the EU countries with the highest average tax rate

Country	The average tax rate in years 1995-2012	The amount of tax brackets	Diversification VAT	C	Ranking
Denmark	39.6	5	25	0.539	5
Belgium	39.4	7	6, 12, 21	0.510	3
Germany	36.6	3	7, 19	0.522	4
Netherlands	36.1	4	6, 21	0.455	2
Norway	35.3	3	8, 15, 25	0.333	1

Source: Own study based on data from Eurostat [European Commission 2013c].

Suffering index decreases when the average tax rate decreases but by more than 0.5 percentage points. It is difficult to see the relationship between the amount of tax brackets and suffering index. A similar level of suffering index is observed at three tax brackets and at seven or five. It seems that in countries with extremely high average tax rates (Denmark and Belgium), the number of tax brackets is important for suffering index, which decreases by 0.029 percentage points when tax rates are reduced by 0.2 percentage points.

Table 5. Suffering index, the amount of tax brackets and diversification of VAT in the EU countries with the lowest average tax rate

Country	The average tax rate in years 1995-2012	C	The amount of tax brackets	C	Ranking
Latvia	20.9	0,667	lack	12, 21	5
Lithuania	21.65	0.528	lack	5.9, 21	2
Estonia	22.20	0.563	lack	9, 20	4
Bulgaria	23,08	0.552	lack	9, 20	3
Czech Republic	23:43	0,350	lack	5,8,18, 21	1

Source: own study based on data from Eurostat [European Commission 2013c].

Most of the countries with the lowest average tax rates, progression-free tax has a similar level of the index suffering the same way as most of the countries with the highest tax rates from progressive tax. The lowest index among the countries suffering without progression occurs in the Czech Republic, where the average tax rate is the highest among the countries with the lowest rates and amounts to 23.43%. The lowest index among the countries suffering from progression takes place in Norway, which also has the lowest average tax rate (35.3%), among the countries with the highest average tax rates. It can be seen that in countries with both progression and its absence is lowest indexes suffering. In turn, the highest indexes of suffering in countries with average tax rates lower than 23.08% in countries with average tax rates higher than 35.3%. It seems that neither the lowest nor the highest average tax rates are not conducive to lowering the index suffering. Tax progression or lack thereof are irrelevant to the index suffering. Factor contributing to the low index of suffering is to diversify tax rates.

Analysis of financial exclusion and suffering index in European countries with progressive tax rates and diversification of VAT in the years 2005–2012

Analyzing the literature in the field of the financial exclusion, there are listed some variables that are involved in the description of this phenomenon. These are:

- Account at a financial institution,
- Borrowed from a financial institution,
- Borrowed from a private informal lender,
- Borrowed from a store by buying on credit,
- Credit card,
- Debit card,
- Loan in the past year,
- Saved any money in the past year.

There were analyzed the frequency of above variables for population groups above 15 years of age in selected countries. Details are shown in Table 8 in Appendix. The results were standardized, also for specific countries and specific characteristics. Index of the financial exclusion (WF) has been calculated using the arithmetic mean (tab.9 in the Annex). The maximum index value of the financial ex-

clusion is 1 and the lowest value is 0. The closer a value of the financial exclusion to a value of 1, the less financial exclusion. There are comparison of index suffering to an index of the financial exclusion in Tables 6 and 7.

Table 6. Index of suffering (C) and the index of financial exclusion (WF) in the EU countries with the lowest average tax rate and their ranking

Country	<i>C</i> <i>Suffering Index</i>	Ranking	<i>WF</i> <i>Financial Exclusion</i>	Ranking
Denmark	0.539	5	0.62	2
Belgium	0.515	3	0.45	5
Germany	0.522	4	0.61	3
Netherlands	0.455	2	0.51	4
Norway	0.333	1	0.70	1

Source: own study.

Norway is an example of a country where there is the lowest level of financial exclusion and the lowest level of the index suffering. Other countries are successively on higher positions. The results indicate a link between the financial exclusion and the value of suffering index.

Table 7. Suffering Index (C) and the index of financial exclusion (WF) in the EU countries with the lowest average tax rate and their ranking

Country	C	Ranking	WF	Ranking
Latvia	0,667	5	0.39	4
Lithuania	0.528	2	0.51	2
Estonia	0.563	4	0.63	1
Bulgaria	0.552	3	0.20	5
Czech Republic	0,350	1	0.42	3

Source: own study.

Estonia is the country with the lowest level of financial exclusion but this is not the country with the lowest suffering index. Both the countries with the lowest and the highest levels of financial exclusion have similar value of suffering index. It means that the group of transition countries is dealing with a lack of dependence

between financial exclusion and the suffering index. This can be explained by the fact that economic phenomena do not fully correspond with social phenomena in this group of countries.

Conclusions

This article is focused on the analysis of the taxation systems in relation to suffering index and synthetic index of financial exclusion, calculated for selected European countries. It was assumed that systems of taxation of income and indirect tax VAT would be important for the social phenomena that occur in the various European countries. This article is an attempt to join the tax system and social phenomena that occur in certain European countries, testifying to the quality and satisfaction of life, opportunities for individual development. The results of the analyzes, indicate relationship between the suffering index and the average level of taxation, especially in Western Europe. This phenomenon can also be seen in selected transition countries. There was constructed a synthetic indicator, called the index of the financial exclusion in order to additional analyzes. It is calculated as the arithmetic average of the eight selected variables, providing for the use of financial products in the countries. This indicator shows that societies with lower average income tax rate, have less financially excluded people. In summary, index of financial exclusion and suffering index have a great relationship with the income tax system in selected European countries. When making this type of analysis in the case of VAT, you cannot draw such a clear conclusion. It means that people living in countries with lower income tax rates, are objectively less financially excluded. The lower indexes of suffering and exclusion indicate a better quality of life among these people.

The authors are aware that carried out the study are of preliminary nature. The analysis could take into account all the European countries and could use a time series, for example 2002-2012. Then the results would have taken on broader meaning for explanations of phenomena related to the quality of life of societies.

In addition, the obtained results justify the use of more advanced methods of quantitative reasoning, that also would increase the rank of research.

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Influence of Dividend on Development Potential of Companies (on the Example of Listed Companies)

Abstract: Considering the dividend in the context of relations between the company and its shareholders reveals its dual nature. The payment of dividend to shareholders is a form of remuneration for the provision of capital for the company. For the company it means giving up the funds that could be used to finance investment, contributing to the development of the company. Therefore, it seems reasonable to adopt of the following research hypothesis: payment of dividends reduces the company's ability to grow. This article aims to verify this hypothesis. 75 companies, which shared profits with their shareholders in the years 2013–2015, have been analyzed. These companies are defined as dividend companies. By examining the relationship between the amounts of dividends and the value of equity and assets of the companies, it has been demonstrated to what extent the payment of dividends determines the changes of their wealth and capital resources.

Key words: dividend, listed company, development potential.

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Introduction

The dividend has various functions in the company and decisions of its payment and amount are determined by several factors. The payment of the dividend is associated with such aspects of the enterprise as the formulation and implementation of the main objective, the optimization of the financing structure and the cost of capital. Dividend may also be viewed in the context of relations between the company and its shareholders – its dual nature is visible then: the payment of dividend to shareholders is a form of remuneration for the provision of company capital, the company, in turn, it means giving up funds that could be used to finance investments. In other words, the dividend is a kind of a price paid by the company to the investor for the purchase of its own shares, and therefore can be treated as cost of using shareholders' equity [Sierpińska 1999, p. 56]. This cost is associated with a reduction in its own internal sources of financing the company. Therefore, it seems reasonable to adopt of the following research hypothesis: payment of dividends reduces the company's ability to grow. This article aims to verify this hypothesis by analyzing the depletion of equity and assets as a result of dividend payments in listed companies.

75 companies, which shared profits with their shareholders in the years 2013–2015, have been analyzed. These companies are defined as dividend companies. By examining the relationship between the amounts of dividends and the value of equity and assets of the companies, it has been demonstrated to what extent the payment of dividends determines the changes of their wealth and capital resources.

1. Dividend payment as a decision problem

Distribution of profits and payment of dividends have been the area of interest for researchers for many years. Theoretical considerations and accompanying empirical analyses are carried out in different aspects. Below are the most important [Duraj 2002, pp. 83–139, Jajuga, Słoński 1997, pp. 282–291]:

- treatment of the dividend as an instrument of financial management in the enterprise,
- considering the dividend in the context of the realization of the general financial objective of the enterprise,

- attempting to optimize the proportion of profit distribution into the part retained in the enterprise for development purposes and the part to be paid as dividends,
- treatment of the dividend as a source of information about the financial condition and development plans of the company,
- studying the impact of dividends on the capital cost and structure of the company,
- analysis of the relationship between the dividend policy and the market value of the company,
- considering the dividend as a basis for making investment decisions on the stock exchange market.

Generally, these aspects come down to the issue of recognition of dividend payments from the point of view of financial managers of the company and from the point of view of capital market investors.

The responsibilities of managers include, among others, the formulation policy on dividends, which is an important element of business development strategy formulation and is closely related with investment decisions of the company. The view that the dividend policy should be subordinated to the investment policy of the company is prevailing in the literature [Duraj 1996, pp. 203–204, Zarzecki 1999, p. 171]. This means that the dividend is the residual amount (Latin: residuum – residue) – the result between the net profit and planning the whole or part of this profit to finance investment needs [Jajuga, Słoński 1997, p. 286]. In practice, companies also implement alternative strategies in relation to the residual dividend policy: they include policy of stable (or increasing) amount of the dividend, policy of constant (or increasing) rate of dividend payments, share buy-back for redemption.

Research trend, representing the point of view of investors, is generally based on the assumption that the participants of the capital market are willing to take risks in varying degrees. The payment of dividends is reflected in the reactions of shareholders. Investors who are reluctant to take risks prefer a relatively secure income in the form of dividends than uncertain capital revenue related to changes in the share price. In the case of a strong form of efficiency of the capital market there is a high probability that paying stable dividends contributes to the increase in share prices, so it has an impact on the value of the company. Another factor influencing the increase of the share price may be the beneficial effect of dividend payments on the company's market image. Analysis of return rates on shares of companies pay-

ing regular dividends is an interesting research topic and can provide the basis for assessing the impact of dividends on the market value of companies.

In turn, the market value is the valuation of the company's equity at a specific point in time as a result of the verification of the actual value of the company based on an evaluation of its potential income and development capabilities. In the literature there is a consensus on the relationship between the payment of the dividend and the company's development. According to McManus, Gwilym and Thomas [2006, p. 522], if the owners plan to invest in a company, it is only in special cases that they allocate profits to pay dividends. If a significant part of the profit or the whole of it is allocated to dividends, it may indicate a lack of owners' interest in further development of the company. According to D. Zarzecki [1999, p. 171] companies should not pay dividends when the board possesses a set of investment projects which guarantee a relatively high rate of profitability. If there is a lack of attractive investment projects, the only reasonable solution is to pay the generated surplus in the form of dividends. Also Brigham and Houston (2005, p. 215) treat access to attractive investment alternatives as one of the main factors determining the level of the ratio of dividend payments. In light of the above, the validity of the formulated research hypothesis should not raise doubts.

2. Methodology of research

As indicated at in the introduction, the purpose of this article is to examine whether the payment of dividends reduces the development possibility of companies. The distinguishing feature of the development of the company is the increase its resource assets that are financed with equity and liabilities. The payment of the dividend affects not only the equity of the company but also its property resources because, together with the dividend, there is the outflow of cash. Assuming that the level of commitments does not change, the consequence of the dividend payment is also a change in the structure of financing the company – the share of equity in financing assets will be relatively smaller. The course of reasoning is illustrated schematically on Figure 1.

The thing is, however, is that the Figure 1 presents a hypothetical state, because the dividend payment is not made on the last day of the financial year, it is done in the following year because the dividend is paid on the condition that the finan-

cial statements are approved and the decision on the distribution of profits is made at the general assembly of shareholders. Then the vesting date of the shareholder dividend (the so-called the dividend date) and the dividend payment date are determined. On the day of the dividend payment date the outflow of cash occurs, and only then we can talk about the actual depletion of capital [Wypych 2010, p. 418].

Figure 1. Relationships between dividend payment and net financial result, equity and assets in a listed company

ASSETS (AKT)		Net profit ZN	Dividend DYW	Decrease of equity	ASSETS after dividend payment (AKT')
	Equity (KW)			Equity after dividend payment (KW')	
	Liabilities (ZOB)			Liabilities (ZOB)	
Indicators analysis of changes in the level of assets and capital structure		Share of net profit in equity (ZN/KW)			
		Rate of dividend payments (DYW/ZN)			
		Rate of decrease of equity (DYW/KW)			
		Rate of decrease of assets (DYW/AKT)			
		Change of the financing structure ($KW/AKT > KW - DYW/AKT'$)			

Source: own study.

The payment of dividend is reflected in the outflow of cash from the company, so in accounting terms, both the level of assets and the level of equity are reduced. In reporting this would be manifested if the dividend was paid at the end of the year. Since the dividend occurs during the fiscal year, the company, in order not to reduce its potential income, has to accumulate funds in the amount at least equal to the reduction of capital caused by the payment of dividends until day the dividend is paid. The company can do so by reducing investment expenditures, working capital or increasing debt. There are also activities that increase profit from operating activities (growth of income from sales, cost reduction, increased productivity, and accelerated asset turnover). If this condition is not met, the company's capital resources will actually be diminished, which will be reflected in the financial statements at the end of the period in which the dividend was paid.

Given the above, momentum indicators expressing changes in equity and assets in the financial year in which the dividend was paid and the rate of change in the financing structure have been adopted as a basis for assessing the impact of dividends on the company's ability to develop:

$$D^{kw} = \frac{KW_1}{KW_0} \times 100 \% \quad D^{akt} = \frac{AKT_1}{AKT_0} \times 100 \% \quad S^{akt} = \frac{KW_{0,1}}{AKT_{0,1}} \times 100 \%$$

where: 0 – value at the beginning of the year, 1 – value at the end of the year.

The level of momentum indicators below 100% can be interpreted as follows: payment of dividend reduces the company's ability to develop because the capital and property resources at the end of the year in which the dividend was paid out decreased. In turn, the reduction of the level of the change indicator in the financing structure means that the company increased the level of debt, which means an increase of financial risk. Of course, such an interpretation does not fully reflect the real situation, because changes in the level of equity and assets and the level of debt are determined by a number of other factors, dependent and independent of the company. They do find, however, its ultimate expression in the net financial result, which is a component of equity.

3. Dividends and the development of companies – empirical analysis

As has already been stated, the verification of the formulated research hypothesis will be conducted on the collective basis of companies referred to as dividend companies. For analytical purposes, it is necessary to adopt specific criteria, based on which the company can be included among the dividend companies. Since there are no objective solutions of this issue, for the purpose of this study it has been arbitrarily assumed that the basis for selection of dividend companies is the annual dividend payment in the years 2014–2016 (distribution of profit for 2013–2015). These selection criteria were met by 76 companies listed on the main market (financial sector companies were excluded from the analysis). Collective data on the dividends, net profit, equity and assets of these companies are shown in Table 2.

In the analyzed period, in the population of surveyed companies decreasing trend in both net profit and dividend can be observed. However, the value of dividends is reduced to a lesser extent than the net financial result and, consequently, the ratio of dividends to net profit increased from 59.7% in 2013 up to 95.0% in 2015. In 2013–2015, these companies allocated 19.6 billion PLN for dividends, which accounted for 25.8% of the dividends paid during the period by all listed companies.

Table 2. Dividends referred to net financial profit and property and capital resources in dividend companies in the years 2013–2015

Category		Years		
		2013	2014	2015
Dividend (paid in the following year)	million PLN	7 279	6 927	5 377
Net financial profit		12 187	8 508	5 636
Equity (as of 31.12)		108 046	134 907	133 987
Assets (as of 31.12)	%	158 800	216 074	220 117
Share of net profit in equity		11,3	6,3	4,2
Rate of dividend payments		59,7	81,4	95,4
Rate of decrease of equity		6,7	5,1	4,0
Rate of decrease of assets		4,6	3,2	2,4
Change of the financing structure		68,0 / 63,5	62,4 / 59,2	60,9 / 58,4

Source: Author's calculations on the basis of financial statements and press releases informing about the distribution of profit (Notoria Serwis database, Web portals: Interia.pl, Bankier.pl)

Particularly noteworthy is the significant increase in assets (in the years 2013–2015, by 38.6%), which reflects the growing income potential of the companies. Since equity increased in this period by 24.0%, it must be concluded that the development of the companies was largely financed by foreign capital. This is confirmed by the decrease in the share of equity in financing assets from 68.0% to 60.9%. On the basis of these data, in relation to the total number of companies it can be therefore assumed that the dividend payment did not decrease their capital and property resources to the extent limiting opportunities for development, but it contributed to the growth of financial risk.

The verification of the research hypothesis proposed at the beginning, however, requires a more in-depth analysis, taking into account the situation of specific companies because the aggregated results are significantly affected by the financial characteristics of the largest companies (KGHM, ORANGE, PGE, PGNiG, and PKN ORLEN). In the years 2013–2015, their share in the total value of dividends paid by the companies included in the study decreased from 71.5% to 56.0%, while in the net profit the decrease was from 74.7% to 31.2%. Meanwhile, the participation in capital and property resources is stable (about 80% in equity and about 75% in assets). For this reason, a comparative analysis of changes in the level of equity and assets of individual companies within the surveyed population, taking into account differences in level of dividend payment indicator is recommended. Relevant information is presented in the Table 3. The calculations relate to dividend payments and changes in the level of equity and assets in 2015.

Table 3. Influence of dividend payment on the level of equity and assets in dividend companies 2015

Category	Relation DYW_{2015}/ZN_{2014}					
	More than 0,90		0,50-0,90		Below 0,50	
	companies	%	companies	%	companies	%
Dynamics $KW_{2015}/KW_{2014} > 1,0$	16	66,7	21	84,0	25	96,2
Dynamics $AKT_{2015}/AKT_{2014} > 1,0$	13	54,2	19	76,0	20	76,9
Dynamics $AKT_{2015}/AKT_{2013} > 1,0$	13	54,2	19	76,0	23	88,5
Decrease rate $KW - DYW_{2015}/KW_{2015}$	15,1		9,3		4,5	
Decrease rate $AKT - DYW_{2015}/AKT_{2015}$	6,5		6,1		2,2	

Source: The same as Table 1.

It turns out that the inclusion of the variation of the dividend payment rate in the analysis leads to different conclusions and hypothesis about the impact of dividend payments on the companies' ability to develop is confirmed. In companies paying very high dividends in relation to the net profit (in 2015, 16 companies paid a dividend higher than the net profit of the previous year, three companies paid a dividend in spite of financial loss) the dynamics of equity and assets is significantly lower than in other groups of companies. Rates of reduction of the equity

and assets expressing the scale of their depletion are here clearly higher. Companies allocating less than half of the profit for dividends, where depletion of equity is 4.5% and of assets only 2.2% look relatively best from this point of view. Naturally, such a result is affected by a significant reduction in dividend payments by the largest companies. And one more important piece of information confirming the validity of the proposed hypothesis – a weighted average rate of growth of assets 2015/2013 for the group of companies that allocate more than 90% of the profit for the dividend is 92.1%, for companies paying dividends in the range of 50–90% of the profit – 103.4% while for companies with a dividend payout ratio below 50% – 120.9%. If this is compared with the number of companies exhibiting momentum indicator higher than 100% in each group, it can be clearly stated that there is a relationship between the amounts of dividend paid and the development of companies – companies allocating more than 90% of the profit for dividends and financing dividends from their retained earnings increase their wealth to a lesser extent than the other companies and more than half of them recorded a decrease in the value of assets in 2015 as compared to 2013.

The observed trends are confirmed in the Pearson correlation coefficients. The values of this coefficient describing the relationship between the ratio of dividend payments and the dynamics of equity and assets are negative and are respectively -0.176 and -0.138. In turn, for the relationship between the ratio of dividends and the rates equity and assets reduction, the correlation coefficient takes positive values: 0.225 and 0.313 respectively. The level of ratios is relatively low, too low to say that these relationships are statistically significant.

Conclusion

As a result of the analysis it has been found that the payment of dividends reduces the possibility of companies to develop, in particular with regard to companies paying relatively high dividends. However, macroeconomic conditions of doing business should be taken into account. In the case of economic slowdown that Polish economy is still struggling with, access to attractive investment projects is limited. Business managers do not make investment decisions when they do not guarantee the achievement of expected profitability. The results of the research may have been affected by the fact that the objects of the analysis were compan-

ies with a stable market position and being in the further stages of development. This would be consistent with the conclusion by A. Sierpińska-Sawicz that at maturity, companies can spend more than half of the profit for dividends and inflow of foreign sources of financing will ensure their development through the consolidation and diversification of activities. At maturity, the range of investment activities ensuring a rate of return higher than the average in the industry is limited [Sierpińska-Sawicz 2015, p. 201]. An interesting theme of research in order to confirm the hypothesis about the impact of the dividend payment on the reduction of development opportunities for companies would be to compare the companies referred to as dividend companies with businesses that do not share their profits with shareholders.

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