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Małgorzata Białas*

THE USE OF ESTIMATED VALUES TO IMPLEMENT THE "*BIG BATH*" STRATEGY DURING THE COVID-19 PANDEMIC ON THE EXAMPLE OF SELECTED ENTERPRISES

Abstract

The big bath strategy applies to a situation when enterprises intentionally show large losses in order to be able to boast a high profit in the next period. They often use estimates for this purpose. The aim of the paper is to check how often the chosen companies have used the Covid-19 pandemic to implement the big bath strategy in 2020.

***Keywords*:** big bath, accounting estimates, Covid-19

***JEL clasification*:** M41

Paper type: Theoretical research article

Introduction

Doing business comes with inherent risks and uncertainties in the economic environment, including crises caused by various external factors. In recent years, the SARS-Co V-2 coronavirus, which causes acute respiratory disease COVID-19, has become such a factor. The rapid increase of infections in many countries caused the World Health Organization (WHO) to declare a global pandemic on March 11, 2020. The virus has mutated many times in the meantime, but the pandemic has left its mark on nearly every economy in the world. The restrictions introduced

* PhD, AGH University of Science and Technology, Faculty of Management, Krakow

by the state authorities resulted in a general limitation of mobility on an unprecedented scale.

About 90% of the world's population has been affected by unprecedented global travel bans, stay-home policies and assembly bans. Actions aimed at stopping the spread of the coronavirus pandemic, however, made it possible to achieve the overarching goal of saving human lives (Czech, Karpio, Wielechowski et al., 2020). The COVID-19 pandemic has led around the world, among others, to an increase the volatility of stock prices, a decline in nominal interest rates, a decline in economic activity and, consequently, a decline in real GDP. The pandemic has also had an impact on the profitability of individual companies.

On the one hand, we are dealing with a pandemic, which has a negative impact on the finances of economic entities from selected industries, on the other hand, accounting standards allow economic units to use accounting estimates in financial statements, and accounting estimates should be understood as approximate amounts cash accepted by the entity to measure certain elements of its financial statements. These values may have an impact on the financial results of a given economic entity, what is more, they may distort them.

It would therefore seem that the above-mentioned circumstances are conducive to the use of the big bath strategy by companies that have been most affected by the Covid-19 pandemic.

The big bath strategy applies to a situation when the company intentionally shows a large and even greater loss in order to be able to boast a higher profit in the next period. This strategy is most often used when external circumstances, independent of the enterprise, contribute to the deterioration of its financial results. The pandemic was such a circumstance in 2020.

The main goal of the paper is to check how often the companies from selected industries have applied the big bath strategy during the COVID-19 pandemic in 2020.

1. The Concept of Creative Accounting

The *big bath* strategy is undoubtedly connected with the concept of creative accounting, as this strategy is intended to deliberately distort the financial result included in the financial statements. These reports are one of the main sources of obtaining information about an enterprise. In order to be useful for their recipients, they must be prepared according to specific rules. Despite the large number of legal provisions regulating the preparation and content of financial statements, there is always a certain margin that allows for an individual approach to the company. This individual approach may take the form of window dressing or even creative accounting. The first of these

concepts applies to a situation where an enterprise, most often at the end of a financial year, without breaking the law, tries to present its financial situation more favorably than it actually is, using various techniques. On the other hand, the second concept, ie "creative accounting", is often treated as a definitely negative phenomenon, even bearing the hallmarks of a crime.

According to W. Wąsowski (2010) "creative accounting is one of the pathologies of the market economy, financial fraud, next to money laundering, embezzlement or share price manipulation". M. Wiatr (2006) has the similar opinion, he treats creative accounting as a tool for “using financial statements to mislead rather than inform”. A negative perception of this phenomenon can also be seen in the works of O. Amat, J. Blake and J. Dowds (1999), who defined creative accounting as "the process by which accountants use their accounting knowledge to manipulate the values presented in financial statements".

Although such a negative understanding of the concept of creative accounting dominates in the literature on the subject, there are also voices pointing to the positive meaning of this concept. The term "creative" means "having the ability to create something new, original, creative" (Dunaj et al., 2001) Following this path, creative accounting in a positive sense is an element of the accounting system and means the ability to optimally adjust the accounting policy to the needs of the individual (Maślankowski, 2004). Therefore, it can be treated as a desirable phenomenon, free from any signs of a crime. Creative accounting is therefore a normal practice used by all enterprises, consisting in presenting the best possible picture of their economic situation in accordance with the applicable law (Schneider 2007). K. Gierusz (2010) emphasizes that accounting should not be treated as an exact science, in which there is no room for any freedom and which "has the tools to unquestionably organize business operations into, for example, specific categories of costs or revenues". According to K. Gierusz, identifying creative accounting with embezzlement and fraud is inappropriate, therefore he tends to separate this concept from "aggressive accounting", although, of course, one must bear in mind that the line between these concepts may be very thin. Therefore, in the literature on the subject, there is a distinction between creative and aggressive accounting. The first one is equated with "interpreting accounting principles in a way that is not directly indicated in these regulations, and which is the result of an ingenious, creative and non-standard application of these regulations and principles" (Tokarski, 2009). On the other hand, aggressive accounting should be understood as "deliberate and intentional recording and presentation of economic events in a manner inconsistent with the provisions and accounting principles, which may harm users of accounting information by presenting a different (better or worse)

economic situation of the entity. It is carried out with the deliberate intention of embezzlement, aimed at artificially inflating profits or concealing losses, and can be very harmful, and in extreme cases - as confirmed by practice - mask the bankruptcy of the enterprise ”(Tokarski, 2009).

These considerations can be summed up by the words of S. Zulfiqar Ali Shah and S. Butt (2011): “Creative accounting is a similar tool as a weapon. If used correctly, it can bring significant benefits to its owner; but if it is misused or in the wrong hands, it causes great damage. Creative accounting has brought more benefits than losses during the crisis. Weapons are almost always innocent; if it has been used to cause damage, only the one who has used it is to blame ”.

Creative accounting is undoubtedly related to the *big bath* strategy. The subject of further analysis, however, will not be to determine whether the treatments performed by selected companies were *window dressing* or of a negative creative accounting.

2. *Big Bath* Strategy

The value and structure of generating a financial result is very important to many readers of financial statements. It is therefore not surprising that the profit and loss account has become an area in which the effects of creative accounting can often be found. There are several basic strategies of shaping the financial result depending on the goals, namely (Piosik and Strojek-Filus, 2013):

- Income smoothing, the aim of which is to achieve stable profit margins;
- avoidance of accountig loss in line with the principle that even the smallest profit is better perceived by investors than a loss close to zero;
- avoidance of earnings reduction,
- intense profit increase,
- significant reduction of the result / increase of the loss (*big bath*).

The strategy of intensive profit increase aims to show significant increases in profit compared to the previous period. If this is done contrary to the regulations, in the long run it means the need to reverse the estimates and, as a result, after some time it becomes necessary to show a loss.

The *big bath* strategy consists in deliberately worsening the financial result of an entity in order to be able to demonstrate an improvement in profitability in the next period. Quoting A. Piosik and M. Strojek-Filus (2013), these activities consist in "deliberate and significant increase in the reported loss (possible increase in profit reduction) in order to facilitate showing the increase in the net financial result in future periods". Such actions can be taken by economic units that are aware that in the current

period they will show a loss anyway (due to the unfavorable change in the macro-environment, e.g. during the global crisis or other problems affecting a given industry and independent of a given entity), thus increasing this losses will not be viewed negatively. In the following periods, however, they will be able to show a much greater and faster improvement in the financial situation, which will be better perceived by potential investors and lenders.

Big bath strategies have already been studied. In 2006. M.E. Barth, W.R. Landsam, M.H. Lang (2006) conducted research on a sample of companies from 23 countries that have introduced International Accounting Standards (IAS). It turned out that companies that applied these standards more often showed a large loss. The analysis conducted on a sample of 108 companies in 1999-2006 in Germany by U. Schäffer, J.P. Lüdtke, D. Bremer, M. Häußler (2012). The researchers noted that accounting standards applied by entities had a significant impact on shaping financial results and the application of the *big bath* strategy. Research in this area was carried out by A. Piosik (2013) on the basis of companies listed on the Warsaw Stock Exchange in 2000-2010. He wondered if companies applying the polish Accounting Act were more likely to suffer a large loss than companies that prepared financial statements in accordance with International Financial Reporting Standards. He defined the loss as a large loss at the end of the period, which is at least 10% of the assets. As a result of the conducted research, it was not possible to demonstrate that the application of the International Financial Reporting Standards would increase the frequency of reporting a large loss. J. Elliott and W. Shaw (1988), on the other hand, arbitrarily defined the b*ig bath* as a write-off in excess of 1% of the book value of the company's assets. Their mostly descriptive results showed that companies using these discretionary large baths were typically larger than other companies in their industries, and also more leveraged.

In turn, M. Chraścina (2016), analyzing the financial statements of 267 companies listed on the Warsaw Stock Exchange in 2011-2015, noticed that reporting large losses is largely influenced by changes in the management board and the size of the enterprise.

Interesting analyzes were carried out by P. Fiechter and C. Meyer (2010), who clearly indicated the use of *big baths* among banking capital groups in the United States in 2008 and 2009. During this period, the global economic crisis continued and many financial institutions suffered from the market collapse, which resulted in huge losses being shown. In addition, the financial market lost liquidity, which resulted in difficulties in the valuation of assets and liabilities. Several banks took advantage of this situation and deliberately presented much larger losses during the crisis period in order to improve their results in the next period. Thanks to this procedure,

already in 2009 and the improvement of the market situation, several banks managed to show a positive financial result.

It is worth emphasizing at this point that showing a large loss does not always mean using the *big bath* strategy. A large loss may also result from internal problems faced by a given enterprise or from problems that affect the entire industry.

Several studies have been conducted in Poland in the context of Covid-19 and its impact on financial statements. Most often these studies show a significant impact of the pandemic on the financial data presented in the financial statements of selected companies. And so B. Wacławik (2021) analyzed selected companies listed on the Warsaw Stock Exchange and noticed that some companies had to issue shares in order to maintain financial liquidity (e.g. CCC S.A.). On the other hand, other economic entities were able to repay loans even ahead of schedule, which confirms their very good financial condition. There is also a frequent theme in the literature for the continued operation of listed companies in connection with COVID-19. An example may be the work of E. Chrostowska and K. Koleśnik (2021). The authors focused on listed companies and noticed that almost half of the entities that declared going concern showed uncertainty about going concern. It is also interesting to note that different ways of presenting information on uncertainty may make it difficult for interested parties to draw conclusions. On the other hand, the research of S. Hońko, M. Remlein et al. (2020) pointed to further problems related to the presentation of the risk resulting from Covid-19 in the financial statements of listed companies. According to the authors, some companies completely ignored the risks associated with the pandemic in their financial statements, and in some cases the scope of disclosures was only symbolic.

The above studies concerned large companies, but there are also analyzes focusing on the impact of Covid-19 on the financial results of entities from the SME sector in Europe. According to C. Wang (2020), if the epidemic were to be persisted for a long time, for example over six months, and if it spread to many other countries around the world, the impact on the financial performance of SME entities operating in the tourism industry would be significant. The authors who conducted a comparative analysis of the impact of Covid-19 with the effects of the SARS epidemic on the same group of entities, i.e. operating in the tourism industry, were of a similar opinion (Secinaro, Calandra, Biancone, 2020). Taking into account the publication date of the papers (i.e. the beginning of 2020), it is already known that the basic assumptions about the duration of the pandemic have not been met.

The above studies describe the impact of Covid-19 on the financial statements of selected companies. However, they do not refer to the *big bath*

strategy used by these companies. On the other hand, B. Lisicki (2021) wondered how often Polish listed companies informed about the impairment of assets in 2020 compared to the previous years. It turned out that during the Covid-19 pandemic, the number of reported decreases in the value of assets was much greater than in previous years. Although the *big bath* strategy is not mentioned in the paper, the described practices used by the analyzed entities by B. Lisicki have characteristic features of this strategy. Similar research was carried out by A. Kuston et al. (2021), observing the financial statements of 33 Indonesian listed companies operating in the mining area. They noticed that those enterprises that apply the *big bath* strategy use the impairment of their assets for this purpose.

These studies confirm the use of estimated values in the *big bath* strategy in 2020, in particular when reporting the impairment of assets. The conducted research, which will be described below, focused not only on the impairment of assets, but also on other possibilities of using estimated values in the *big bath* strategy.

This paper will present the results of analyzes of Polish listed companies in the catering industry, as there is no literature research on the impact of Covid-19 on the financial statements of companies in this segment. Research on Polish listed companies is described without indicating a specific segment. There are also analyzes focusing on a selected segment, for example tourism or mining, while there is no analysis of financial statements of catering companies. And yet this is an industry that has also suffered greatly from the government's decisions in 2020. Therefore, the first research hypothesis is **H1: the listed companies in the catering industry are eager to use the *big bath* strategy in the first year of the Covid-19 pandemic**.

For comparison, companies that are not listed on the stock exchange and which also operate in the catering industry were analyzed. Additionally, the analysis of companies from the hotel and tourism industry was included. No research results were found regarding Polish entities from these industries and the impact of Covid-19 on their financial statements. Although the research conducted by C. Wang and S. Secinaro concerned the tourist segment, they did not include the financial statements for the entire year 2020, when further restrictions were introduced.

The following sentence was adopted as the second hypothesis **H2: smaller entities also use the *big bath* strategy. This hypothesis applies to entities that are not listed on the stock exchange, and which operate in the catering, hotel and tourism industries.**

Research methodology: the paper was prepared on the basis of a review of Polish and foreign literature and an analysis of financial statements of selected economic entities. Separate financial statements of 3 listed companies from the catering industry and 30 smaller non-listed companies

from the catering, hotel and tourism industries were used for the analysis. The analysis was carried out for the years 2018-2020. The criterion for the selection of the analyzed companies was the availability of individual financial statements verified by the statutory auditors. These industries were selected due to the fact that these industries were severely affected by the restrictions introduced by the government during pandemic in 2020.

3. Estimated Values

The strategy of *big baths*, i.e. overcharging the financial result with costs, is possible, inter alia, by using estimated values in accounting.

Accounting estimates mean the approximate monetary amounts that an entity uses to measure specific elements of its financial statements. According to J. Pfaff (2016), a significant part of the balance sheet and profit and loss account items are estimated items. The reasons for this state of affairs should be sought:

- in the uncertainty of the economic environment in which economic entities operate;
- in gradual departure from historical valuation in favor of fair value, which forces the accounting system to describe the probable economic future of economic entities (Gos, 2011);
- striving to obtain financial information in a relatively short time, even at the cost of its accuracy.

The concept of accounting estimates is applied not only to items measured at fair value but also to other items that require certain estimates. According to M. Towpik et al. (2011), the following items of financial statements are most often associated with estimated values:

- tangible fixed assets and intangible assets,
- impairment of fixed and current assets,
- goodwill,
- deferred tax,
- long-term contracts,
- accruals and provisions for liabilities.

The consequence of using these values in the balance sheet are estimates that are shown in the profit and loss account and have a direct impact on the financial result. For example, the valuation of assets or liabilities at fair value or the adjusted purchase price causes the differences in this value to be recognized in the income statement as costs or revenues depending on the direction of changes. Making impairment losses on assets is also an expense. It may apply to both trade receivables write-offs and fixed assets impairment write-offs. In each case,

we are dealing with estimated values that will be included in costs. In the event of a reversal of the entry, e.g. due to a change in conditions, revenues can be recognized, which will improve the financial result. We also meet the estimated values when determining the expected period of use of a fixed asset, and thus - the appropriate depreciation rate.

These are only the examples of the use of company estimates which are mentioned above. Nevertheless, it can be seen that the estimates have a large impact on the shape of the financial statements, and thus on the financial result.

Changes in estimated values are most often presented in the profit and loss account as other operating income or costs. Therefore, the subject of further research will be the increase in the value of other operating costs in 2020.

4. Research Results

The purpose of the research is to check whether, during the pandemic period especially in 2020, selected companies listed on the Warsaw Stock Exchange, applied the *big bath* strategy by showing a greater loss due to the estimates in their reports financial.

For this purpose, 3 listed companies were analyzed: Sfinks Polska S.A.; AmRest Sp. z o.o (part of AmRest Holding SE), Mex Polska S.A. These are companies that operate in the area of restaurants and other catering establishments (EKD 56.10.A). This industry was considered to be one of the hardest hit as a result of the restrictions imposed by the government in 2020. By the decision of the prime minister, on March 13, 2020, the gastronomy sector was suspended for the first time. After 9 weeks, on May 18, 2020, it was resumed for 23 weeks with sanitary restrictions. On October 24, 2020, the gastronomy was closed again until further notice. As estimated by the Polish Gastronomy Chamber of Commerce, as a result of the pandemic in 2020, about 130,000 people from this industry lost their jobs, and over 8,000 restaurants were declared bankrupt. Only 5% of entities managed to change their business profile (bankier.pl).

The analysis was performed on the basis of individual reports.

The calculated sales profitability ratios (calculated as: profit on sales / sales revenue) are presented below to underline the problems of these units in 2020.

Table 1: Return on sales and return on assets for selected 3 listed companies from the catering industry in 2018-2020 / in%/

Return on sales	2018 r.	2019 r.	2020 r.
Sfinks Polska S.A.	3,4	4,1	-15,1
AmRest Sp. z o.o.	6,1	7,6	-0,9
Mex Polska S.A.	26,3	9,7	-38,1
Return on assets (ROA)	**2018 r.**	**2019 r.**	**2020 r.**
Sfinks Polska S.A.	-2,37	-6,07	-39,99
AmRest Sp. z o.o.	2,20	0,95	-5,43
Mex Polska S.A.	6,12	3,53	-20,53

Source: own study based on the financial statements of the entities mentioned

It can be seen that while in the years before the pandemic, the units operated profitably, in 2020 all entities reported a loss on sales, which had an impact on the negative profitability of sales. Mex Polska S.A. recorded the lowest rate. As a result, the examined companies also showed a net loss, which had a negative impact on the ROA (return on assets) ratio. Sfinks Polska S.A. had the worst result in this area.
It would seem that in such a situation the companies will apply the *big bath* strategy, since the basic operating activity resulted in a loss on sales anyway. The table below shows the growth dynamics of other operating costs.

Table 2: Growth dynamics of other operating costs for selected 3 listed companies from the catering industry in 2018-2020 / in%/

Growth dynamics of other operating costs	2018/2019	2019/2020
Sfinks Polska S.A.	-59,7	570,6
AmRest Sp. z o.o.	36,2	197,7
Mex Polska S.A.	1706,3	-78,6

Source: own study based on the financial statements of the entities mentioned

From the calculations provided, it can be concluded that in 2020 the *big bath* strategy was applied by 2 companies: Sfinks Polska S.A. and AmRest Sp. z o.o. On the other hand, MexPolska S.A., despite the fact that it had the lowest value of the sales profitability index, even showed a decrease in other operating costs.

The most common items in other operating costs of the analyzed companies that were related to the use of estimates include:

- established provisions for probable liabilities,
- liquidation of fixed assets,
- write-downs for receivables,
- established revaluation write-offs for fixed assets.

Both Sfinks Polska S.A. and AmRest Sp. z o.o. the highest values among other operating costs were shown in the estimates of impairment losses on fixed assets (PLN 22,886 thousand and PLN 53,127 thousand, respectively). It is also worth looking at the ratio of other operating costs to the value of assets, as shown in Table 3.

Table 3: Ratio of other operating costs to the value of assets of selected 3 listed companies from the catering industry in 2018-2020 /in %/

Ratio of other operating costs to the value of assets	2018 r.	2019 r.	2020 r.
Sfinks Polska S.A.	7,08	1,51	17,57
AmRest Sp. z o.o.	0,62	0,82	2,61
Mex Polska S.A.	0,27	3,98	1,10

Source: own study based on the financial statements of the entities mentioned

It is clearly visible that Sfinks Polska S.A. it has the highest ratio of other operating expenses to total assets.
The first research hypothesis H1 was confirmed because two out of three listed companies in the catering industry implemented the *big bath* strategy in 2020.

In order to verify another research hypothesis, a total of 30 companies were analyzed, 10 companies each from the catering industry (EKD 56.10.A), from the hospitality industry (EKD 55.10.Z) and from the activities of tourism organizers (EKD 79.12.Z). The analysis covered the years 2018-2020, which meant that a total of 90 separate financial statements were analyzed. The entities whose reports were available and which were audited by statutory auditors were selected.
The results of the calculated indicators and their interpretation will be presented in the following tables.

Table 4: Average return on sales and return on assets calculated for 30 companies from the three sectors mentioned in 2018-2020 /in% /

Average return on sales	2018 r.	2019 r.	2020 r.
turism	-14,4	3,7	-7,7
gastronomy	12,7	12,2	-0,3
hospitality industry	8,3	7,9	-10,1
Average return on assets ROA	**2018 r.**	**2019 r.**	**2020 r.**
turism	12,7	14,4	1,3
gastronomy	23,0	28,0	2,6
hospitality industry	7,0	5,8	-18,8

Source: own study based on the financial statements of the analyzed entities

It is clear that the hospitality industry has been the hardest hit in 2020 as a result of government action to tackle Covid-19. It should be noted that the average value of the sales profitability ratios is more favorable than for Mex Polska S.A. (minus 38.1%). On the other hand, in the area of the return on assets, Sfinks Polska S.A. it had a much worse result (minus 39.9%).

However, it should be borne in mind that these are only average values. A closer look at the results of the sales profitability index shows that among the 10 selected business entities from the hotel services industry, the worst result was related to Nosalowy Dwór Sp. z o.o. and it was 43%. In terms of return on assets, Focus Hotels S.A. had the worst result. (61.7%) and Nosalowy Dwór Sp. z o.o. (51.8%). It can be seen, therefore, that not only listed companies have poor results in the area of profitability.

In turn, in the catering industry, the average sales profitability ratio was at a relatively high level (minus 0.3%), which results from the fact that as many as 7 companies achieved profit on sales and only 3 companies reported a loss. North Food Polska S.A. reached the value of the sales profitability index at the level of minus 48.2% in 2020, which is much more than Mex Polska S.A. (minus 38.1%).

Table 5: Average ratio of other operating costs to the value of assets calculated for 30 enterprises from the three sectors mentioned in 2018-2020 / in% /

Average ratio of other operating costs to the value of assets	2018 r.	2019 r.	2020 r.
turism	3,5	3,3	2,8
gastronomy	3,0	9,0	7,7
hospitality industry	3,1	2,5	3,3

Source: own study based on the financial statements of the analyzed entities

Table 5 shows that in 2020 the average share of other operating costs in the value of total assets was the highest in the catering industry, despite the fact that their profitability ratios were not that negative. Such a high level of this measure (7.7%) in 2020 was decisively influenced by Wrocławska Akademia Kulinarna Sp. z o.o. sp. k., which both in 2019. and in 2020. showed the value of this ratio above 40%. After eliminating this company from the research sample, the average value of the ratio of other operating costs to the value of assets would be 4.7% in 2019 and 4% in 2020, which is lower than the value of this ratio calculated for Sfinks Polska S.A. (17.57%).

It can be seen, therefore, that smaller companies from the gastronomy, hotel and tourist services industries do not follow the *big bath* strategy. The amount of other operating costs did not increase significantly.

Observable, these entities tried to do their best to minimize the negative impact of Covid-19 on their financial statements. They also often increased the value of other operating income, as shown in Table 6. Thus, the second research hypothesis H2 should be rejected, as non-listed companies from the catering, hotel and tourist services industries rather did not apply the *big bath* strategy in 2020.

Table 6: Average value of the ratio of other operating income to total assets calculated for 30 enterprises from the three sectors mentioned in 2018-2020 / in% /

Average value of the ratio of other operating income to total assets	2018 r.	2019 r.	2020 r.
turism	3,1	3,2	8,2
gastronomy	4,3	8,6	9,7
hospitality industry	4,1	2,8	5,8

Source: own study based on the financial statements of the analyzed entities

It can be easily seen that small companies save their bottom line by increasing the value of other operating income. Unfortunately, due to the lack of precise information, it is not possible to check which items are the most common.
Calculating correlation coefficients between different values for 30 companies did not bring the expected results. No significant correlation was found between the profitability ratios and the value of other revenues or costs.

5. Conclusions

The *big bath* strategy is used by companies when they want to intentionally show a large loss in order to be able to boast a high profit in the next period. This is especially true for the period when external circumstances justify lower profitability rates. Estimates are very suitable for this type of strategy.

The purpose of this paper was to check whether selected companies in 2020 during the Covid-19 pandemic applied the *big bath* strategy. For this purpose, the financial statements of three listed companies and 30 smaller business entities were analyzed. These smaller entities were not listed on the stock exchange and operated in the catering, hotel and tourism industries as tour operators. These are industries that have been particularly hard hit by the restrictions introduced by polish government in 2020.

It turned out that Sfinks Polska S.A. and AmRest Sp. z o.o. applied the *big bath* strategy. Thus, the first research hypothesis was confirmed, saying that listed companies from the catering industry willingly use the *big bath* strategy in the first year of the Covid-19 pandemic. Only

the financial statements for 2021 will be able to confirm the purposefulness of the write-offs and increasing the value of other operating costs.

The remaining entities from the industries mentioned apply this strategy to a lesser extent. It was noted that 30 unlisted companies prefer to save the financial result by increasing the value of other operating income rather than "clean the balance sheet" through the costs. No significant correlation was found between the profitability ratios and the value of other revenues or operating costs for these companies. Therefore, the second research hypothesis that smaller entities also use the *big bath* strategy should be rejected.

The paper may be an inspiration for further research, including comparative research, in companies from the same and other sectors. The issue is vital, all the more so as the impact of the pandemic may change over the time.

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Marian Kopczewski*

INNOVATION IN KNOWLEDGE TRANSFER OF UNIVERSITIES - A DETERMINANT OF ENTERPRISE DEVELOPMENT

Abstract

The article is theoretical and analytical and aims to analyse innovation in knowledge transfer of universities. Its first part discusses the aim of the didactic and educational activity of every educational institution as well as describes innovation and innovativeness. Next the article attempts to assess the innovativeness of students as well as evaluation of the education offer at universities and verify students' approach to the issues of innovation.

Keywords**:** creativity, innovation, managers, students, safety, knowledge transfer, enterprise development.

JELL Clasification: F63, O10

Paper type: Theoretical research article

* Prof. PhD. eng., General Tadeusz Kościuszko Military University of Land Forces in Wrocław

Introduction

The aim of the didactic and educational activity of every educational institution, and especially higher ones, is to prepare the graduate's intellectual and professional skills for life in the society. When creating education programs in a specific field of knowledge or subject of education, it is assumed that their implementation will ensure that the teachers acquire the necessary minimum of required competences. The willingness to meet them prompts managers to create innovative solutions, search for new possibilities of action, ways of activating employees, stimulating them to think and act independently. it is primarily about taking innovative, unconventional and creative activities, especially in making decisions in crisis situations. The concept of innovation was introduced into the language of science in Poland by Z. Pietrasiński. The author pointed out that innovations are "changes intentionally introduced by man or cybernetic systems designed by him, which consist in replacing the existing states of affairs with others, assessed positively in the light of specific criteria and constituting in total progress"(Pietrasiński 2001).

Terms "innovation" and "innovativeness" are also the subject of special interest in contemporary public discourse, including educational. It is worth mentioning here, for example, that the European Parliament and the Council of the European Union have already announced 2009 as the Year of Creativity and Innovation. The main goal of the activities undertaken this year was to make everyone aware that creativity and innovation are the key not only to the economic, cultural and scientific development of regions and countries, but also to the individual development of each person. Moreover, many European Union documents and legal acts treats issues related to innovation as a priority. At this point, we can mention, for example, the Europe 2020 Strategy, which indicated as a priority: "smart growth: development of an economy based on knowledge and innovation" (Brussels 2017) . Also in Poland, various documents, programs and competitions indicate the importance of innovation in the development of enterprises or scientific institutions. Importantly, the main way to implement these priorities should be appropriate quality education.

The situation outlined above prompts a renewed discussion on the place and role of innovative activity in universities. Therefore, activities and research have been largely focused on strengthening the ties between theoreticians and pedagogical practitioners, on supporting, promoting and disseminating innovative activities of teachers, educators and employees. Their scope is the issues of pedagogical and managerial innovation, conducted didactic classes devoted to modern trends in education, analysis of the content of the literature on the subject on this issues and - what is especially cognitively valuable - practical

experience gained / beinggained in the course of implementing pedagogical innovations.
Assuming that the selected theoretical contexts are the foundation of thinking about the innovative actions of the teacher-manager and the resulting opportunities. Innovation is (Jamieson, M. V., & Shaw, J. M. 2020):

- a set of features characterizing a given person or group of people (adjective approach),
- a set of activities (i.e. a process), as a result of which new ideas, solutions, etc. arise (functional - process approach),
- output (effect) of the above process (objective approach).

Without resolving the above dilemma, a creative and innovative person can be attributed, inter alia, the following features: she is considered a rebellious and independent person, she is inquisitive, she has imagination, she is educated - she has knowledge, she has the ability to observe, she is witty and she can think in an unconventional way, she can focus (concentrate).
Innovation (Latin revival) is a special type of change. J. Schumpeter regards innovation as "introducing new products, new production methods, finding new markets, acquiring new sources of raw materials and introducing a new organization". In a treated as: a fundamental or radical change, involving the transformation of a new idea ov technological inventron, innowatron is market product or process, the first application of science and technology, the first commercial launch of a new product, process or device, the first application of an invention (Schumpeter 1960). In a broad sense, innovation is: any good that is perceived by someone as new, any change in products and processes that improves the company's competitive position in relation to other companies on the market. All definitions of innovation also emphasize that:
• the subject of innovation is man: only changes resulting from human activity are considered innovations; people are the creators and recipients of innovation, and also participate in the processes of transfer and diffusion of innovation,

- the subject of innovation are products, production processes and organizational solutions, and the essential features of innovation are novelty, improvement, perfection,
- innovations are the introduced beneficial changes, they are the environment and a tool for achieving social and economic goals on the scale of the enterprise, region and state,
- innovations are local in nature; it does not matter that new products or production processes are already known elsewhere; for a given place (company, market) they are innovations.

1. Purpose of the Study and Methodological Assumptions

Innovation is the basic element of 21st century organizations aiming to accelerate growth. It becomes necessary to search for new products, new technologies or new organizational forms in the integrated development of innovative activities of the organization. Their future seems to be young people - students, graduates of universities and centers, representatives of Generation Y, who have "tamed" technological innovations and actively use digital media and digital technologies, also justified it, (Breivik-Mayer, M., Arntzen-Nordqvist, M., & Alsos, G. A. 2020):

• an attempt to assess the innovativeness of students - managers, both in terms of examining their self-assessment in the above-mentioned scope as well as checking the possibilities of logical and creative thinking and examining the potential of the features describing their personality - before and after the training,

- analysis of the evaluation of the education offer at universities in terms of shaping pro-innovative attitudes, available in the course of studies and courses - seen through the eyes of the student,
- verification of students' approach to the issues of innovation.

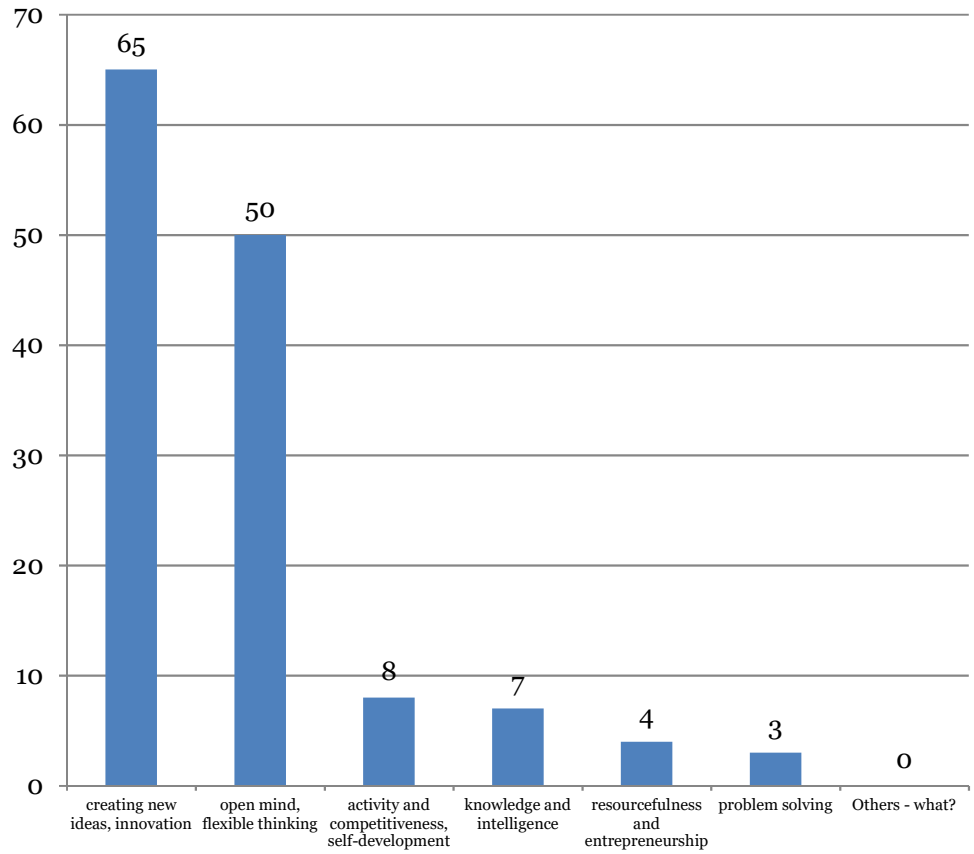
Generally speaking, the aim of the research was to examine the perception of students in terms of the issues analyzed in the project and on this basis to develop a scientifically justified concept of organizational and functional solutions, increasing the effectiveness of education in the field of activities developing their innovation - attitudes of people prepared and focused on changes and able to implement them in practice. The concept will also result in proposals for changes in educational programs.

The results and autcomes of the quantitative research conducted indicate the directions and activities that should be carried out in terms of increasing the level of innovation among student-managers. The results and autcomes of the conducted quantitative research conducted concerned an attempt to evaluate innovation, both in terms of examining their self-assessment in the above-mentioned scope, as well as checking the possibility of logical and creative thinking and examining the potential of the features describing their personality, turn out to be positive or not, from the point of view of the effectiveness of implementation expected outcomes at the stage of education. In addition, the results of partial research were presented at the International Defense Exhibition in Kielce (Kopczewski 2021).

2. Analysis of Responses from the main Part of the Survey

In the first question of the survey, the respondents were asked to indicate the features they associate with creativity. The question did not specify the number of answers allowed and was answered by all respondents. The results in quantitative form are presented in Figure 1.

Figure 1. Quantitative scale of responses to question 1: 'In your opinion, creativity is:' (N=101).

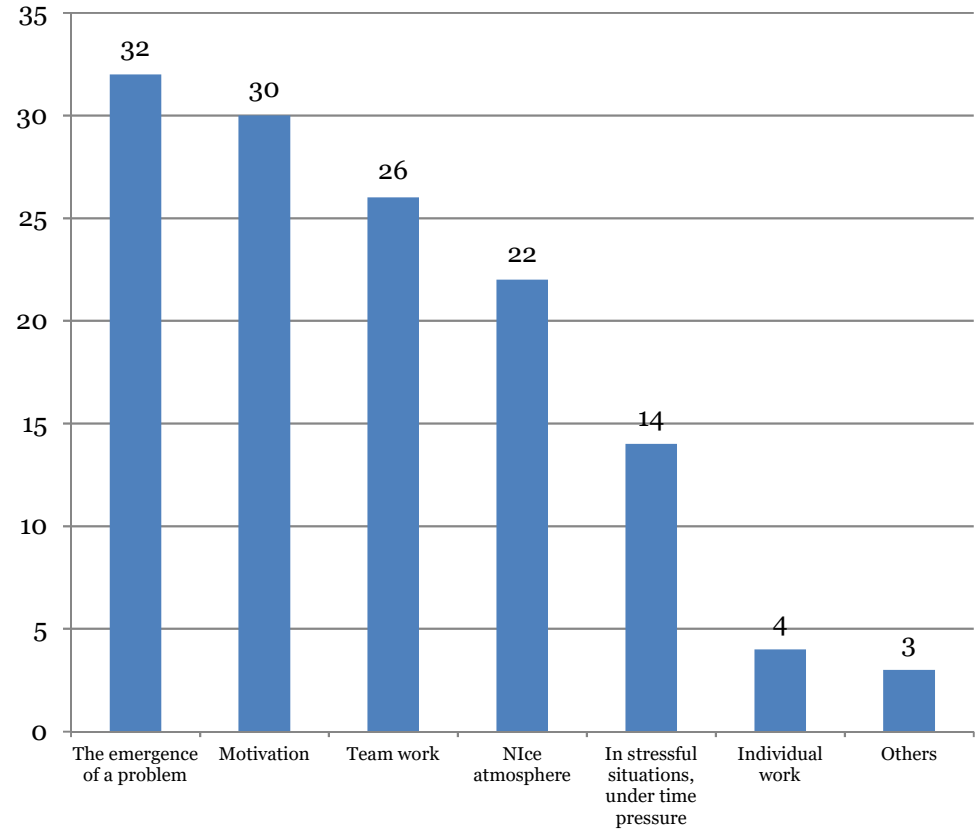


Source: Own work.

The results of the research showed that by far the most frequently indicated features associated with the notion of creativity were the creation of new ideas, innovativeness, and an open mind and flexible thinking. It constitutes a set of features related to proactive activity resulting in the willingness to implement own initiatives.

In the second question of the questionnaire, the respondents were asked to indicate circumstances conducive to innovativeness. This question also did not specify the number of answers allowed. The question, as before, was answered by all the respondents and the results in quantitative form are presented in Figure 2.

Figure 2. Quantitative scale of responses to question 2: 'What circumstances are the most conducive to creativity and innovation?' (N=101).



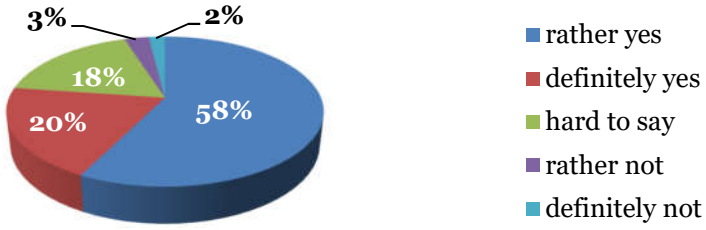
Source: Own work.

The results of the research showed that, in contrast to the previous question on associations with creativity, in the case of circumstances, the four leading response factors proved to be relatively similar in quantitative terms. In the opinion of the respondents, the most important factors favoring creativity and innovation were the emergence of a problem, motivation, team work, and a nice atmosphere. The three answers in the category "others"

were related to openness to innovation, appropriate organizational culture, and freedom of expression.

The third question of the survey concerned the respondents' feeling of their own conviction about the effectiveness of action to solve problems. This question was again answered by 100% of people and the percentage results are presented in Figure 3.

Figure 3. Percentage scale of responses to question 3: 'Do you always work with a high degree of certainty that you are on the right track to solve a particular problem?' (N=101).

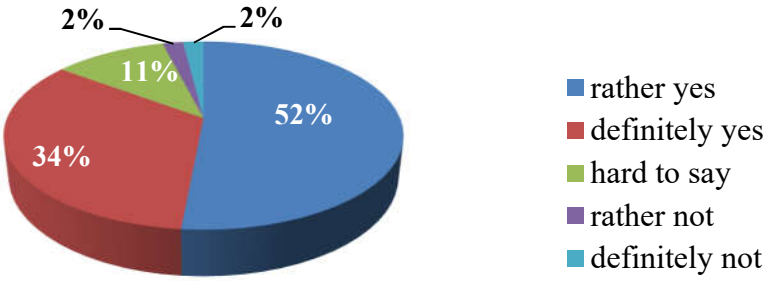


Source: Own work.

The research results indicated that the most respondents positively referred to their own feelings of effectiveness in solving problems. Differentiation is particularly visible after the percentage statement of positive (rather yes and definitely yes) and negative (rather not and definitely not) categories of 78% and 5% respectively.

The fourth question of the survey was to ask the respondents whether a step-by-step approach to problem solving is effective. The question was answered by 99% of the respondents. Figure 4 displays the percentage results.

Figure 4. Percentage scale of responses to question 4: 'Do you feel that the logical step-by-step method is best for solving problems?' (N=100).

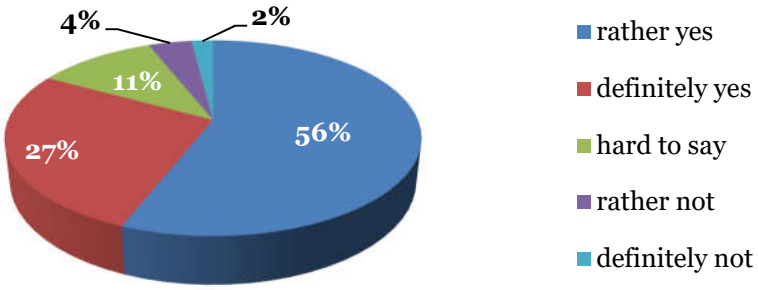


Source: Own work.

The results of the research showed that, as in the case of question 3, most respondents expressed a positive opinion, this time in terms of their belief that using the step-by-step method in action is the best method of solving problems. The difference between the positive and negative categories was even greater, as the percentage was 86% and 5% respectively.

The fifth question of the questionnaire concerned the respondents' assessment of whether team work allows them to change the behavior of other people by expressing own opinions. This question was answered by 99% of the respondents, and the percentage results are presented in Figure 5.

Figure 5. Percentage scale of responses to question 5: 'When working in a group, do you occasionally express opinions that change others' way of thinking?'

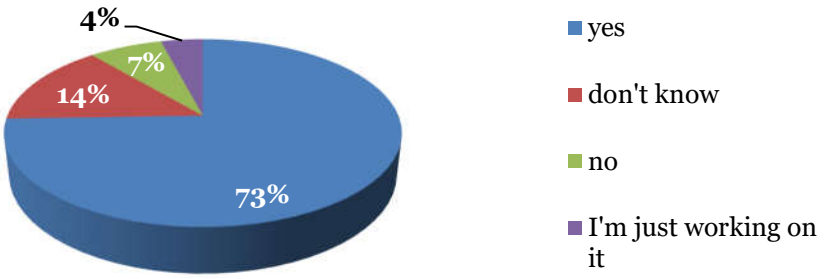


Source: Own work.

The results of the research showed that once again the respondents in vast majority expressed their positive/negative attitude to the content of the question - 83% and 6% respectively. It means that in their opinion, team work aimed at solving a given problem requires the exchange of opinions.

The sixth question of the survey was whether they created a solution to a difficult problem, which they later implemented. This time all the respondents also answered, and the percentage results are presented in Figure 6.

Figure 6. Percentage of responses to question 6: 'Have you ever come up with a solution to a difficult problem that you later implemented?'

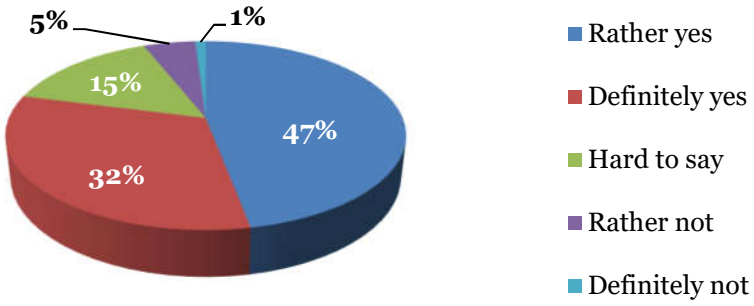


Source: Own work.

The results of the research proved that the most of the respondents (73%) came up with a solution to the problem, which they then used in practice. It is a positive sign of their analytical thinking capacity.

The ninth question concerned the respondents' opinion in terms of confirming or denying that they consider themselves as seeking creative solutions in their daily work. 99% of the people answered the question, and the results in percentage scale are presented in Figure 7.

Figure 7. Percentage scale of answers to question 9: 'Are you trying to think out of the box and look for more creative ideas when solving tasks?'



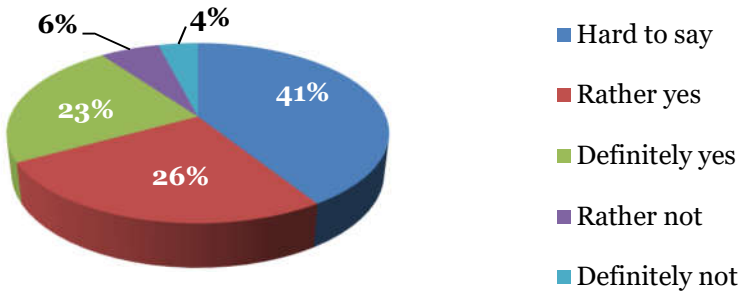
Source: Own work.

The results of the research showed that in total 79% (by summing up the affirmative answers) of them confirmed their creative way of acting. As in the case of the answers to question 6, it, therefore, proves their high degree of analytical thinking and creativity in solving problems.

The question 10 was connected to the respondents indicating whether in their opinion it is more interesting to create new ideas or to provide

information about the idea to others. The question was answered by 95%.The results in percentage scale are presented in Figure 8.

Figure 8. Percentage scale of responses to question 10: 'Is it more interesting to come up with new ideas or communicate an idea?'(N=96)

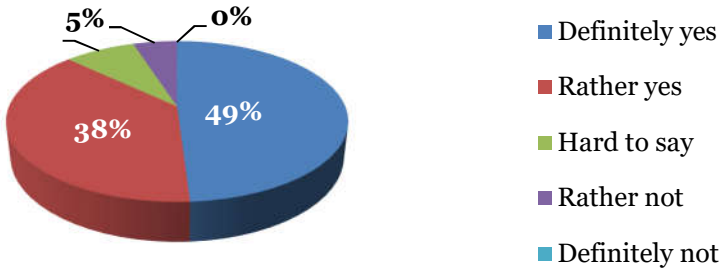


Source: Own work.

The research results indicated that similarly to the answers to question 8, the majority of respondents (41%) did not have a clear opinion on the matter concerned. However, a total of 49% of them responded (by summing up the affirmative answers) that in their opinion it is more interesting to come up with an idea than to provide information about it. Therefore, as in the case of answers to question 6, it proves the high potential of the respondents and the level of willingness to document the results of their analyses that needs to be improved.

The question 11 was linked to the respondents indicating whether in their opinion it is more interesting to create new ideas or to provide information about the idea to others. The question was answered by 99% of people. The results in percentage scale are presented in Figure 9.

Figure 9. Percentage of responses to question 11: 'Do you like working as a team?' (N=100)

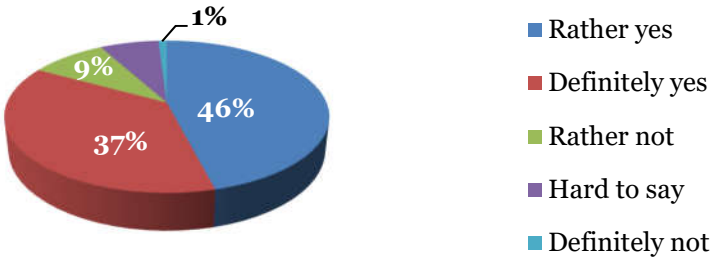


Source: Own work.

The results showed that almost half (49%) of the respondents declared a strong willingness to work as a team, and 38% of them answered "rather yes", which gives a total of as much as 87%. Therefore, it shows a very high level of teamwork skills, shaped, among others, during the training process. It should translate into high efficiency of action during future service.

In question 12, the respondents were asked to indicate whether they like to break schemes in action. This question was answered by all respondents and the results in percentage scale are presented in Figure 10.

Figure 10. Percentage scale of responses to question 12: 'Are you a person who likes to break schemes?'

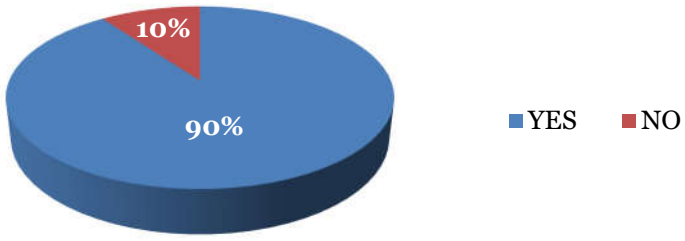


Source: Own work.

The results showed that, as in the case of the answers to the previous question, almost half (46%) of the respondents declared a strong willingness to break schemes, while 37% of them answered "rather yes", which amounted to the total of 83%. Again, similarly as in the case of answers to questions 3-6, it indicates a high level of respondents' creativity.

In question 13, the respondents' task was to determine whether they like to learn and develop. This question was answered by all respondents and the results in percentage scale are presented in Figure 11.

Figure 11. Percentage scale of responses to question 13: 'Do you like to learn and develop?'

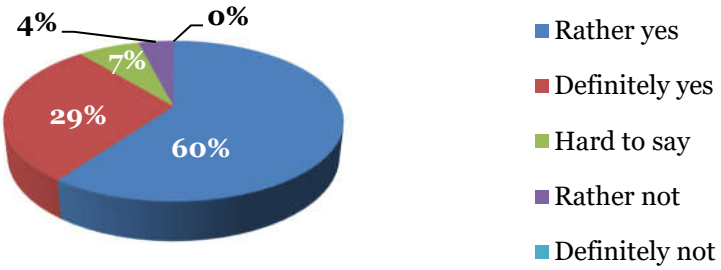


Source: Own work.

The results showed that almost all respondents strive to learn and develop, which once again confirmed their high level of self-development motivation.

The question 14 asked respondents to indicate whether they acquire at least a few new skills during a year. This question was again answered by all respondents. The results in percentage scale are shown in Figure 12.

Figure 12. Percentage of responses to question 14: 'Do you acquire several new skills during the year?' (N=101).

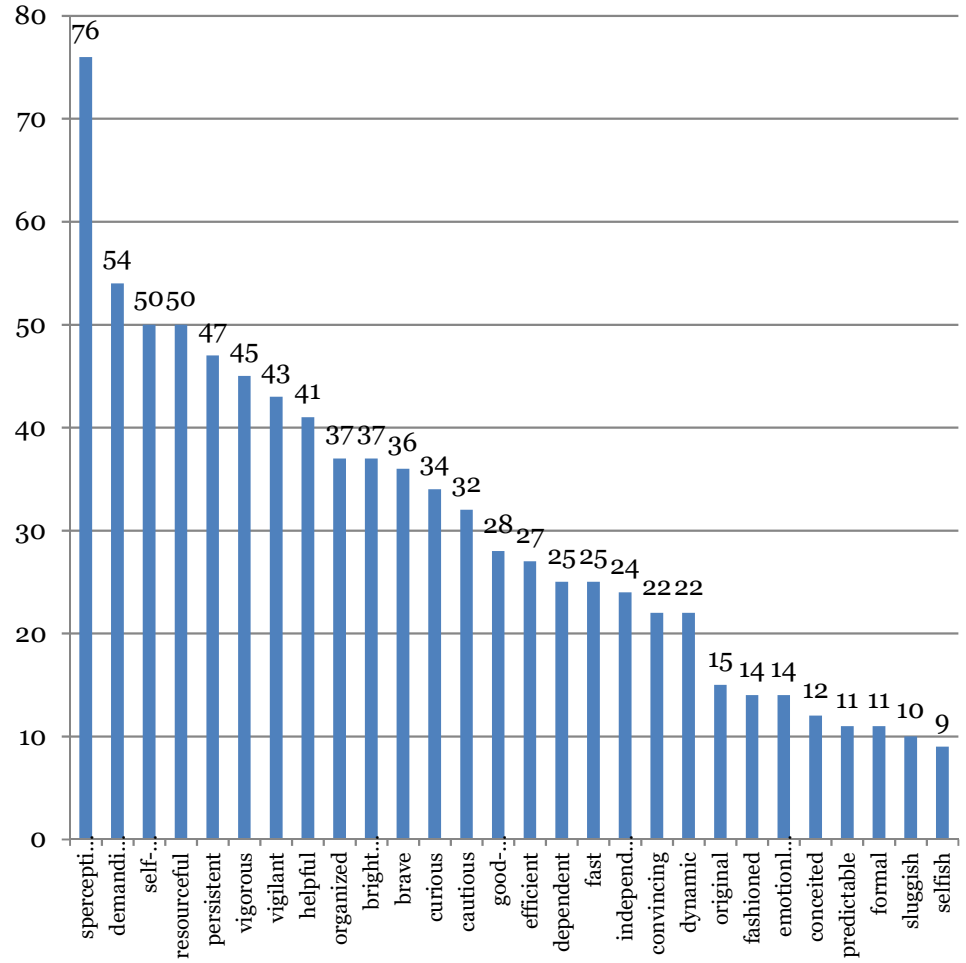


Source: Own work.

The results of the survey showed that almost all respondents (89% of the answers "rather yes" and "definitely yes") declared that they acquire at least a few new skills during a year, which again confirmed their high level of innovativeness.

In the sixteenth question, the respondents were asked to choose from among possible answers 10 characteristics which in their opinion best reflect their character. This question was answered by 99% of the respondents. The results are presented on a quantitative scale in Figure 13.

Figure 13. Quantitative scale of responses to question 16: 'Below there is a list of personality descriptors. Choose 10 that characterize you most' (N=100)

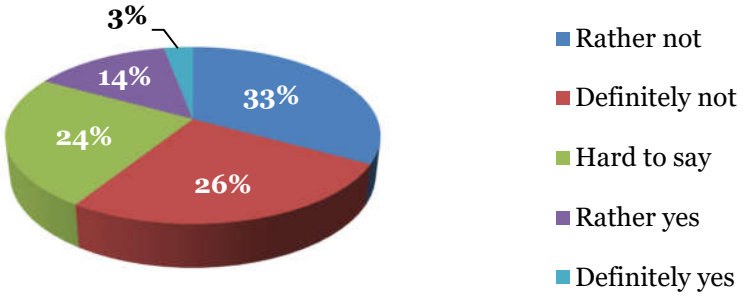


Source: Own work.

The respondents indicated a total of 851 traits. The results showed that as much as 88% (741) of them were positive features, which proves a very high level of own positive perception. Only 10% were clearly negative traits and 2% indifferent ones. At the same time, it should be noted that the total sum of the indicated characteristics exceeded the allowed number (10 per 1 respondent), which resulted in a bad interpretation of the content of the question by 10% of the respondents who indicated more than 10 traits in their answers. This fact, however, due to a relatively small number of errors, did not negatively affect the reliability of the research results.

The seventeenth question asked the respondents to indicate whether during their period of study, the lecturers rewarded ingenuity and innovative thinking. This question was answered by 98% of respondents. The results in percentage scale are presented in Figure 14.

Figure 14. Percentage of answers to question 17: 'Is ingenuity and innovative thinking rewarded and appreciated in your studies?' (N=99)



Source: Own work.

The results showed that in this case, for the first time in a survey, the majority of respondents (59% of the total sum of answers "rather not" and "definitely not") indicated negative answers.

3. Synthesis of Test Results and Conclusions

The overall assessment of the usefulness of the research carried out should be considered highly positive, as most questions were answered by almost 100% of the respondents. The only exception to this rule were open-ended questions, which required an in-depth analysis and thus more time to answer. Summarizing the nature of answers provided by the respondents, it should be noted that in most cases they were positive. That was expressed both in their recognition of the essence of innovativeness and creativity, their high assessment of their own level, and the increase in their level after completing their education during military studies in relation to the period preceding them.

The respondents almost unequivocally indicated that they like to work as a team, break schemes in action, and constantly strive for self-development, which will certainly positively affect the quality of their service. At the same time, it demonstrates the desired direction of shaping future managers, as regards educational content, since, as the respondents indicated, the evident progress in creativity and innovativeness.

The respondents, as far as areas conducive to their development are concerned, appreciated, first, the possibility of learning foreign languages, management, and the possibility of implementing innovative

solutions while creating their diploma theses. The research has shown that there is no doubt that the study of the level of students' innovativeness and creativity is necessary in the context of their future existence on the labor market. In summary, the most important conclusions of the research are as follows:

1. The respondents almost unequivocally indicated that they like to work as a team.
2. There is noticeable progress in creativity at the time of professional promotion
3. The most important feature of teachers according to respondents are Soft skills.
4. This significance is increased due to increasing the service quality of managers.

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ARTICLES

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Robert Lisowski[1], Maciej Woźniak[2]

EFFECTS OF FISCAL PREFERENCES ON PROFITABILITY OF ENTERPRISES AGAINST THE GROSS DOMESTIC PRODUCT IN POLAND

Abstract

Fiscal preferences belongs to the measures of public policy which aim is supposed to fix the market failures. However, there is a shortage of studies which evaluates the effects of the fiscal instruments on enterprises from all sectors. Moreover, it is not clear how strong their influence in comparison to other external factors. One of the most important of the external determinants is the economic growth. Therefore, the aim of the paper is to analyze the effects of fiscal preferences on profitability of enterprises against the Gross Domestic Product (GDP) and its components in Poland. We set three hypotheses but only two of them could be confirmed and only in some part. The effects of the fiscal instruments on profitability is positive although only for some kinds of enterprises. It was a little stronger impact than for selected macroeconomic variables connected with GDP. However, one must take into consideration that the impact of GDP or some of its components is negative and regards medium-sized companies.

***Keywords*:** fiscal preferences, profitability, enterprises, Gross Domestic Product, evaluation impact

***JEL Classification*:** H21, J11

Paper type: Theoretical research article

[1] PhD. eng., AGH University of Science and Technology, Faculty of Management, Department of Enterprise Management
[2] PhD., AGH University of Science and Technology, Faculty of Management, Department of Enterprise Management

Introduction

Fiscal preferences belongs to the measures of public policy which aim is supposed to fix the market failures. Therefore, the goals could be very wide - support of creation of new ventures, increase the value of investments or strengthen the financial efficiency of companies. In Poland the value of fiscal instruments[3] amounted about 5% of Gross Domestic Product (GDP). In connection to this, some studies about the evaluation were provided (Woźniak and Lisowski, 2016; Lisowski et al, 2019). Although the preferences are neutral for tax payers - both revenues and costs - they may have influence on the profitability of enterprises. There is an extensive literature about the issues (Conor and Kopczuk, 2017; Yiang, et al, 2018; Glogower and Kamin, 2018), particularly for banking sector (Siudek and Drabarczyk, 2015) or insurance industry (Ortyński, 2016). However, there is a shortage of studies which encompass enterprises from all sectors. Moreover, it is not clear how strong the influence of fiscal preferences is in comparison to other external factors. One of the most important of the external determinants is the economic growth. Therefore, the aim of the paper is to analyze the effects of fiscal preferences on profitability of enterprises against the Gross Domestic Product (GDP) and its components in Poland.

The paper is organized as follows. In the next section the literature review was conducted. Then, the methods and data were presented. In the next section, the results of statistical analysis was provided. The conclusions, recommendations and direction for further research was presented in the end of the paper.

1. Literature review

The literature review concerns the quantitative studies, we decided to conduct in two parts. First the evaluation of the effect of fiscal instruments on performance of enterprises were scrutinized. Then, the publications about influence of GDP on enterprises were analyzed. After that, we presented the conclusions.

Some studies (Howell, 2017; Gramillano and Floria, 2017; Cadil, 2018) have used counterfactual approach to evaluate the influence of subsidies on performance of companies. The results suggest there is positive impact of such instruments on the revenue of beneficiaries. Another study (Woźniak and Lisowski, 2016) shows positive relationship between the majority of tax instruments and the value of investments of the industrial small and medium-sized enterprises (SMEs) in Poland. However, further research (Lisowski et al, 2019) with more advanced statistical methods confirms these

[3] The terms: fiscal preferences and fiscal instruments are used as synonymous in the paper.

findings only in some cases. The research of Yang et al (2018) reveals also that some of the fiscal and tax incentives positively influence on the technological innovation of Chinese enterprises listed on the stock exchanges.

Assrgaf and Ali (2017) studied whether government subsidies are determinants of financial performance of state-owned companies (SOE) in Indonesia. They used purposive sampling method of seven SOE for 11 years and linear regression for a statistical analysis. The results revealed negative effect of the subsides on the financial performance of these enterprises. They also notice that the government encouraged state-owned companies to apply for loans in order to decrease the burden of the subsidies. Nevertheless, the research evaluated the effects only for SOE whereas most of enterprises are private.

Koniewski et al. (2015) analyses also influence of grants on performance of SMEs in Poland. They uses the counterfactual approach. The findings confirm that is some cases there is a positive impact of grants on financial efficiency. However, they also try to evaluate such impact against selected macroeconomics indicators. They decided to use the regression panel method. The findings shows a negative and significant correlation between GDP and profitability. The results are but confine only to the enterprises which were the beneficiaries of public grants over five years.

Lisowski and Woźniak (2019) analyses the influence of chosen fiscal preferences on profitability of enterprises in Poland. They decided to use the casual relationship of Granger. The findings indicates that in some cases there is a positive impact of the value of fiscal preferences on the profitability of companies, particularly SMEs. However, the tests had low power and the research confines only to one of external determinants.

Siudek and Drabarczyk (2015) shows that there is a negative and statistically significant relationship between the economic development measured in GDP per capita and the financial performance of commercial banks in the countries of the European Union (EU). Another study (Ortyński, 2016) reveals positive relationship between the growth of GDP and profitability of technical activity in insurance companies in Poland.

Misztal (2015) analyses also the influence of selected external factors on the profitability of two Polish companies listed on the Warsaw Stock Exchange. He argues that there is positive and strong correlation between the GDP and efficiency but only in case of one enterprise from manufacturing sector. The regression analysis confirmed the finding. The study was, however, made only for two companies and for short time span (10 years: 2005-2014).

Datu (2016) studied the incentives that affect the profitability of insurance business in Philippines. In connection to this, he used ordinary least square, model as well as fixed effect and random models for statistical analysis.

The results reveals no evidence that GDP affects profitability of these enterprises. The research was conducted only for insurance industry and for a very short space of time - 5 years: 2008-2012.

Berhe and Kaur (2017) also verifies the factors that affects profitability of insurance companies but in Ethiopia. They decided to use regression analysis as a statistical method. The findings shows that growth rate of GDP was among the key factors that significantly affect the profitability of these enterprises. The research was but constrained to the insurance sector, too. Moreover, it was conducted for relatively short time space – 10 years: 2005-2015.

Dewi et al. (2019) tried to determine the influence of macroeconomic factors on firm profitability in Indonesia. They decided to use multiple regression method for statistical analysis. The findings reveal that only GDP has significant impact on company profitability. The study was constrained, however, to fast moving consumer good enterprises listed on the stock exchange although for quite ling period of time – 18 years: 2008-1016.

The relationship between the profitability of companies and GDP and its components is widely accepted in the literature. It is explained by the theory of economic growth. However, there are inconclusive findings whether it is positive or negative. That is the research gap which should be analysed. The effect of fiscal instruments on performance of companies is still the subject of debate. The findings suggest that only some of them are effective. However, there is a shortage of reliable results for different types of fiscal instruments. Moreover, it is not clear if their effect on profitability of enterprises is higher than in case of economic growth. That should be clarified. In connection to this, the authors decided to set the following hypotheses:

- H1: There is a positive effects of the chosen fiscal preferences on the profitability of enterprises in Poland.
- H2: There is a positive effects of GDP on the profitability of enterprises in Poland.
- H3: The positive effects of the chosen fiscal preferences and GDP on the profitability of enterprises in Poland is different.

In order to verify the hypotheses, we collected the necessary data and chose the appropriate research methods.

2. Data collection and research methods

In order to achieve the goal of the paper, we collected (partly estimated) the data and assigned to three groups. The first one includes the value of the selected fiscal preferences that were chosen based on the findings of the previous studies (potential independent variables) from the reports about the fiscal preferences published by the Polish Ministry of Finance:

- Total revenues exempt from Corporate Income Tax (CIT): nominal value and preference value,
- Losses from previous years deducted by corporates,
- Income deductions in CIT,
- Tax deductions in CIT.

The second group includes the value of selected macroeconomic indicators (potential independent variables) published by the Polish Central Statistical Office:

- gross national income,
- gross domestic product,
- gross value added,
- domestic demand,
- total consumption (broken down into household and public consumption),
- gross accumulation,
- gross fixed capital formation
- increase in tangible assets,
- export,
- import,
- GDP per capita,
- GDP per capita as a percentage of average GDP per capita for EU countries.

The third group includes the following values of financial data of all enterprises (excluding micro-enterprises) and broken down into small, medium and large-sized enterprises (dependent variables) published by the Polish Ministry of Finance:

- Net financial result per an enterprise (wfn_1f),
- Net financial result per an employee (wfn_1p),
- Total net financial result (wfnl),
- Total gross financial result (wnbl),
- Gross turnover profitability rate (wrob),
- Return on net turnover (crows).

The authors decided to focus on companies that pays CIT. Although the third group of the selected variables includes also small number of enterprises that pays Personal Income Tax (PIT). Eventually, we collected the data for the years 2003-2017 including 43 variables.
Although many research which evaluate the impact of public aid uses a counterfactual approach, others analyses the relationship with use of statistical methods like correlations or regression. We decided to choose the second strategy. The reason is that a counterfactual approach is quite expensive and appropriate rather for specific types of support instruments. While evaluating the much bigger population of companies, like in case of taxpayers, it is advisable to choose the statistical methods. Therefore, we decided to conduct the analysis according to the following scheme:

- verification of stationarity of the time series (using trend analysis and ADF tests),
- differentiation of non-stationary variables,
- calculation of linear correlations between various dependent and independent variables (both not delayed and delayed by one and two years),
- Granger causality study,
- attempt of construction of single-equation econometric models.

We decide to use two programs: *Statistica* and *Gretl* for statistical analysis.

3. Results and discussion

First, we to check the stationary stability of variables by trend analysis and the ADF test. All variables have proven to be non-stationary and, therefore, we calculated first differences of variables (prefix "d_"). That was the basis for further calculations. The only exception was the variable "increase in tangible assets", which is stationary due to its specificity. In order to pre-assess causality, linear correlations of Pearson between the dependent and independent variables were examined. However, none of the calculated coefficients appeared to be significant.

Then, the correlations between the values of the potential independent variables delayed by 1 year and the values of the dependent variables were examined. In the result 29 significant values of correlation coefficients were obtained. They included the relationship between the following independent variables:

- differences in the nominal value of tax deductions (d_ oop _wn_1),
- differences in the value of GDP (d_PKB_brutto_1),
- differences in the value added (d_value_added to_1),
- differences in the value of accumulation (d_Akumulacja_b rutto_1),
- differences in the value of GDP per capita (d_PKB_brutto_ per_capita_ 1),

and some types of differences in the values of the dependent variables but mainly for medium-sized enterprises.

After that, the correlations between the values of the potential independent variables delayed by 2 years and the values of the dependent variables were examined. In the result 12 significant correlation coefficients were obtained. Relationships were found between:

- differences in the value of preferences obtained from total revenues exempt from CIT (d_PZog_wp_2),
- differences in nominal values of losses from previous years deducted in a given year (d_SLU_wn_2),
- differences in value added (d_wartosc_dodana_2),
- differences in the value of public consumption (d_Spozycie_pub numerous_2),

and some types of differences in the values of the dependent variables but mainly for small and medium-sized enterprises.

Then, the causality of correlations in the Granger sense was conducted. Correlation means a relationship, but it may be accidental. The variable *x* is, however, the cause in the Granger sense of the variable *y* if the current values of the variable *y* can be more accurately predicted taking into account the past values of the variable *x.* In the study we applied the delay for independent variables equal to 1 or 2 years, according to the previously calculated correlation coefficients. On this basis, the vector auto regression model (VAR) was estimated: VAR (1) or VAR (2).

In table 1 the results of the causal relationship between the considered variables are summarized. However, only the pairs in which a causal relationship can be found at a significance level of at least 5 % are presented. In the cases of the causal relationship, the data on the selected delay in the VAR model and on the p- value in the causality test was provided. Bilateral causality between variable pairs was not found.

Table 1. Causal relationships between the selected variables: *p*-values

	d_PZog_wp VAR (2)	d_SLU_wn VAR (2)	d_oop_wn VAR (1)	d_PKB_brutto VAR (1)	d_wartosc_dodana VAR (1)	d_PKB_per_capita VAR (1)	d_spozycie_publiczne VAR (2)
d_wfn_1f_pow9	-	-	0.0001				
d_wfn_1f_50_249	-	-	0.0001	0.0195	0.0301	0.0192	
d_wfn_1p_pow9	-	-	0.0001				
d_wfn_1p_50_249	-	-	0.0001	0.0265	0.0357	0.0270	
d_wfbl_pow9	-	-	0.0002				
d_wfbl_50_249	-	-	0.0002	0.0134	0.0161	0.0153	0.0422
d_wfnl_pow9	-	-	0.0001				
d_wfnl_10_49	-	0.0235	-				
d_wfnl_50_249	-	-	0.0001	0.0191	0.0247	0.0223	
d_wrob_pow9	-	-	0.0001				
d_wrob_10_49	-	0.0324	-				
d_wrob_50_249	-	-	0.0001	0.0329		0.0456	
d_wron_pow9	-	-	0.0001				
d_wron_10_49	-	0.0284	-				
d_wron_50_249	0.0803	-	0.0001	0.0434			

Source: own study

The names of the variables in the second section of the paper were already explained. The endings in the names of the dependent variables mean:

- pow9 - all enterprises (excluding micro-enterprises),
- 10_49 - small enterprises,
- 50_249 - medium enterprises.

There were 32 causal correlations out of previously described 41 significant correlations. The table 1 presents a significant and causal impact of 7 independent variables on 15 dependent variables. These cases were described below.

1. Changes in the value of the preferences accruing from the income exempted from CIT have negative impact (model VAR2) after one year and two years (signs of correlation coefficients and coefficients in the model negative) on the net turnover profitability rate in medium-sized companies. Interpretation of this relationship is quite difficult. On the one hand, exempt revenue consists of a number of different items (e.g. income from running lottery tickets, income obtained from business activity conducted in the special economic zone) which are tax neutral on the revenue side, but not all are cost neutral (in the sense: expenses financed from them may be tax deductible costs). In addition, the above revenues and the expenditure financed with them are not accounting neutral. Thus, obtaining such revenues may entail greater involvement of other financial sources of medium-sized enterprises, which in turn may cause that the net financial result decreases in a short period of time, and thus the net turnover profitability index decreases. Moreover, assuming that revenues exempt from CIT are according to of the Accounting Act as other operating or financial revenues, their increase has a negative impact on the net turnover profitability ratio (the value of total revenues is in the denominator of the formula).
2. Changes in the value of the losses from previous years deducted in a given year have a positive impact (VAR2 model) after one and two years (signs of correlation coefficients and coefficients in the positive model) on:
    - changes in total net financial result in small companies,
    - changes in gross turnover profitability rate in small enterprises,
    - changes in net turnover profitability rate in small companies.

According to tax law, a company is allowed to deduct losses from the same source of income for 5 consecutive years and no more than 50% loss from each year. Therefore, taking into account the obtained results, the impact on the above mentioned independent variables may even have a loss of seven years ago. The deducted tax loss reduces income tax in a given year, thus increasing the net financial result and net turnover profitability ratio. The loss itself may be the result of for instance previous investments. This may explain the impact of the deductible loss on the gross turnover profitability rate. Perhaps the gross turnover profitability index is rising not because of loss deduction itself, but due to investments from a few years ago.

3. Changes in the value of the tax deductions made in a given year have a positive impact (VAR1 model) after a year (signs of correlation coefficients and coefficients in the positive model) on:
    - changes in net financial result per one company and in medium-sized companies,
    - changes in net financial result per one person employed in all companies and in medium-sized enterprises,
    - changes in gross financial result all companies and in medium-sized enterprises,
    - changes in net financial result all companies and in medium-sized enterprises,
    - changes in the gross turnover profitability rate in all companies and in medium-sized enterprises,
    - changes in the net turnover profitability ratio in all companies and in medium-sized enterprises.

Tax deductions includes mainly deductions of tax paid abroad (in the absence of a double taxation agreement) and deductions of tax paid on dividends received from foreign subsidiaries (not less than 75% of shares). As one may assume from the above list and calculations, the positive impact applies primarily to medium-sized companies and through their strong impact also all companies (except microenterprises). This can be demonstrated by the fact that the correlation coefficient for 5 out of 6 above mentioned relationships is higher when the dependent variable applies not to all companies but only to medium-sized enterprises. Interpretation of inflows is similar to the case of losses from previous years. Tax deduction affect its reduction and therefore an increase in net profit and the rate of profitability net turnover. A more accurate interpretation does not seem important since tax deduction from CIT is used by a small number of taxpayers. For example, in the 2017 only 354 entities took advantage of this preference.

4. Changes in the value of GDP in a given year have a negative impact (VAR1 model) after one year (signs of correlation coefficients and coefficients in the negative model) on:
    - changes in net financial result per one medium-sized company,
    - changes in net financial result per one medium-sized company
    - changes in gross financial result in medium-sized companies,
    - changes in net financial result in medium-sized companies,
    - changes in gross turnover profitability rate in medium-sized companies,
    - changes in net turnover profitability rate in medium-sized companies.

5. Changes in the value added in a given year have a negative impact (VAR1 model) after one year (signs of correlation coefficients and coefficients in the negative model) on:
    - changes in net financial result per one medium-sized company,
    - changes in net financial result per one medium-sized company,
    - changes in gross financial result in medium-sized companies,
    - changes in net financial result in medium-sized companies.

6. Changes in the value of GDP per capita in a given year have a negative impact (VAR1 model) after a year (signs of correlation coefficients and coefficients in the negative model) on:
    - changes in net financial result per one medium-sized company,
    - changes in net financial result per one medium-sized company
    - changes in gross financial result in medium-sized companies,
    - changes in net financial result in medium-sized companies,
    - changes in gross turnover profitability rate in medium-sized companies,
    - changes in net turnover profitability rate in medium-sized companies.

7. Changes in the value of public consumption in a given year have a negative impact (VAR2 model) after one and two years (signs of correlation coefficients and negative coefficients in the model) on changes in gross financial result in medium-sized companies.

Interpretation of the relationships described in points 4-7 is quite difficult. First of all, these relationships apply only to medium-sized companies. It seems that the increase in the value of selected macroeconomic indicators may be caused for example by an increase in aggregate demand which in turn leads to a growth in prices. The increase in prices will affect not only consumer but also producer goods, what is the reason of higher production costs. It seems, therefore, that after a year or two, this may cause a decrease in the value of the financial result and turnover profitability rate. Moreover, it could be connected with the investment overhang which can lead to negative consequences for profitability of enterprises. The reason is that investments affect economic growth of GDP as one of the main components of aggregate demand.

Then, we focused on comparing the impact of tax preferences and selected selected macroeconomic indicators on the profitability of enterprises. Take into consideration the absolute values of significant and causal correlations, we estimated that there was a little stronger impact

in the case of tax preferences (| *r* | = 0.64 to 0.71) than selected macroeconomic variables (| *r* | = 0.61 to 0.67).

In the last part of statistical analysis, we made an attempt to build single-equation econometric models. We constructed 6 models - cases where the dependent variable is affected by at least two dependent variables that are not correlated significantly with each other. The variables regarding tax preferences and one representative of selected macroeconomic indicators were applied as independent variables. We selected the representative one based on the absolute value of the correlation coefficient of the independent variable and the dependent variable. Each time the variable d_PKB_brutto_1 was selected. Five of the six models were not appropriate because of high estimation errors, statistically insignificant regression coefficients *B* in the equation, p> 0.05 or low determination coefficient R^2. The sixth model, however, had good results. The multiple regression for this case was presented in table 2.

Table 2. Summary of multiple regression

N=13	Summary of dependent variable regression: d_wfn_1f_50_249 (regression) R = 0.82693357 R^2= 0.68381914 adjusted R^2 = 0.62058296 F (2.10) = 10.814, p <0.00316, Standard error of estimation = 182.66					
	b*	Standard error with b *	B	Standard error with B	t(10)	p
Intercept term			495.6415	183.7549	2,69730	0.022417
d_oop_wn_1	0.525969	0.194720	0.0005	0.0002	2.70116	0.022269
d_PKB_brutto_1	-0.458787	0.94720	-0.0053	0.0023	-2.35614	0.040217

Source: own study

As it results from Table 2, two variables (d_oop_wn_1 and d_PKB_brutto_1) explain 68.4% of the variability of the variable d_wfn_1f_50_249. The coincidence condition is also met:

$sgn(r_i) = sgn(b_i)$

$sgn\ (r_i)$ - signs at Pearson's linear correlation coefficients between independent variables and the dependent variable,

$sgn\ (b_i)$ - signs with non-standardized regression coefficients occurring in the model with independent variables.

4. Conclusions

In the paper, based on the literature review, we decided to set and verify three hypotheses:

- H1: There is a positive effects of the chosen fiscal preferences on the profitability of enterprises in Poland.

The hypotheses was confirmed only in some part. There is a positive effect of the losses from previous years on the following measures: total net financial result, gross turnover profitability rate and net turnover profitability rate but only in small companies. On the other hand, there is a positive influence of tax deductions on net financial result, net financial result, gross financial result, net financial result, gross turnover profitability and net turnover profitability for all companies and in medium-sized enterprises. Moreover, we found that there is an effect of the preferences accruing from the income exempted from CIT on the net turnover profitability rate in medium-sized companies but it is negative.

- H2: There is a positive effects of GDP on the profitability of enterprises in Poland.

The hypothesis should be rejected. We found only that there is an effect of some of the chosen macroeconomic indicators: GDP, value added, GDP per capita and public consumption on the profitability in medium-sized enterprises but it is negative.

- H3: The positive effects of the chosen fiscal preferences and GDP on the profitability of enterprises in Poland is different.

The hypotheses was confirmed only in some part. There was a little stronger impact in the case of the chosen fiscal preferences than for selected macroeconomic variables connected with GDP. However, one must take into consideration that the influence of the fiscal instruments on profitability is positive although only for some kinds of enterprises. The impact of GDP or some of its components is negative and regards medium-sized companies.

The findings of the paper contributes to widening the existing international knowledge about fiscal policy and public economics. Moreover, it add new knowledge to the theory of corporate finance. The results may be important for decision-makers, indicating the need to modify the current methods of fiscal policy. It regards not only Poland but also abroad, particularly in the countries of the EU.

However, one must take into consideration that the time series in the study were relatively short. The analysis of data before 2003 is be difficult. First reason is the lack of all necessary data. The second problem was connecting

with the changes in tax law what makes that some data are incomparable. Therefore, the tests had low power and the results should not be treated as decisive. This also indicates the need to repeat the research in the future. Longer time series will increase the power of testing by providing more reliable results. This will allow for better evaluation of the implemented fiscal preferences and their possible modification.

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ARTICLES

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Robert Poskart*

The emergence and development of the cryptocurrency as a sign of global financial markets financialisation

Abstract

The article presents one of the most important, in the author's opinion, manifestations of further intensification of the processes of financialisation of global financial markets, which was the emergence of decentralized digital currencies (so-called cryptocurrencies) based on blockchain technology. Their creation and existence on the global financial market have been widely considered as one of significant effect of the global financial crisis, which symbolic beginning is September 15, 2008, when one of the largest US investment banks Lehman Brothers collapsed. The worldwide COVID-19 pandemic has only highlighted the importance of this effect of financialization. The purpose of the article is to present the impact of cryptocurrencies, including bitcoin, on the deepening of the processes of financialisation of modern financial markets. Author analysis is based on statistical data, on the literature review and documents of world financial institutions.

Keywords: cryptocurrency, financialisation, global financial markets

JELL Clasification*:* E44*,* G15

Paper type: Theoretical research article

* Ph. D., University of Opole, Institute of Economics and Finance, Department of Finance and Accounting

Introduction

The new monetary system, with the US dollar at the forefront as the world's main reserve currency, was created in 1944 on the basis of the post-war order in *Bretton Woods* and ultimately failed to stand the test of time and collapsed on August 15, 1971, when the then president of the United States, Richard Nixon, gave a famous television speech in which he announced that the US was closing the so-called "golden window", which was tantamount to breaking the exchangeability of the US dollar for physical gold. This decision was made as a result of the real threat of total exhaustion of the huge American gold reserves accumulated during World War II. This was caused by the ever-increasing trade deficit of the United States, which in turn was responsible for the huge arms expenditure associated with the need to bear the burden of financing the war in Vietnam. In making this unilateral decision, which was surprising to the financial world at the time, the US authorities also confirmed that they were unable to manage the internal crisis caused by the domestic trade deficit alone, thus recognising the primacy and superiority of capital in private hands. From that historical moment on, a new and very important player has emerged in the architecture of the global financial system, in the form of private capital, which has benefited from diversified financial activities, until now completely ignored by the post-war order set up in *Bretton Woods* (Dembinski, 2008; Galbraith, 1994; Griffin, 2002).

From the moment the United States closed the previously mentioned "golden window" and the exchangeability of the US dollar for gold ceased, the historical era of fully gold-covered money (1 oz gold = USD 35) came to an end and a completely new era began, governed by different laws, namely the era of paper money, the so-called fiduciary money, based only on society's trust in the solvency of state institutions and the stability of the entire financial system (Rothbard,1983; Selgin, 2017). The consequence of this was that contemporary money took on the character of merely symbolic money, i.e. money whose cost of production is many times lower than the value it represents - denomination (purchasing power) (Skawińska, Sobiech- Grabka, Nawrot, 2010). In the current financial system, parallel to money in paper form, there is also non-cash (intangible) money in the form of electronic money.

The fact that money did not have to be covered by gold bullion from now on has caused changes over the years consisting in the loosening of bilateral relations between the financial sphere and the real world economy. This resulted in the emergence of opportunities for the unrestricted creation of money by the banking system, the emergence of innovative but also risky financial engineering products in the form of complex derivatives, the abolition of capital flow controls, the globalization of corporate activity

and the pressure of shareholders to maximize stock market capitalization and the rate of return on the capital of transnational corporations (Mishkin, 2006; Stiglitz 2003). This has enabled an explosive increase in the value of global financial assets in relation to non-financial assets, manifested by the dynamic growth of the former's share in global GDP. Serious and at the same time irreversible changes has been triggered in the entire global economy, it has been called the process of its financialisation (Dembinski, 2008).

According to Paul H. Dembinski, the progressing financialisation of the world economy consists in a permanent increase in the share of the financial system in the process of creating global GDP. The consequence of this is an excessive increase in the importance of markets and financial institutions (the financial sphere of the economy) compared to the constantly decreasing importance and shrinking potential of the real sphere, where specific goods and services are produced for the needs of real investments and current consumption. In the case of some countries (USA, UK, Switzerland) the financial sector has even become the main engine of economic growth (Stanisławski, 2013). The financial sector itself has evolved from a bank-based system model to a financial market model. The unrestrained development of the latter, combined with the ever-present temptation to abuse the global financial system - *moral hazard* - resulted in a dramatic drop in confidence, not only in the financial markets but also in the very essence of money, which was one of many serious consequences of the global financial crisis that erupted in 2008 (BIS, 2009; Roubini, Mihm, 2010; Schiff, 2012). Despite a gigantic crisis of confidence in the ubiquitous fiduciary currencies - fiat, based only on faith in their so-called value, the system did not return to the gold standard that had been known for centuries, and there was a certain revolution not so much in the system itself, but on its "periphery". It resulted in the creation of independent from the main system, at the same time completely uncontrollable from the outside and independent in its essence cryptocurrencies, based on blockchain technology. According to the author of the article, it even revolutionized the process of financialisation and pushed its development in a completely new, so far unpredictable direction, which is part of a slightly broader framework of the increasingly common phenomenon, the so-called virtualization of money (Gilder, 2015).

Decentralized digital currencies started to have a significant impact on the future of the traditional financial system, becoming its successor or an important (key) complement (Laboure, 2020), as they have the properties to compensate for the significant shortcomings of the traditional system, thanks to the use of new technologies such as blockchain and IT ecosystems built on its architecture,

revolutionary in their capabilities (Poskart, 2020). In the global financial system, classical banks are beginning to play a smaller and smaller role, slowly losing their market position to FinTechs. The current capitalization of the latter, together with non-bank payment institutions, already represents about 30% of the value of the 500 global financial institutions (Dimon, 2020). The processes of the inevitable transformation have been further amplified by the emergence of the so-called "black swan" – the COVID-19 pandemic and the subsequent lockdowns implemented by governments of the most developed countries of the world. Authorities of monetary institutions, such as central banks and international regulators, in all developed countries seem to be concerned about this development out of fear for the future of the legacy financial system (D'Urbino, 2021; Lagarde, 2018, Carstens, 2018).

There have been some scientific studies are devoted to the subject of the evolution of money as such and its future (Bitros, Economou, Kyriazis, 2020). There are a few scientific studies focused on the possibilities of achieving higher-that-market-average profits as a result of trading on this market and its level of efficiency (Kyriazis, 2019; Stosic, Stosic, Ludermir 2018). There is a block of literature that examines the cryptocurrency market as a speculative bubble or cryptocurrencies as a means for money laundering, drug trafficking and terrorist financing (Geuder, Kinateder, Wagner, 2018). In existing literature has been highlighted cryptocurrencies acquisition, so-called mining (Eyal, Sirer, 2014). Nevertheless, there has been very little research on the emergence of cryptocurrencies as an evolution of the system and its financialization.

The article presents one of the most important, according to the author, manifestations of the global financial markets financialization process further intensification (deepening) which was the emergence of bitcoin and its subsequent explosive development, as well as other decentralized digital currencies (the so-called cryptocurrencies) based on blockchain technology. The fact of their emergence and appearance on the global financial market is widely regarded in the literature as one of the global financial crisis many significant effects for which the symbolic beginning is assumed on September 15, 2008, when one of the largest American investment banks, *Lehman Brothers*, was declared bankrupt.

The aim of the article is to show the influence of cryptocurrencies, including bitcoin, on the financialization processes of contemporary financial markets deepening. Thus, I develop the hypothesis that the emergence of cryptocurrencies is another manifestation of the financialization of the global economy. The structure of this article is as follows. The first part of the article describes what structural factors had to be present in order to create a favourable environment for the private market of cryptocurrencies

with bitcoin at the forefront. Further, the definition considerations on the notions of cryptocurrencies and bitcoin are presented and it is shown how they differ from money in the traditional sense. Then, the reasons for the explosion of interest in the cryptocurrencies market and its entry into the mainstream media were described followed by a summary and conclusions.

1. The creation of bitcoin and other cryptocurrencies

The emergence of bitcoin and other cryptocurrencies phenomenon was considered to be one of the many significant consequences of the crisis on the global financial markets (Poskart, 2015). The actions taken then by the central banks of the world's leading economies, headed by the US Federal Reserve System *(FED)*, the most influential regulator of financial markets, aimed at rescuing the global financial system, resulted in the application on an unprecedented scale in the post-war financial order, on a mass scale, of non-standard monetary policy tools known as *QE- quantitative easing*. The intention was, in a nutshell, to print huge amounts of money (initially at a rate of USD 60 billion per month) and "pump" it into the world monetary system. It caused a justified increase in inflation concerns of investors majority, while at the same time causing a drastic crisis of confidence not only in institutions acting as market regulators, but also in the entire global financial system (Mises, 1953; Paul, 2009). The "need of the moment" has forced, in a way, the existence of bottom-up innovation processes, aiming in a longer perspective at overthrowing the monopolization of the money emission process, so far reserved for central banks. The sign of those times was the appearance of the first private cryptocurrency in the world, known as bitcoin (BTC)[†]. It was initiated by publishing in the Internet, on November 1, 2008, a manifesto signed by an anonymous creator (or a group of creators) under the pseudonym *Satoshi Nakamoto*. The manifesto contained both, the explanation of the cryptocurrency mechanism itself, and the entire architecture of the so-called *blockchain* system. It has many "advantages" over the classical money system architecture, among which the leading one seems to be decentralization, preventing any "manual" control of the *blockchain system* (Nakamoto, 2008), not to mention the "empty money printing", used on a mass scale and in a coordinated way in the current money system by central banks of the leading world economies (FED, ECB, BOJ). The rapid growth in the valuation of the entire cryptocurrency market, is expressed, among other things, in the ever-increasing number of digital currencies, of which there are now more than

[†] The name bitcoin itself refers to both the unit of digital currency (cryptocurrency) and the IT system for making transfers in this currency, written in capital letters- Bitcoin.

10,000, which, compared to about 180 (according to UN data) national currencies, means that there are now about fifty-five digital currencies per national currency. It is not without significance to observe the relatively large market capitalization of digital currencies, currently exceeding USD 1.6 trillion (Coinmarketcap.com 2021), which, on the one hand, testifies to the enormous potential of this market (Kyriazis, 2019) and its constantly growing importance in the so far, as a rule, conservative financial world. On the other hand, this phenomenon may also be related to the declining trust in centralized financial markets, regulatory institutions, supervision combined with a simultaneous increase in inflationary fears and the desire of investors and other money users to escape negative interest rates. It seems that in the current difficult situation in which the world economy found itself: in the era of the global COVID-19 pandemic and lockdowns of the world's largest economies, the search for answers to questions about the future of the global financial system has become even more urgent than before.

2. Bitcoin and cryptocurrency definition

Until the creation of bitcoin, the concept of cryptocurrency was unknown to the world. The most important cryptocurrency of the world – bitcoin, which seems obvious, was defined at the very beginning by its creator – *Satoshi Nakamoto* in 2008. He described it as "a fully-fledged version of electronic money, based on *peer-to-peer* network communication models, allowing online payments to be sent from one entity to another without the need for transactions to flow through financial institutions". In other words, the Bitcoin network functions without any intermediaries, i.e. without the participation of the trusted third party, which until now had been banks with their transaction systems (Nakamoto, 2008).

The first definition of virtual money - cryptocurrency included in an official financial institution document appeared four years later in the European Central Bank, published in October 2012, entitled *Virtual Currency Schemes*. Virtual money is defined there as a type of unregulated digital money, which is issued and usually controlled by its creators and used and accepted by members of a specific virtual community (European Central Bank, 2012). Such money has no physical (material) representation, it functions only in the digital universe.

A slightly different definition of digital currencies was proposed by the European Banking Authority (EBA). According to this definition, virtual currencies are digital representations of value, not issued by a central bank or public authority, not necessarily linked to the currency of a specific country, but recognised by natural and legal persons as means of payment that can be transferred, stored or traded electronically (NBP, KNF, 2017).

Very interesting approach to the treatment of the essence of virtual currencies (cryptocurrencies) was presented in Poland in the Act of 1 March 2018 under the revealing name of anti-money laundering and terrorist financing. According to this act, virtual currency is understood as "a digital representation of a value that is not:

a) legal tender issued by the NBP, foreign central banks or other public administration bodies,
b) an international unit of account established by an international organisation and accepted by individual countries belonging to or cooperating with that organisation,
c) electronic money within the meaning of the Payment Services Act of 19 August 2011,
d) a financial instrument within the meaning of the Act of 29 July 2005 on financial instruments trading,
e) a bill of exchange or cheque

– and is exchangeable in the course of trade for legal tender and accepted as a means of exchange, and may be stored, transferred electronically or may be the subject of electronic commerce" (Dz.U. 2018 poz. 723).

This definition shows the great caution shown by the central authority, which constitutes a generally applicable national law, with regard to a decentralised, unregulated and unmanageable block-chain system that is able to „value digital mapping". The name of the act suggests the government's lack of support for a system that could compete not only with central banks but also with the entire global banking system in the future.

All the quoted definitions, especially those published by significant institutions of the world of finance and the bodies constituting the law specifying what digital (virtual) currencies really are or are not, prove that bitcoin and other cryptocurrencies ceased to be a niche phenomenon at the moment of their publication and it was impossible to continue to ignore this phenomenon pretending that it simply does not exist. It had to be somehow systematized, outlined, matched and placed against the background of the contemporary understanding of the money phenomenon. Since then, bitcoin and other leading currencies, such as the ethereum, ripples started to appear in official documents of the Bank for International Settlements (called the Central Bank of Central Banks) and the International Monetary Fund (IMF, 2016), the World Bank (World Bank 2014), which deal with the challenges of the global financial system future (BIS, 2018).

3. Spectacular increase of bitcoin and other cryptocurrencies popularity in the mainstream as a cause and effect of financialisation

The advantage of bitcoin and other cryptocurrencies is that they cannot be printed in any quantity as it is the case with the classic fiduciary currencies. Unlike traditional money, the supply of bitcoin is not controlled by any central unit and, moreover, it is predefined - as a result of the algorithm built into the system it will never exceed 21 million pieces, which is likely to occur around 2140 (Nakamoto, 2008). It is growing systematically, although at an increasingly slower rate, which is the result of the increase in the BTC „extraction" difficulty i.e. cryptographic calculations that must be carried out by computers with ever-increasing computing power - the so-called "excavators" - in order to cope with the increasingly difficult degree of new currency units "extraction". In this way BTC imitates with its behaviour physical gold, the supply of which is also constant, growing slowly and steadily as a result of the ore new extraction on the Earth[‡]. Another attractive feature from the user's point of view, which distinguishes bitcoin and other cryptocurrencies from traditional money, is the fact that its market, unlike traditional markets, is decentralized, with no geographical or time restrictions, operating 24 hours a day, 7 days a week and 365 days a year.

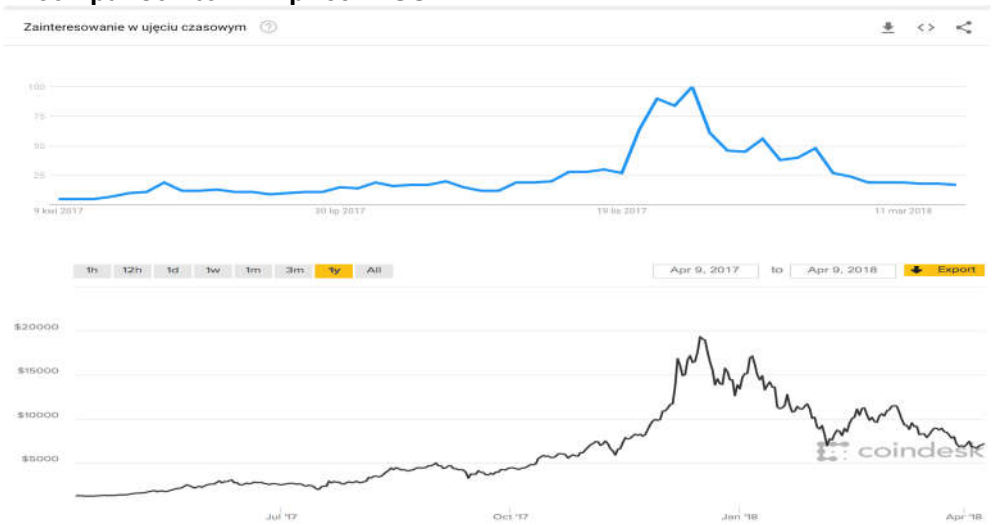
Initially, bitcoin was a completely unknown digital asset functioning only in a closed community of computer scientists, computer *geeks* (enthusiasts), it remained for the majority of society as a complete avant-garde. Later on, it began to be used more and more widely by criminal circles for the purposes of the so-called *dark economy*, i.e. for trading in legally prohibited goods and services on the famous *Silk Road* platform, among other things, and then it began to gradually reach the *mainstream*, it was primarily due to its constantly rising price, which in turn encouraged further growth in its value. As information about spectacular increases in value began to appear on the Internet, on social networking platforms and in the so-called mainstream media, this additionally fuelled interest and thus further price increases not only in this asset but also in the broad market of other digital currencies. This inflamed the imagination of potential investors, which resulted in the emergence of the so-called speculative mania, already known many times from history (and not only the latest), causing an explosive increase in bitcoin prices. At that moment, it was driven by the capital flowing from beginner investors, who had no experience

[‡] Bitcoin is also divisible to the eighth decimal place, i.e. it is divided into as many as 100 million parts, called satoshi (the equivalent of the grosz in the case of PLN). There is therefore no reason to fear that the currency may run out in the future. For comparison, traditional currencies are quoted to four decimal places and physical cash to two.

at all, wanting to benefit from a hypothetical future increase in the price of bitcoin, which was only supposed to be more and more expensive.

To present the above described situation, the frequency of entering the phrase "bitcoin" in the world's most popular web browser google was compared with the bitcoin (BTC) rate expressed in USD (Figure 1).

Figure 1. The popularity of the phrase "bitcoin" on google trends in comparison to BTC price in USD



Source: https://trends.google.com/trends/explore?q=bitcoin, https://www.coindesk.com/price/, 2019-11-20.

Analyzing both graphs a perfect correlation of the increase in Internet users' interest in bitcoin is shown, which always appeared when its course had spectacular increases. The interest in this digital asset grew, which resulted in a further increase in its price. Parallel to the rise in prices, the bitcoin interest increase on the Internet proves that non-professional capital, belonging to beginner investors, often without any knowledge and experience, started to invest in bitcoin, thus providing fuel for further increases and pumping it to sky-high values, reaching several thousand USD for one BTC. Most investors believed that in the near future bitcoin will be worth even USD 1 million, as many influencers, the so called "reprimanders/ shills" in Polish, convinced many of them. It did not take much to break through this bubble.

It can be assumed that an additional reason for the popularity of digital currencies among the mainstream media is the ubiquitous and widely advertised affirmation of consumerism, which results in a desire to quickly enrich oneself, preferably without any work, but through speculation -

previously on the stock exchange or the Internet platform for currency exchange, called Forex (Foreign Exchange Market), and nowadays on cryptocurrencies. All this combined with speculative mania and "bandwagon effect" caused the speculative bubble on bitcoin to inflate at the end of December 2017, when the price of bitcoin rose almost instantaneously to an incredible USD 20,000 per 1 BTC, which was then equivalent to almost 14 ounces of gold[§]. At the beginning of January 2018, when the price reached its peak, most investors wanted to make profits and started selling their bitcoins. It turned out then that there was a shortage of people willing to buy at such price, and the bubble burst. This was the time when there were sudden and powerful price drops in the market. The drop in the price of bitcoin stopped only at USD 8,000 per 1 BTC - which meant a 60 % drop in its price from the peak of the bull market. In this spectacular way, bitcoin became a speculative bubble of all time, breaking even the famous 17th century Dutch Tulip Mania and the 18th century British Southern Seas Company bubble (Monaghan, 2018). The value of bitcoin has risen to $68,000 in September 2021 before drop nearly about 50% to $36,000 in December 2021.

Another, in the author's opinion, obvious reason for a huge increase in interest in this new, revolutionary carrier of values – digital assets such as bitcoin and other cryptocurrencies, which is one of the manifestations of financialisation, the progressing phenomenon of contemporary money virtualization, performs more and more often its functions not in the physical form, i.e. classic, old-fashioned physical cash, but electronic money, which is only an electronic record on a carrier that can be both a payment card and a smartphone, and recently even a smartwatch (Maciejasz-Świątkiewicz, 2017). The dynamic development of the Internet in recent years has caused a significant part of human activity to move to the Internet. Thereby, there has been a process of their migration from the real world to the digital (virtual) sphere, thus creating a completely new, previously unknown in human history, artificial (synthetic) reality, the so-called virtual reality. For the whole young generation of users, the so-called Z-generation, money is usually identified almost exclusively with the electronic (virtual) record in a smartphone, and not with physical cash. For a user with such an advanced level of absorption of modern technologies, cryptocurrencies are (become) the next stage of money evolution. Sometimes they become even better money, because they are not subject to the control of the financial system with central banks at the forefront and can be traded without time limits. It should be stressed at this point that for many representatives of the current new generation of young investors who grew

[§]It is worth noting that Bitcoin debuted on MtGox for the first time on 17 August 2010 with a price of USD 0.063/BTC.

up in a bitcoin bull market, traditional investing in the stock market is simply boring and not very exciting, and the commissions required for intermediation by financial institutions are not among the lowest either. Moreover, it is empirically correct that every new generation entering the investment market has less risk aversion and chooses more risky - variable instruments than their predecessors (Malmendier, 2007).

The previously stated theses should be confirmed by the American service Cryptoradar research conducted in September 2019 in the USA. They proved that users interested in cryptocurrencies are younger than the age of 35, mainly men, while total sceptics are people over 65 - as many as 74.3% of respondents in this age group declare unwillingness to engage in this type of investment. The research also showed that 6.2% of the adult population = 20 million Americans declared that they had bitcoins. A similar study conducted by ING Śląski Bank in Poland in 2018 indicated that the percentage of Poles owning bitcoins was 10%, but these results were considered to be slightly overestimated by experts (www.bankier.pl, 2019).

4. Summary

This article presents the impact of the emergence of a completely new class of assets, i.e. digital and related cryptocurrencies assets, on the intensification of the constantly evolving financialisation process for several years.

The emergence of bitcoin, as this paper attempts to prove, was a kind of precursor – an impulse that started the development of digital cryptocurrencies in the world, thus giving an impulse to create a completely private, denationalised, independent of any central banks and governments, uncontrollable global value transfer system as an alternative to the current monetary system.

Bitcoin and other digital currencies, by gaining extraordinary popularity, especially among the young generation Z, which has grown up in the Internet world, have contributed to the deepening of further processes of money virtualization and financial markets financialisation thus becoming a future competitor, not only for all fiduciary currencies, ubiquitous in the modern world financial system, but also for the existing transaction systems (networks) in the traditional banking system.

Another important factor intensifying the further financialisation of the system is the fact that for the new generation, which grew up on bitcoin bull market, cryptocurrencies are simply another form of money. Variability of this market does not frighten them as much as others, because you can make above-average profits and losses on it, of course, can also be more severe, but as research shows, investors who achieved above-average rates of return in the past (e.g. on cryptocurrencies) are not afraid to take above-average risks.

The ubiquitous digitalization of social relations, trade relations and further virtualization of modern money and the financialisation of markets will, in the far or near future, lead to the entry into the so-called *cashless society* era, and this in turn will create completely new opportunities, as well as completely new threats with the loss of anonymity at the forefront. The worldwide COVID-19 pandemic has only strengthen this trend.

The author is aware of the fact that the topic has not been sufficiently exhausted in the article, however, it is a signal of the problem and a contribution to further discussion on the changes progressing on the financial markets. The processes analysed in the article are the subject of the author's current research conducted in several countries. The results of this research will provide material for a publication which will present more clearly the signalled research problem.

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ARTICLES

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Aleksandra Saternus[1]

Competitiveness of the Polish Economy in Comparison with the Economies of the Visegrád Group in years 2015-2019[2]

Abstract

The aim of the study is to present an assessment of the international competitive position and development of competitiveness of Polish economy compared to the Visegrád Group countries in years 2015-2019, and to identify the key indicators that formed those aforementioned. The data used for the analysis come from the reports published by International Institute for Management Development and World Economic Forum. On the basis of the assessment, it can be concluded that in the time considered Polish economy was the second most competitive among the Visegrád Group economies, behind the Czech economy, which was determined primarily by criteria assessing business dynamism, institutions, as well as public finance, and health and environment.

Keywords**:** economic competitiveness, competitive position, economy of Poland, Visegrád Group.

JEL classification: F62, F63**,** O11, O57.

Paper type: Theoretical research article

[1] Cracow University of Economics

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Introduction

Competitiveness is nowadays regarded as one of the main subjects of consideration of economic, political and management sciences. (Mróz, 2016). It implies production, employment, GDP and, in effect, country's level of development. Until recently, this term was only considered on a micro scale, mainly at the level of a company, and later at national and international level. In spite of the fact that 'international competitiveness of economy' is one of the most commonly used terms from the field of international economy, the multitude and diversity of its definitions[3] present in literature indicate the lack of agreement between theorists regarding an unambiguous declaration of what competitiveness of the economy as a whole actually is, or even on using it in relation to a country at all.

The main goal of the study is to present the most important results of the analysis of application of the term and assessing the development of the international competitiveness of the Polish economy in comparison to the Visegrád Group countries. The following literature and reports of international organizations were used: World Economic Forum (WEF) - *The Global Competitiveness Report* and the International Institute for Management Development (IMD) - *World Competitiveness Yearbook*. There are multiple studies on this subject available in literature, however, there is no study covering the range of recent years. This article therefore attempts to close this gap. The following research hypotheses were taken into account in the presented analysis:

- international competitiveness of economy is determined by an array of different factors of economic, political and social nature;
- the economy of Poland is one of the most competitive among the economies of the Visegrád Group countries.

The quintessential conclusions of the analysis are compiled in the "Conclusion" section.

1. The concept of economic competitiveness

Initially, the concept of competitiveness was only applied to enterprises and, under such a concept, W. Mantura defined it as" the ability of the entity to compete" (Mantura, 2000, p. 87). M. Gorynia provided a very similar definition, according to which it is "the ability to compete and thus to operate and survive in a competitive environment" (Gorynia, 2002, p. 48). He also stressed that this is a relative feature, i.e. it should be measured with regard

[3] J. Misala quotes 27 definitions of national competitiveness derived from foreign literature and 10 from Polish literature, Misala, J. (2011). Międzynarodowa konkurencyjność gospodarki narodowej,. Warsaw: Polskie Wydawnictwo Ekonomiczne.

to other entities. Over time, the term ‘competitiveness’ has also started to be used for countries.

A review of the crucial definitions of economic competitiveness is presented in Table 1.

Table 1. Definitions of economic competitiveness

Definition	Year	Author	Source
1	2	3	4
„Competitiveness for a nation is defined as degree to which it can, under free and fair market conditions, produce goods and services that meet the test of international markets while simultaneously maintaining and expanding the real income of its citizens”	1985	President’s Commision on Industrial Competitiveness	(US Government Printing Office, 1985, p. 5)
„World competitiveness is the ability of a country or a company to, proportionally, generate more wealth than its competitors in the world markets"	1994	International Institute for Management Development (IMD)	(Aiginger, Bärenthaler-Sieber, Vogel, 1994, p. 69)
„The ability of a country to create added value and thus increase national wealth by managing assets and processes, attractiveness and aggressiveness, globality and proximity, and by integrating these relationships into an economic and social model”	1996	International Institute for Management Development (IMD)	(Garelli, 1996, pp. 6-7)
"The ability of companies industries, regions, nations or supra-national regions to generate, while being and remaining opened to international competition, relatively high factor income and factor employment levels”	1996	Organisation for Economic Co-operation and Development (OECD)	(Hatzichronoglou, 1996, p. 20)
„Competitiveness is the ability of a country to achieve sustained high rates of growth in GDP per capita”	1996	World Economic Forum (WEF)	(World Economic Forum, 1996)

Table 2. cd

"Competitiveness is the ability to achieve success in markets leading to better standards of living for all. It stems from a number of factors, notably firm level competitiveness and a supportive business environment that encourages innovation and investment, which combined lead to strong productivity growth, real income gains and sustainable development"	2004	Ireland's National Competitiveness Council	(National Competitiveness Council, *2004, p. 3*)
„Competitiveness is the set of institutions, policies, and factors that determine the level of productivity of a country"	2006	World Economic Forum (WEF)	(World Economic Forum, 2006, p. xiii)
„Competitiveness refers to the overall economic performance of a nation measured in terms of its ability to provide its citizens with growing living standards on a sustainable basis and broad access to jobs for those willing to work. In short, competitiveness refers to the institutional and policy arrangements that create the conditions under which productivity can grow sustainably."	2010	European Commission	(European Commission, 2010*, p*. 23)
"Competitiveness is a comprehensive and holistic concept. It evaluates the extent to which a country fosters an environment where enterprises can achieve sustainable growth, generate jobs and, ultimately, increase welfare for its citizens"	2019	International Institute for Management Development (IMD)	(International Institute for Management Development, 2019, p. 3)

Sourse: Own elaboration based on sources given in column 4.

M. E. Porter links competitiveness as regards national economies with the concept of productivity. In his opinion, this is the only right reference of competitiveness to the countries. He claims that a high, growing standard of living for a given nation depends on the efficiency of work and the capital held by its members. The factors which are responsible for shaping the competitive advantage of the economy at the microeconomic level are presented by him in a form of a model referred to as *the Porter Diamond*

Theory of National Advantage. The first set of factors presented in the model - the strategy, structure and rivalry of companies - determines how companies are created, organized and managed, and how they compete with each other. Factors of production such as natural, human and capital resources, as well as infrastructure have been included in the factor conditions, while the characteristics of the domestic demand for products and services produced by the given industry have been included in the model as demand conditions. The last set of factors describes the presence – or absence – of domestic suppliers and related industries that are internationally competitive. Other factors also have a role to play here, such as the government, which indirectly, by creating conditions in which companies can gain competitive advantage, contributes to its creation, as well as opportunities, random events such as the emergence of new technologies, sudden changes in financial markets or exchange rates, coups and wars. These events, used appropriately, can contribute to gain of competitive advantage. All model items interact with each other (Porter, 1990).

According to J.H. Dunning, Porter underestimated the role of globalization in creating a competitive advantage for states. He considers that the components of Porter's Diamond should be updated to take account of the phenomenon of transnationalization. This is mainly due to the growing importance of transnational corporations, which contribute to the development of economic links (Dunning, 1993).

The European Commission defines competitiveness as ‘ability to provide citizens with growing living standards on a sustainable basis and broad access to jobs for those willing to work’. It also stresses the role of institutional and policy arrangements, which are responsible for creating favorable conditions for sustainable productivity growth, which is considered the only source of sustainable income growth and thus of an increase in the standard of living of society (European Commission, 2010). The World Economic Forum[4], in turn, identifies the competitiveness of the economy through its characteristics, which contribute to a more efficient use of production factors. Among these are i.a.: institutional conditions, as well as policies adopted and applied. According to the *Global Competitiveness Report*, the productivity of an economy determines the level of prosperity it can achieve (WEF, 2019). The authors of the European Commission's definition as well as the World Economic Forum, likewise Porter, link the competitiveness of the economy to its productivity.

[4] World Economic Forum - an international non-governmental and lobbying organization located in Cologny, Switzerland; it publishes *Global Competitiveness Report* yearly.

International Institute for Management Development[5] during the process of creating *World Competitiveness Yearbook* uses a definition that states that the economic competitiveness assesses the degree to which it provides an environment that enables enterprises to achieve sustainable growth, create jobs and, consequently, improve the prosperity of its citizens (Cabolis, 2019).

The definitions of international competitiveness of economy can also be found in Polish literature. According to M. Żmuda and E. Molendowski (2016) it can be defined as the ability to achieve development goals, among which increasing the welfare of the citizens is regarded as the most crucial one. Cz. Pilarska notes that it is "closely correlated with the ability of a country to effectively use its production factors in order to achieve prosperity", at the same time she emphasizes that competitiveness is not so much an economic phenomenon, but a socio-economic one (Pilarska, 2017, s. 50). M. Weresa notices that competitiveness should be considered in two approaches – static (in literature - international competitive position), and dynamic (international competitive ability). And so, according to the first approach, it is described as a position of a country on international markets related to foreign trade, and particularly with its structure which translates to the welfare of the society. In the other approach, however, it is the ability to achieve benefits from production factors faster than other countries which leads to relatively faster rate of growth of the level and quality of life of the citizens (Weresa, 2008). Common feature of majority of definitions is therefore a statement that competitiveness of economy contributes to a stable economic growth and to improvement of a quality of life of the country's society.

The literature on the subject defines four main stages in the development of the international competitiveness of national economies (Borowiecki, Siuta-Tokarska, 2015):

- Stage I – competitiveness based on the production factors – most frequently occurs in least developed countries
- Stage II – competitiveness based on investment – specific to developing countries
- Stage III – competitiveness based on innovation – occurs in developed countries
- Stage IV – competitiveness based on wealth – characteristic of developed countries, whose basis of competitive advantage is already achieved competitive position that countries, at this stage, do not want to improve but maintain.

[5] International Institute for Management Development – business education school based in Lausanne, Switzerland known for its competitiveness report - *World Competitiveness Yearbook*

The economist who negates the legitimacy of the use of analogy between competitiveness of companies and whole economies is P. Krugman. He argues that, unlike companies, countries do not enrich themselves at the expense of others. Producing goods that compete, they might provide each other with markets. Moreover, a good condition of one economy may contribute to improvement of the other one, because the first country gives the other the access to a bigger market. Krugman also emphasizes that international trade is a non-zero sum game. This is not the case for companies that benefit at the expense of their opponents in the market. Another difference is that the competitiveness of companies depends on the results they achieve. When their market position does not bring the expected results, they ultimately cease to operate. National economies, on the other hand, regardless of their condition, continue to exist (Krugman, 1994). Krugman's statement has been widely criticized by other researchers. For more information see Żmuda, Molendowski (2016).

2. Determinants of economic competitiveness

The diversity of the quoted definitions shows that the development of international competitiveness of economy (and therefore, competitive position) is affected by a multitude of factors. An overview of those factors can be done on the basis of reports published by various institutions. The most popular are the ones prepared by International Institute for Management Development and World Economic Forum.

The authors of *The World Competitiveness Yearbook* create a ranking of competitiveness of 63 countries. For this purpose they analyze over 300 criteria divided into four groups (IMD, 2019):

- economic performance – includes factors regarding domestic economy, international trade, international investment, employment, prices;
- government efficiency – public finance, tax policy, institutional framework, business legislation, societal framework
- business efficiency – productivity & efficiency, labor market, finance, management practices, attitudes and values;
- infrastructure – basic infrastructure, technological infrastructure, scientific infrastructure, health and environment, education.

In turn, *Global Competitiveness Index* developed by World Economic Forum that is designed to assess the productivity and track its changes for nearly 140 countries, is based on 12 competitiveness pillars compiled in four categories (WEF, 2019):

Table 3. 12 competitiveness pillars by World Economic Forum

Category	Pillars in the category
Enabling environment	I. Institutions II. Infrastructure III. ICT adoption IV. Macroeconomic stability
Human capital	V. Health VI. Skills
Markets	VII. Product market VIII. Labour market IX. Financial system X. Market size
Innovation ecosystem	XI. Business dynamism XII. Innovation capability

Source: (WEF, 2019).

M. Weresa divides the determinants of economic competitiveness into three groups, formed with specific factors (Weresa, 2008):

I. Material resources and their quality, including natural and climate resources, technical infrastructure, social infrastructure, workforce, capital resources, resources and level of technology;
II. Non-material resources and their quality: creativity and innovation, proclivity to entrepreneurship and taking risk, level of institutional development and efficiency of their functioning, economic policy and its efficiency, social and cultural capital;
III. Resource efficiency: labour and capital productivity.

3. Competitive position of Poland in comparison to Visegrád Group countries

Visegrád Group (V4) is an informal grouping of four Central European countries: Czech Republic, Poland, Slovakia and Hungary. The Group was established on February 15, 1991 in a Hungarian town Visegrád, where then president of Czechoslovakia Václav Havel, president of Poland Lech Wałęsa and prime minister of Hungary József Antall met. Its initial aim was to deepen the cooperation regarding building the democratic state structures and free market economy, as well as undertaking joint efforts to join the European Union. Currently the cooperation focuses mostly

on development of transport infrastructure and enhancement of the energy security in the region.[6]

In terms of the goals of the analysis presented in the study, examination of the development of competitiveness on the basis of *The Global Competitiveness Report* published by World Economic Forum appears to be important. The positions taken by the countries of the Visegrád Group in a competitiveness ranking by WEF in years 2015-2019 were presented in Table 3.

Table 4. Position of Visegrád Group countries in WEF's competitiveness ranking in years 2015-2019

	Position in ranking					**Change 2015-2019**
Year	**2015-16**	**2016-17**	**2017-18**	**2018**	**2019**	
Czech Republic	31	31	31	29	32	-1
Poland	41	36	39	37	37	+4
Slovakia	67	65	59	41	42	+25
Hungary	63	69	60	48	47	+16

Source: Own elaboration based on (WEF, 2019).

The Visegrád Group countries were changing their competitive position in the competitiveness ranking during the period considered. Poland was the second most competitive economy of the Visegrád Group in all those years, after the Czech economy. In 2018, it improved its position by two, from 39 to 37, and maintained it at the same level in 2019, while the Czech Republic and Slovakia fell slightly in the ranking, and Hungary's economy rose by one rank. In 2019 Poland improved its competitive position compared to 2015 (by 4 positions), but not as much as Slovakia (by 25 positions) and Hungary (by 16 positions), while the Czech Republic slightly deteriorated its position in the ranking.

Due to the fact that the authors made changes in the methodology used in developing the report between year 2017 and 2018, and have not come up with a key of comparability between them, in Table 4. were presented the positions for WEF's competitiveness pillars for V4 countries in years 2018-2019.

[6] Visegrád Group. (n.d). Retrieved November 29, 2021, https://www.gov.pl/web/dyplomacja/grupa-wyszehradzka.

Table 5. Position of V4 countries in WEF's competitiveness ranking for each pillar in years 2015-2019

Competitiveness pillars	2018				2019			
	Czech Republic	Poland	Slovakia	Hungary	Czech Republic	Poland	Slovakia	Hungary
Institutions	43	**53**	55	66	44	**60**	61	63
Infrastructure	18	**27**	33	28	20	**25**	30	27
ICT adoption	42	**68**	35	51	42	**51**	39	54
Macroeconomic stability	1	**1**	32	43	1	**1**	1	43
Health	41	**49**	57	69	48	**54**	57	70
Skills	25	**32**	48	49	29	**34**	45	49
Product market	47	**38**	78	82	55	**50**	89	91
Labour market	47	**62**	58	83	48	**70**	64	80
Financial system	40	**55**	54	66	47	**57**	56	66
Market size	42	**22**	60	48	42	**22**	59	48
Business dynamism	25	**55**	45	75	32	**59**	55	83
Innovation capability	29	**38**	43	39	29	**39**	44	41

Source: Own elaboration based on (WEF, 2018, WEF 2019).

The data presented in Table 4. indicates that the development of Polish competitive position in the period considered was influenced essentially by highly-graded macroeconomic stability and market size which is considerably bigger than in other Visegrád Group countries. Also polish product market was rated highest among all analyzed in both years, leaving quite a large gap to the others. Unfortunately, this rate deteriorated by 12 positions in 2019, however, a similar pattern was noticed for the other economies, which led to Poland maintaining its leading position. Polish economy took second place in the Group in years 2018-2019 in terms of institutions, infrastructure, skills and innovation capability. What is worth noticing is the improvement of position of Poland in the ranking of ICT adoption by as much as 17 positions compared to the previous year, whereas Czech Republic maintained and the other countries aggravated their position so that Poland overtook Hungary in the ranking for this pillar.

Unfortunately, it has to be noted that in 2019 Poland's position deteriorated in eight (out of twelve) fields compared to 2018, but in case of Czech Republic it was eight fields as well, in case of Slovakia it was as much as nine, however Hungary deteriorated its position in barely five, improved in three, and maintained the same position as the year before in four fields. In order to improve the competitive position, an improvement of business dynamism, financial system, and most of all, of a poorly rated

in comparison to other V4 countries, especially in 2019, labour market should take place in Polish economy.

In the following stage of the analysis of Visegrád Group economies' competitiveness, *World Competitiveness Yearbook* published by International Institute for Management Development was used. The positions of V4 countries in competitiveness ranking by IMD in years 2015-2019 were presented in Table 5.

Table 5. Position of Visegrád Group countries in IMD's competitiveness ranking in years 2015-2019

	Position in ranking					**Change 2015-2019**
Year	**2015**	**2016**	**2017**	**2018**	**2019**	
Czech Republic	29	27	28	29	33	-4
Poland	33	33	38	34	38	-5
Slovakia	46	40	51	55	53	-7
Hungary	38	46	52	47	47	-9

Source: Own elaboration based on (IMD, 2019).

As in the case of the previous report, Poland took second place in the Visegrád Group countries in terms of economic competitiveness according to the analysis presented in *World Competitiveness Yearbook.* In this case Poland was also behind the Czech Republic, whereas Slovakia and Hungary took the last and the second to last position interchangeably in the period considered. Particular tendencies, upward or downward, in the development of competitive position of the countries in the overall ranking were not noticed, however, what may be pointed out is that in 2019 every V4 economy deteriorated its position in comparison to the beginning of the period considered, that is 2015.

Table 6. Position of Visegrád Group countries in IMD's competitiveness ranking for each criterion in years 2015-2019

Competitiveness criteria	2015				2016				2017				2018				2019			
	Czech Republic	Poland	Slovakia	Hungary	Czech Republic	Poland	Slovakia	Hungary	Czech Republic	Poland	Slovakia	Hungary	Czech Republic	Poland	Slovakia	Hungary	Czech Republic	Poland	Slovakia	Hungary
Domestic economy	42	**21**	47	40	35	**23**	38	44	41	**39**	51	57	35	**29**	57	37	29	**26**	39	23
International trade	13	**15**	31	6	13	**15**	34	11	13	**22**	27	9	20	**11**	25	10	17	**10**	19	12
International investment	35	**50**	55	20	27	**44**	56	34	36	**30**	55	62	32	**34**	59	63	38	**40**	56	63
Employment	36	**42**	56	39	35	**42**	50	41	25	**40**	49	21	16	**37**	35	34	12	**32**	47	34
Prices	18	**32**	25	16	6	**17**	12	9	15	**19**	18	16	17	**8**	13	16	25	**9**	23	14
Public finance	32	**29**	37	49	24	**41**	31	50	18	**46**	41	51	14	**38**	47	44	25	**38**	47	45
Tax policy	38	**44**	48	56	40	**44**	45	57	45	**47**	53	58	41	**48**	56	49	47	**49**	50	46
Institutional framework	32	**29**	45	43	29	**32**	34	43	26	**34**	49	43	27	**38**	53	39	31	**41**	54	39
Business legislation	34	**20**	49	37	38	**31**	45	42	35	**41**	60	42	34	**38**	58	42	42	**39**	59	37
Societal framework	21	**27**	34	53	24	**34**	35	41	29	**35**	41	45	25	**36**	44	42	25	**38**	46	41
Productivity & efficiency	26	**23**	20	48	18	**28**	27	45	30	**25**	44	57	20	**21**	33	45	28	**27**	34	46
Labor market	34	**39**	48	52	39	**35**	45	57	44	**36**	54	59	36	**42**	62	60	49	**38**	62	59
Finance	39	**32**	49	57	32	**34**	45	52	32	**39**	51	54	30	**27**	59	52	36	**37**	57	49
Management practices	27	**31**	38	59	33	**22**	32	55	34	**42**	55	61	35	**34**	59	58	43	**36**	61	49
Attitudes and values	32	**45**	51	60	34	**49**	47	59	39	**45**	57	62	45	**52**	62	61	39	**48**	59	57
Basic infrastructure	19	**24**	38	39	17	**31**	32	37	18	**28**	37	38	25	**29**	45	33	24	**31**	46	32
Technological infrastructure	27	**35**	47	46	28	**37**	38	40	26	**35**	47	45	26	**35**	43	45	30	**39**	42	41
Scientific infrastructure	28	**34**	50	35	28	**37**	49	35	28	**34**	47	35	26	**33**	54	34	26	**31**	50	35
Health and environment	28	**41**	32	42	29	**42**	30	43	31	**40**	34	39	30	**41**	39	40	31	**43**	38	39
Education	28	**16**	40	36	22	**16**	39	36	31	**20**	41	42	39	**31**	47	42	40	**31**	47	44

Source: Own elaboration based on (IMD, 2015-2019).

The breakdown of the positions according to the competitiveness criteria of IMD for V4 countries in 2015-2019 was presented in Table 6, and based on the data presented in it, conclusions on the development of the competitive position of the Polish economy against other countries were drawn.

In 2015, Poland was in the second least competitive position in terms of international trade within the group, but the final increase of 5 positions in the period 2015-2019, and the decline of the Czech Republic (by 4 positions) and Hungary (by 6 positions) secured that in 2019 Poland was the most competitive in this respect. From year to year, Poland's position in terms of employment improved, and so from 42nd in 2015, in 2019 it was in 32nd, but it was not as much improvement as in the case of the Czech Republic, which starting from the 36th place finally reached 12th. Poland in three out of five years surveyed was the most competitive among the Visegrád Group countries in terms of labor market, and in 2019 improved by one position compared to 2015, while the other countries deteriorated (Czech Republic – 15 positions, Slovakia – 14 positions, Hungary – 7). However, the biggest improvement in the Polish economy was recorded in terms of prices. Starting at the last place in the group in 2015, it managed to take the first one in 2019. It was a jump of whole 23 positions in the global ranking.

Both the business legislation and the societal framework in Poland deteriorated during the period considered. However, the downward trend also taking place in the Czech Republic and Slovakia allowed Poland to maintain its initial position in V4 in societal terms, while in legal terms Poland eventually fallen from its first position to the second position in favor of Hungary. Poland recorded the biggest drop in 2015-2019, among all criteria, for business legislation. It was a difference of 19 positions. The second biggest decline in Poland occurred in the case of education (15 positions), but the similar pattern also occurred in other countries, so that Poland managed to maintain its first position in this respect for all the years under examination. Poland's position in the ranking evaluating institutional framework in 2015-2019 deteriorated from year to year and, therefore, from its first position at the beginning of the period considered, ended in third in 2019. The ranking for tax policy also deteriorated (5 positions in 2019 compared to 2015). At the beginning of the period under consideration Poland had a great advantage over the other Visegrád Group countries in terms of the domestic economy, which, however, has decreased over the years, leading to the fact that in 2019 it lost its position as a leader in this respect in favor of Hungary.

In 2019 Poland was the most competitive in the Visegrád Group in terms of international trade, prices, productivity and efficiency, labor market, management practices and education. The third position was achieved

in tax policy and institutional framework, and, in terms of health and environment, was the least competitive among all countries.

4. Conclusion

Nowadays economic competitiveness gains more and more importance. It is a significant indicator that helps assess the economic situation of a country, and also helps determine the economic policy orientations. Thanks to reports on international competitiveness of economies, it is possible to compare countries and the processes that take place in them. The most crucial tendencies were described in this study. On the basis of literature review it can be stated that economic competitiveness development is influenced by a variety of factors assessing i.a. the economic situation of a country, legal, political and social sphere, which confirms the abovementioned hypothesis.

The analysis shows that the most competitive economy of the Visegrád Group in years 2015-2019 was the Czech Republic. However, Poland was in the second position in this regard, supporting the second of the hypotheses. On the basis of *The Global Competitiveness Report* it can be concluded that in the period considered the strength of the Polish economy was formed primarily by macroeconomic situation and the market size. However, business dynamism and ICT adoption were poorly rated in comparison to other V4 countries, although the latter one was significantly improved in global terms in the last year considered. Over the years under examination Poland improved its competitive position, however not as much as Slovakia and Hungary. The strong competitive position of the Czech Republic was determined primarily by macroeconomic stability, rated at the same level as of Poland. The biggest advantage that the Czech Republic held over Poland was in terms of business dynamism and institutional framework, therefore those are the factors that Poland should take into particular consideration in order to become the most competitive economy of the Visegrád Group.

The analysis of *World Competitiveness Yearbook* shows, however, that over the years considered Poland improved its economic situation, thereby narrowing the gap to the Czech Republic in this category. Most of all, the improvement of Poland in prices and international trade deserves a positive assessment. In spite of a poor rating in a global terms, polish labor market distinguished itself from the other V4 countries. Poland should pay particular attention to health and environment because of its worst position in the Group in this matter. At the end of the years considered the Czech Republic had a significant advantage over Poland in terms of employment, public finance, as well as in societal framework, and attitudes and values, therefore those are the fields that require Poland's improvement

for it to improve its competitive position among the Visegrád Group economies.

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