
The Impact of the Covid-19 Pandemic on the Financial Performance of Public Companies in Poland

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Abstract:

Purpose: This paper sets out to analyze the impact of the pandemic on selected sectors of the economy and specific companies within the industries most affected by the pandemic-related crisis.

Approach/Methodology/Design: The study covers selected parameters of financial performance (operating revenues, operating profit/loss, gross profit, total cash flow, cash flow from operating activities, cash flow from investing activities, net cash flow) on a sample of 115 companies listed on the Warsaw Stock Exchange (WSE) for the period of the first half of 2019 and the first half of 2020.

Findings: The results confirm that the exogenous demand and supply side shock has had a varied impact on sectors of the economy and different companies within the same industries. Large enterprises cope better with the effects of the pandemic.

Practical Implications: This research and its results may be helpful for managers in crisis management in enterprises and for the government in adjusting the scope and forms of support for enterprises affected by the pandemic.

Originality/Value: This study fills a gap in the literature by analyzing the impact of the economic crisis on the financial results of individual industries and enterprises in Poland. The research pointed out that the impact of the pandemic on the financial situation of enterprises within one industry isn't uniform and one-way (some companies improve their financial performance and others post a significant deterioration in their financial standing) and the large enterprises cope better with the effects of the demand and supply side shock.

Keywords: Pandemic, financial performance, companies.

JEL classification: D01, E20.

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1. Introduction

Economic crises are a permanent component of the modern economy and result from its cyclical nature. From an economic point of view, these can be defined as a slowdown in economic growth, entry into the consecutive phase of the business cycle, characterized by a significant and rapid reduction in production, real income of society and an increase in the unemployment rate. The open character of the economies in today's countries, the number and nature of trade and financial ties between economic operators make crisis phenomena grow stronger and spread faster and faster across national borders. It should be stressed, however, that the pandemic crisis that we are currently going through is absolutely different both in economic, social and medical terms (Maćzyńska, 2020). What distinguishes it from all previous crises is primarily the extent and speed of its spread.

Measures taken to counteract the COVID-19 pandemic (lockdowns) have caused a negative shock both on the demand and supply sides. These shocks have overlapped and intensified each other, leading to disruptions in supply chains and, consequently, also to a reduction in the industrial output at an unprecedented rate (Inoue and Todo, 2019). A supply side shock has led directly to a demand side shock. Store closure and stay-at-home policies have resulted in a reduction in the purchase volumes of goods and services, with consumers, fearing or struggling with a slump in income, have limited consumption (especially of industrial and luxury goods) and postponed investment projects (Baldwin and Weder di Mauro, 2020).

The ability and speed of companies to adapt to changed business conditions (decrease in demand for products or services, decrease in sales revenues, decrease in cash flow, difficult access to resources, including manpower) is determined by many factors. The aim of the article is to illustrate the impact of the pandemic on the financial results of individual industries and to seek answers to the following questions:

1. How did the exogenous supply and demand shock caused by the pandemic situation affect the financial condition of industries in Poland?
2. Is the impact of the pandemic on the financial situation of enterprises within one industry uniform and one-way?
3. Is there a relationship between the size of an enterprise and the ability to adjust to the effects of a supply-demand shock.

The aim of the article is to illustrate the impact of the pandemic on the enterprise sector (from the public companies sector) and to search for answer to the question why enterprises of the same industry operating in the same environment feel the effects of the shock caused by pandemic to a significantly different degree.

The range of the COVID-19 pandemic and its impact on the global economy and the economic situation of individual countries made it the subject of many studies. The effects of a pandemic are analyzed in macroeconomic terms, e.g., the impact of a pandemic on oil prices (Gil-Alana and Monge 2020), on the returns of digital companies (Ben-Ahmed *et al.*, 2021, Hyman *et al.*, 2021), or from a microeconomic level, e.g., the impact of a pandemic on individual enterprises (Margherita and Heikkila 2021; Wu *et al.*, 2021; Golubeva 2021; Grima *et al.*, 2020) or enterprises in a given industry (Kaczmarek *et al.*, 2021; Chen *et al.*, 2020; Khan *et al.*, 2020). The literature on the subject also includes studies on the impact of the pandemic on the activities of the enterprises from the SME sector (Bai *et al.*, 2021, Markovic *et al.*, 2021; Dai *et al.*, 2021) or on large corporations (Margherita and Heikkila 2021). There are studies showing the impact of the pandemic on the activities of listed companies (Shen *et al.*, 2020; Devi *et al.*, 2020; Rababah *et al.*, 2020), but to the best of the authors' knowledge there is no study showing the impact of the pandemic on individual industries in Poland. Our study fills this research gap.

The paper consists of four parts, which include, introduction, literature review, methodology and data, results and discussion, and summary.

2. Literature Review

The growth of a company, its economic condition (financial standing) and competitive edge in the market are influenced by many factors both within and beyond the control of the company itself (internal and external factors, respectively).

External factors can be grouped into at least 4 categories, i.e., international, domestic, local environment and sector-specific factors (Mitek and Miciuła, 2012, p. 60). International factors include globalization, world markets, global economic situation, level of free movement of goods, services, capital and persons. Domestic factors include domestic economic situation, fiscal and monetary policy, extent of government intervention in markets, inflation, legal regulations, economic growth dynamics, social and cultural conditions, technological development, tax system, financial system, currency stability and determinants of economic activity in the sector. Further, there are also local factors, such as relations with the immediate environment of the company's operation, local authorities. The latter group comprises the factors that determine the economic activity of the sector.

Another category of growth factors covers internal (microeconomic) conditions, which include, but are not limited to, tangible and intangible assets of the company, production profile, advancement of fixed assets, level of equity, availability of external financing sources, management efficiency, product competitiveness and quality, sales profitability, business networks and connections, activities and processes taking place in the company.

In addition to all factors having impact on the economic activity of businesses, those recognized and predictable, there emerge from time to time random, unpredictable and unrecognized ones (shocks). This is because contemporary business enterprises operate in an increasingly turbulent environment, which is marked with multiple, often very violent, changes / disruptions / shocks of a social, political and economic nature, significantly affecting society and the economy. Professional literature refers to these disruptions as uncertainty shocks. The essence and mechanism of the impact of uncertainty shocks on the economy (demand and supply sides) have been widely discussed in professional literature (Kaplan and Violante, 2018; Bloom, 2007; Kozeniauskas *et al.*, 2017; Orlik *et al.*, 2012; Villaverde Guerron-Quintana *et al.*, 2020). Model examples of events triggering an uncertainty shock include the 9/11 WTC attack, oil producers' agreements to cut production, armed conflicts, the 2008 financial crisis, Brexit, or the Covid-19 pandemic. These situations, caused by random economic, political or social factors, lead to economic shocks.

An economic shock (severe disruption) is an unanticipated and sudden disturbance in the normal operation of a company, the economy or society, which, depending on the scale of impact, has multiple effects. Economic shocks can vary in nature and are classified according to various criteria. External shocks come from outside the company, while internal shocks arise inside it.

Drop (2001) defines an economic shock as a sudden event in the economy or politics that has a high impact on basic macroeconomic variables such as production output, inflation rate, unemployment rate and the current account balance. As it has turned out now, economic shocks can be also spurred by many social, health, climate or other factors outside the economic model (Table 1).

Table 1. *Classification of economic shocks*

Classification criteria	Shocks within the criterion
1. Direction (channel) of impact on the economy	Supply Demand
2. Area of impact	Global National Regional Isolated
3. Economic policy	Independent of economic policy Triggered by economic policy
4. Nature of impact	Economy-wide Sector-specific
5. Symmetry of impact	Symmetrical Asymmetrical
6. Persistence of impact	Persistent Transient
7. Source of shock	Internal - within economy External - outside economy

8. Origin	Real economy Financial economy
9. Magnitude of impact on economic growth	Low Considerable High

Source: *Own study based on J. Drop, Rodzaje szoków gospodarczych a unia walutowa (Types of economic shocks and the monetary union), Zeszyty Naukowe Akademii Ekonomicznej w Krakowie, no. 589, 2001, p. 26.*

An economic shock, regardless of the underlying cause, extent or scale of impact, affects the economy, individual sectors and individual enterprises through changes in aggregate demand or aggregate supply, to generate demand and supply shocks. Demand side shocks arise as a result of sudden and unforeseen changes in domestic or foreign demand (they increase or decrease the demand, i.e., a positive or negative shock, respectively). Supply shocks result from such events as, for example, emergence of disruptive technologies, fluctuations in commodity prices and wages, and relate to factors determining production costs (positive ones increase supply, while negative ones reduce supply). The specific types shocks are characterized in the study by Drop (2001).

Other authors have also discussed this matter, among others Maria del Rio-Chanona *et al.* (2020), Sharma and Sharma (2020), Coibion *et al.* (2020). The impact path of economic shocks on supply and demand sides is multi-stage. These questions have been dealt with in foreign publications presenting the mechanisms of the impact of the Covid-19 pandemic on demand and supply (Alvarez *et al.*, 2020; Atkeson *et al.*, 2020; Baldwin *et al.*, 2020; Eichenbaum *et al.*, 2020; Fornaro *et al.*, 2020; Guerrieri *et al.*, 2020; Jorda *et al.*, 2020; Rowe *et al.*, 2020; Saez *et al.*, 2020). For example, Sharma and Sharma (2020) identified the characteristics of the pandemic-related crisis as a demand and supply shock and its impact on the supply chains. To meet the challenges of unprecedented times, organization managers need to review and redesign their supply chains.

The impact of crises on economic entities is widely analyzed and described in the literature on the subject. The impact of the economic crisis on the profitability of enterprises has been described by Agiomirgianakis *et al.* (2013), Joh *et al.* (2003), Fuertes-Callén and Cuellar-Fernández (2019). The relationship between the economic crisis and risk was investigated by Burns *et al.* (2011) and Sukhareva (2020). Credit risk determinants of banks in developing countries after the economic crisis were analyzed by Yüksel (2017).

The impact of the crisis on banking operations, including capital requirements, was examined by de-Ramon *et al.* (2016), Walter (2019), Jouida (2019). The stock exchange is considered to be a barometer of the economy, therefore the effects of the crises are visible in stock prices and their volatility (Thalassinos 2015; Rachdi 2013).

3. Methodology and Data

The impact of an exogenous demand and supply crisis, which the crisis triggered by the SARS-CoV-2 virus pandemic is, on the real economy is multi-channelled. Theoretical analyses, however, have pointed to the fact that the strength of this impact varies by sectors and industries (Susilavati *et al.*, 2020; Williams *et al.*, 2020; Manlova *et al.*, 2020; Fabeil *et al.*, 2020). However, while the varied strength of the pandemic shock impact on different sectors of the economy can be easily explained by the different extent of the impact, the fact that business enterprises in the same industries are affected in different ways by the pandemic crisis still requires analysis. A similar differentiation can be seen by the size of enterprises suffering negative demand and supply impulses. In view of the above, the following research hypotheses were put forward.

H1: The exogenous demand and supply side shock affects individual sectors of the economy in a different way.

H2: The impact of the pandemic on the financial standing of enterprises is not uniform or unidirectional.

H3: The impact of the exogenous demand and supply side shock varies across enterprises from the same industries, with some companies improving their financial performance and others posting a significant deterioration in their financial standing.

H4: Larger enterprises cope better with the effects of the demand and supply side shock.

The hypotheses were verified based on the analysis of descriptive statistics for selected Polish economic operators by sector. Then, the results were compared with the performance indicators of companies used as a benchmark. It was decided that the benchmark will consist of public companies listed on the Polish capital market and included in the WIG20 index of the Warsaw Stock Exchange. Sectors were included in the study, for which, in the light of the existing empirical research and theoretical analyses, potential effects of the pandemic could have been significantly negative. The study covered the following stages:

Step 1 - sample definition:

The study was based on financial data for all public companies from selected sectors listed on the stock exchange. Sectors were identified based on a review of the available literature, with the final selection of those that could have potentially been most affected by the pandemic due to the nature of economic activities. The sample size for selected sectors is given in Table 2.

Table 2. *Sample size for selected sectors*

Sector	Number of study enterprises
1. tourism and recreation	9

2. automotive	7
3. building construction	45
4. real property	35
5. steel industry	9
6. transport and logistics	6
7. retail chains	4
Total	115

Source: Own study.

Step 2 - financial data selection:

For the purposes of the analysis, the financial indicators were selected for inclusion in the study. The following financial categories were included:

- core business performance indicators of an enterprise - operating revenues, operating profit/loss;
- overall performance indicators of an enterprise - gross profit;
- liquidity performance indicators of an enterprise - total cash flow, cash flow from operating activities, cash flow from investing activities, net cash flow.

The data for two periods were compared, i.e., H1 2019 and H1 2020, with the calculation of the dynamics of changes for all values.

$$d = \frac{W_{H12020} - W_{H12019}}{W_{H12019}} \quad (1)$$

d - dynamics of changes in the examined category

W_{H12019} - size of the examined financial category in H12019

W_{H12020} - size of the examined financial category in H12020

The data were taken from the financial statements published by the economic operators included in the study as available on the website www.biznes.pap.pl.

Step 3 - descriptive statistics:

Based on the collected financial data, calculations were made for selected descriptive statistics (by sector). The following metrics were used:

arithmetic mean

$$\bar{x} = \frac{1}{N} \sum_{i=1}^n x_i \quad (2)$$

revenue-weighted arithmetic mean

$$\bar{x}_w = \frac{\sum_{i=1}^n x_i P_{iH12020}}{\sum_{i=1}^n P_{iH12020}} \quad (3)$$

arithmetic mean w/o outliers

$$\bar{x}_{w/o0} = \frac{1}{N-2} (\sum_{i=1}^n x_i - x_{\max} - x_{\min}) \quad (4)$$

standard deviation

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^n (x_i - \bar{x})^2} \quad (5)$$

where:

\bar{x} - arithmetic mean of x category

N - sample size

\bar{x}_w - sales revenue- weighted arithmetic mean

$p_{iH12020}$ - sales revenues in H12020

Table 3 presents detailed information on the scope of the analysis.

Table 3. Descriptive statistics used

No.	Statistics used	Financial data category
1.	arithmetic mean	sales revenue dynamics operating profit-to-sales dynamics gross profit dynamics net cash flow dynamics operating cash flow dynamics investing cash flow dynamics total cash flow dynamics
2.	sales revenue- weighted arithmetic mean for H12020	sales revenue dynamics operating profit-to-sales dynamics gross profit dynamics
3.	arithmetic mean w/o two outliers	net cash flow dynamics operating cash flow dynamics investing cash flow dynamics total cash flow dynamics
4.	standard deviation	sales revenue dynamics operating profit-to-sales dynamics gross profit dynamics

Source: Own study.

The calculations for descriptive statistics were made for the benchmark-group companies.

Step 4 - sub-classification of the sample by the level of revenues:

To verify the H3 hypothesis, the entire sample (115) of companies was divided into three groups according to the level of revenues from operating activities generated in H12020:

- small-sized, with operating revenues of up to PLN 100 million - 53 companies,

- medium-sized, with operating revenues from PLN 100 million to PLN 1,000 million - 52 companies,
- large, with operating revenues over PLN 1,000 million - 9 companies.

The phases of the study are presented graphically in the flow diagram below (Figure 1).

4. Results and Discussion

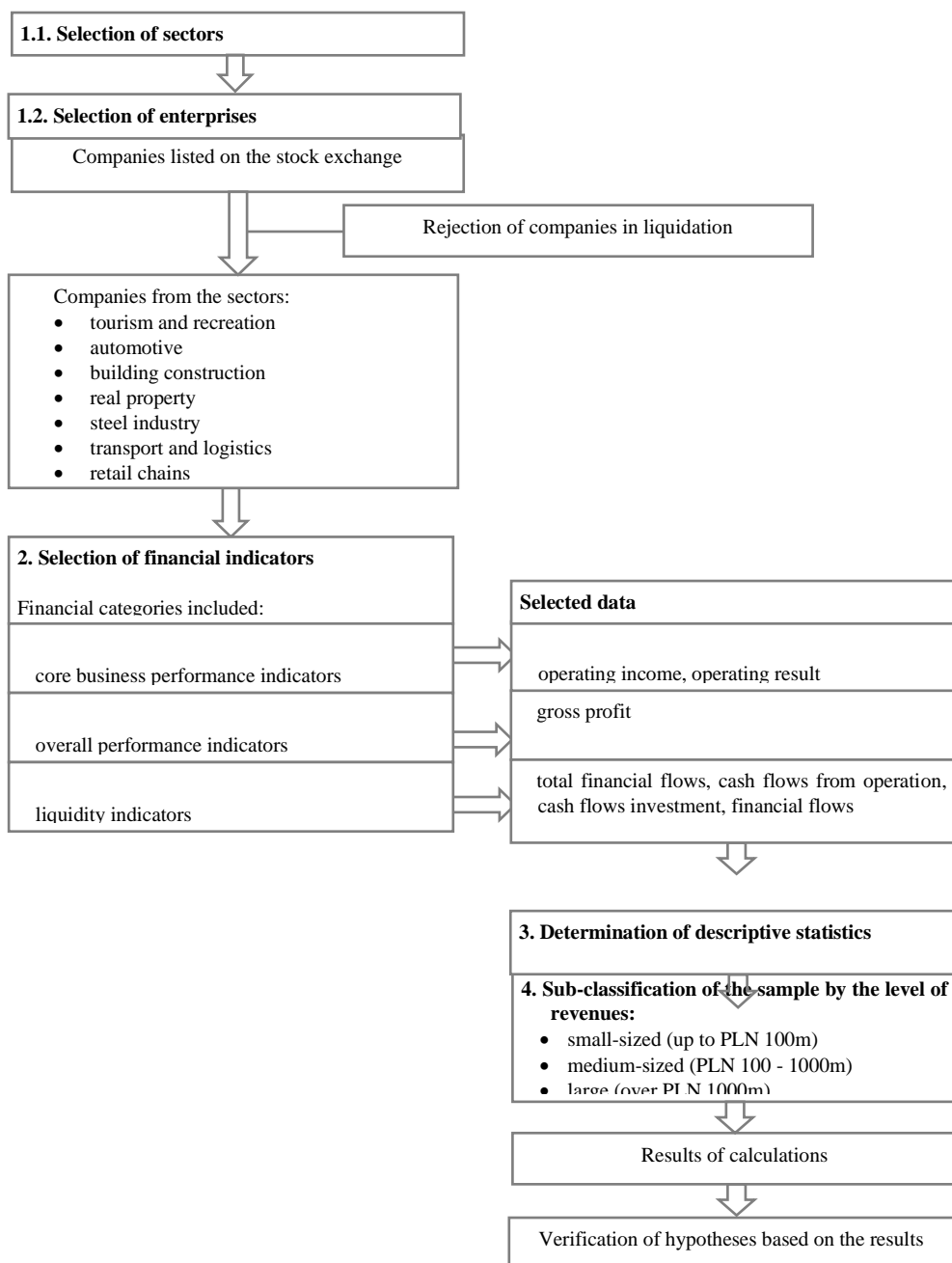
The results of the analyzed financial categories are given in Table 4.

Table 4. Descriptive statistics of analyzed data

industries									
categories		tourism and recreation	automotive	steel industry	transport and logistics	retail chains	building construction	real property	benchmark companies (WIG20)
revenue	arithmetic mean	-37.30%	-22.56%	-9.67%	-27.89%	0.12%	-1.17%	43.49%	-4.58%
	weighted arithmetic mean	-30.71%	-7.00%	-8.46%	-22.05%	9.15%	5.85%	63.63%	-5.85%
sales dynamics	standard deviation	22.29%	25.10%	18.15%	18.74%	21.75%	30.92%	164.05%	13.34%
	arithmetic mean	-425.46%	-19.09%	23.43%	-135.66%	-21.99%	-8.96%	-40.82%	-107.33%
profit-to-sales dynamics	weighted arithmetic mean	-324.34%	-0.37%	-8.01%	-251.84%	-3.48%	-45.99%	-34.70%	-27.61%
	standard deviation	531.09%	44.83%	74.21%	130.19%	80.04%	248.42%	385.09%	271.81%
profit dynamics	arithmetic mean	-431.57%	-44.96%	14.92%	-166.80%	15.14%	-34.17%	-68.35%	143.72%
	weighted arithmetic mean	-617.50%	0.22%	-17.23%	-357.86%	-93.92%	0.63%	-78.93%	1421.76%
gross dynamics	standard deviation	363.32%	93.52%	74.87%	206.84%	106.92%	214.90%	359.41%	1031.31%
	arithmetic mean	283.74%	209.08%	75.28%	-123.43%	2466.44%	236.00%	-122.69%	869.95%
net cash flow dynamics	arithmetic mean	w/o229.01%	158.38%	-52.04%	-53.68%	-328.64%	158.21%	62.47%	511.66%
	outliers								
operating cash flow dynamics	arithmetic mean	-129.44%	100.84%	100.78%	-31.87%	-144.69%	3701.80%	-59.91%	1147.44%
	arithmetic mean	w/o-101.34%	41.87%	104.57%	-35.92%	-49.00%	296.63%	0.64%	161.86%
investing cash flow dynamics	outliers								
	arithmetic mean	-16.30%	-82.75%	4.65%	-54.05%	-56.53%	-130.82%	-32.09%	-117.57%
total cash flow dynamics	arithmetic mean	w/o63.20%	-30.64%	14.06%	-42.68%	-8.66%	-109.68%	-0.83%	-82.09%
	outliers								
total cash flow dynamics	arithmetic mean	581.76%	-113.17%	-570.74%	53.12%	138.28%	1.25%	-908.84%	-5776.25%
	arithmetic mean	w/o357.54%	-71.06%	-246.25%	57.96%	60.07%	6.97%	-105.04%	-62.46%

Source: Own calculations.

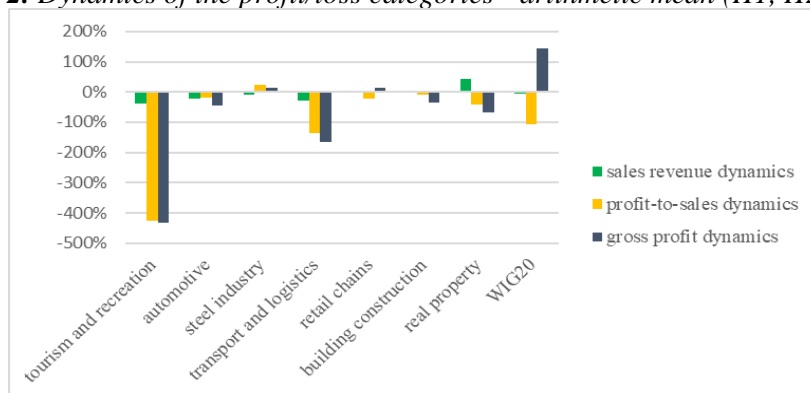
Figure 1. Phases of the study



Source: Own elaboration.

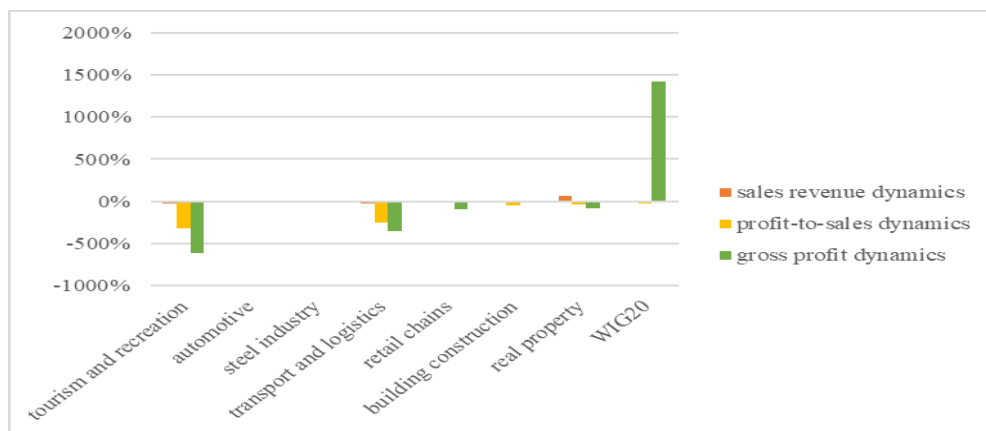
Figure 2 and 3 show the dynamics of the profit/loss categories (sales revenues, operating profit/loss and gross profit) by industries, including benchmark-group companies (WIG20 index).

Figure 2. Dynamics of the profit/loss categories - arithmetic mean (H1, H2)



Source: Own study.

Figure 3. Dynamics of the profit/loss categories - sales revenue- weighted arithmetic mean (H1, H2)

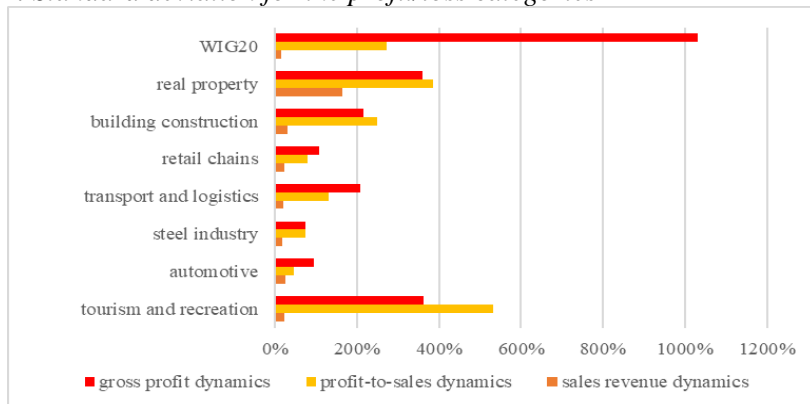


Source: Own study

The study results presented in Figures 2 and 3 confirm the H1 hypothesis about the different scale of the impact of the pandemic on enterprises from various sectors of the economy. The highest negative impact is demonstrated in the following sectors: tourism and recreation, transport and logistics. A much lower, though also negative impact of the crisis is visible in the following sectors: automotive, steel industry, retail chains, building construction and real property. The difference in the levels of dynamics in the profit/loss categories weighted by the level of sales revenues, lower than the simple arithmetic mean, indicates a relationship between

the size of the enterprise and the depth of disruption triggered by the crisis (the larger the enterprise, the smaller the scale of impact), which allows for a positive verification of the H4 hypothesis. Figure 4 presents data on the variance levels in the profit/loss categories in the analyzed groups of enterprises, including benchmark-group of companies (WIG20).

Figure 4. Standard deviation for the profit/loss categories

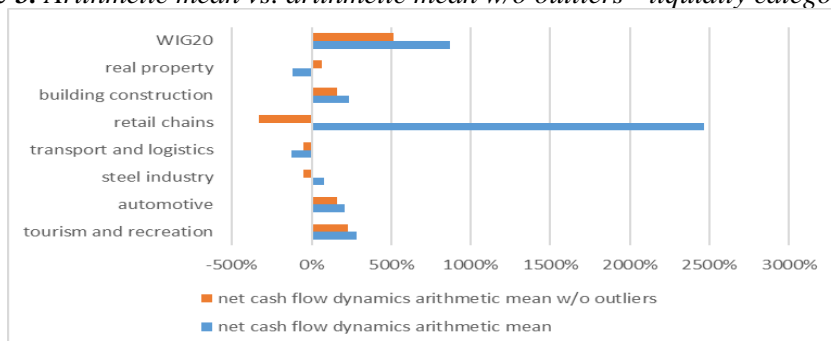


Source: Own study.

The level of the demonstrated standard deviation indicates a high variance of the results within the analyzed sectors, which confirms the H3 hypothesis about the varied impact of the pandemic-related crisis on enterprises in the same sector.

Figure 5 presents data on the level of net cash flows and differences in the levels of change dynamics in this category with variance smoothing (arithmetic mean excluding outliers).

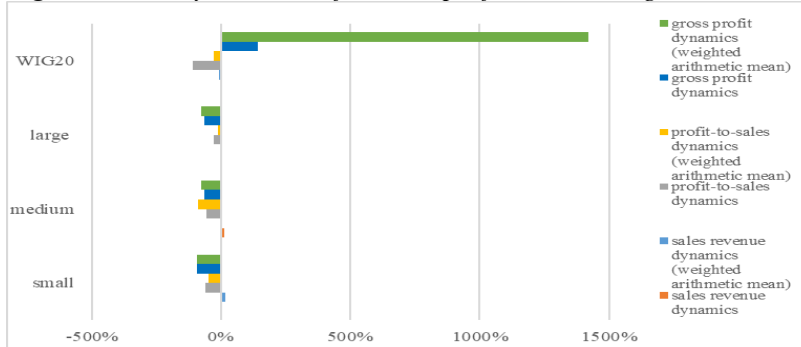
Figure 5. Arithmetic mean vs. arithmetic mean w/o outliers - liquidity categories



Source: Own study.

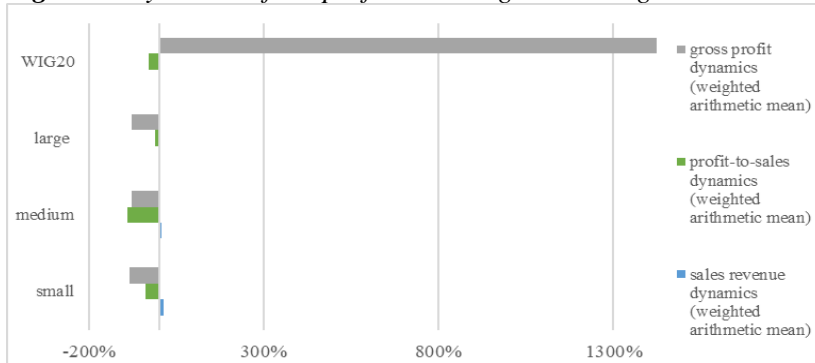
Figures 6, 7 and 8 present data on the levels of change dynamics in the profit/loss and liquidity categories, in break down by small-sized, medium-sized and large enterprises.

Figure 6. Dynamics of the profit/loss categories - arithmetic mean



Source: Own study.

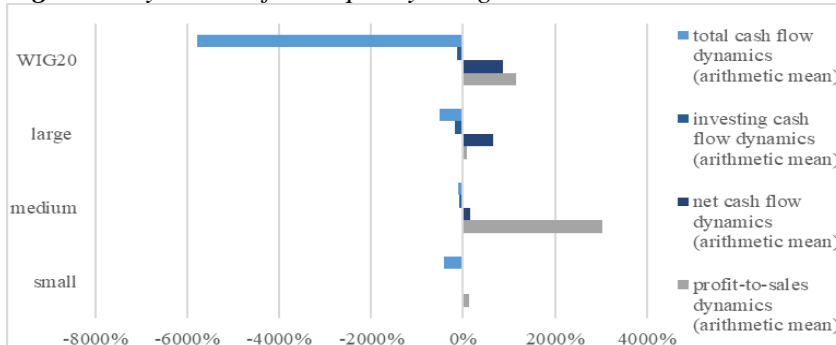
Figure 7. Dynamics of the profit/loss categories - weighted arithmetic mean



Source: Own study.

The data presented in Figures 6 and 7 do not indicate a significantly more favourable situation of large enterprises in comparison with small-sized and medium-sized enterprises, and thus do not allow for an unambiguous, positive verification of the H4 hypothesis.

Figure 8. Dynamics of the liquidity categories - arithmetic mean



Source: Own study.

The data given in Figure 8 indicate a more favourable situation of large enterprises in comparison with small-sized and medium-sized enterprises in the liquidity categories, especially in terms of net cash flows. This demonstrates that large enterprises coped better with liquidity management in the exogenous shock conditions caused by the pandemic-related crisis, which confirms the H4 hypothesis.

The study confirmed the validity of the H1, H2 and H3 hypotheses, which claim that exogenous demand and supply side shocks affect individual sectors of the economy and specific enterprises within the same industries in different ways. Due to the novelty of the topic and the fact that the pandemic is still ongoing, only a few studies of a similar nature can be found in the literature on the subject.

Shen *et al.* (2020) examined the impact of the COVID-19 epidemic on the financial performance of Chinese listed companies. The study showed that the pandemic has a significant negative impact on their financial results. Their total revenues decreased significantly. These companies also reduced the scale of their investments. The negative impact of the pandemic on the activities of the analyzed enterprises was also visible in the regional perspective, as the greatest decrease in revenues was observed in the areas affected by the lock down

A similar study on Chinese listed companies was carried out by Rababah *et al.* (2020). They showed that the effects of the pandemic are most felt by small and medium-sized companies as well as companies and industries that export their products. Due to the introduction of blockades for the movement of goods and people between countries, exporters recorded the largest drops in revenues.

Devi *et al.* (2020) examined the impact of the COVID-19 pandemic on the financial performance of companies listed on the Indonesian Stock Exchange. The research sample included 214 companies, which were then divided proportionally into nine sectors and 49 subsectors. Consumer goods sector was the sector with the highest increase in liquidity and profitability ratios with a simultaneous decrease in the leverage ratio. On the other hand, the sectors with reduction of liquidity and profitability ratios were: real estate, construction, finance, trade, services and investments.

An analysis of the impact of the COVID-19 pandemic on the tourism industry was carried out by Sigal (2020). The author demonstrated that this industry is in a phase of rapid and steep decline in demand. Despite the proven resilience of the tourism industry to economic crises, it is very likely that the effects of the current shock will last longer than in other sectors of the economy. Dimitrelou *et al.* (2020) studied the impact of the pandemic on the European aviation industry. The results of their PEST-based study demonstrated that the European aviation industry's situation is unprecedented and needs a radical change and state support to be able to cope with the effects of the crisis.

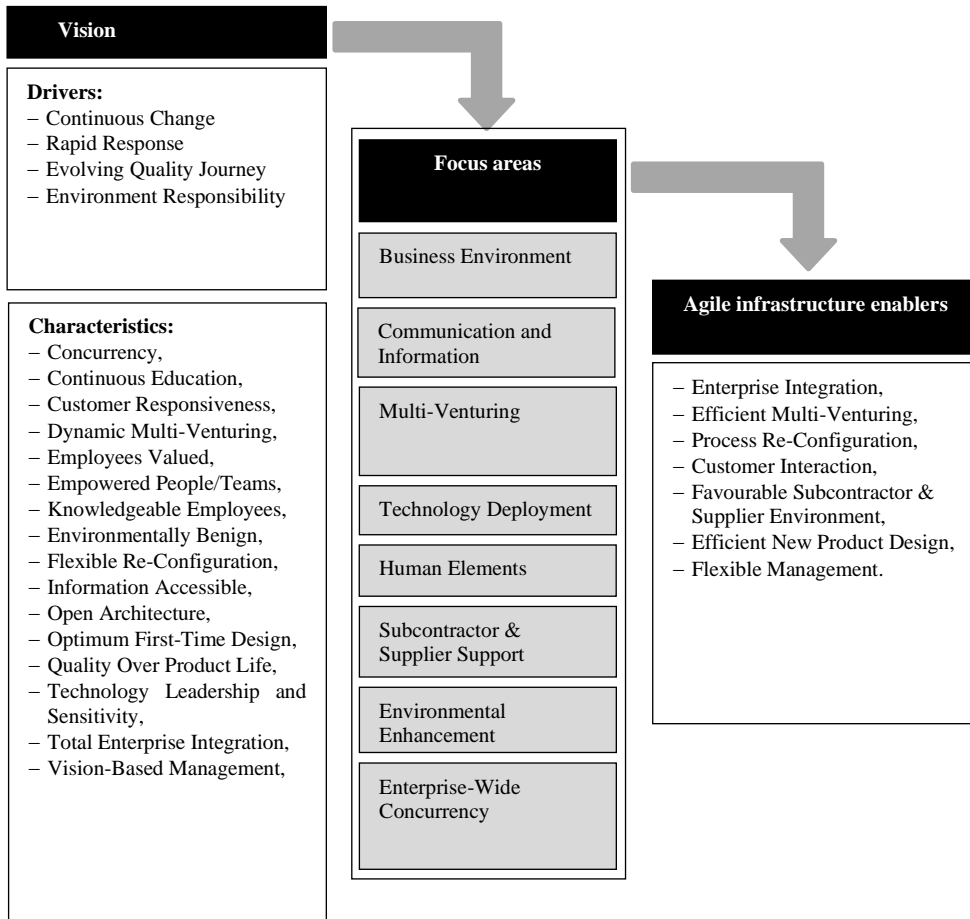
Our study has also confirmed the validity of the H4 hypothesis that large enterprises do better. Our results are in line with the results of a study by Sharma *et al.* (2020), who described Samsung's response to the lockdown put in place as a pandemic control measure. With a long-established network of production plants scattered in different locations, Samsung was able to decide to transfer production between locations and thus avoid a complete production downtime. Likewise, to compensate for the closure of retail stores, Samsung leveraged its contracts with cell phone retailers and Benow (a payment system and EMI technology operator) to create an e-commerce platform to boost its reach to customers. Eggers' study (2020) demonstrated that small and medium-sized enterprises, characterized by unstable and relatively low cash flows, turned out to be particularly vulnerable to the pandemic-related crisis. Pantano *et al.* (2020) showed that retailers who did not adapt quickly enough to the new operating conditions are currently facing actual or threatened bankruptcy.

Companies handle the crisis in different ways. Nguyen *et al.* (2021) demonstrated that in their struggle with the crisis, companies most often chose cost cutting strategies to deal with economic slowdown. The authors of the study believe that the research should be continued and put forward a preliminary hypothesis that agile companies cope with the crisis better, while the size of the company is key to the emergence of this feature (agility).

The concept of agility in economics appeared in the early 1990s (Nagel *et al.*, 1991), as mentioned by Chomicki and Mierzejewska (2020). Agility has multiple dimensions, from production agility, through management agility, agile programming, to agile enterprise. According to Yahaya Yusuf, agility has four cornerstones (Yahaya Yusuf 1999), i.e., core competence management, capacity for reconfiguration, knowledge driven enterprise and virtual enterprise. Another author (Rick Dove, 2005) defines three enablers of enterprise agility, i.e., accurate timely awareness that a change should be made, enabled by focused knowledge management processes, effective value-propositioning skills to prioritize among competing changes and competing response-alternatives to those changes; and a facilitated ability to change business processes and to customize operational responses in real time, that is, response ability. Only an agile enterprise has the ability to overcome difficulties in turbulent, unstable and uncertain environments.

The concept of an agile enterprise assumed the management's attention concentrated on developing a vision of the company guided by permanent change, which, by centring the business potential around selected focus areas, would be an agile infrastructure enabler. However, the original assumptions of the concept acquired a new meaning in the conditions of the pandemic. With managers forced to meet the complex conditions of restrictions and to ensure business continuity while lockdowns are put in place and relaxed alternately, the concept has been due to be refreshed. A suggested rebuilt agile enterprise model based on visualization by the Iacocca Institute is shown in Figure 9.

Figure 9. Model of an agile enterprise in the conditions of an economic crisis - based on the agile enterprise model from the 21st Century Manufacturing Enterprise Strategy Report (Iacocca Institute, 1991)



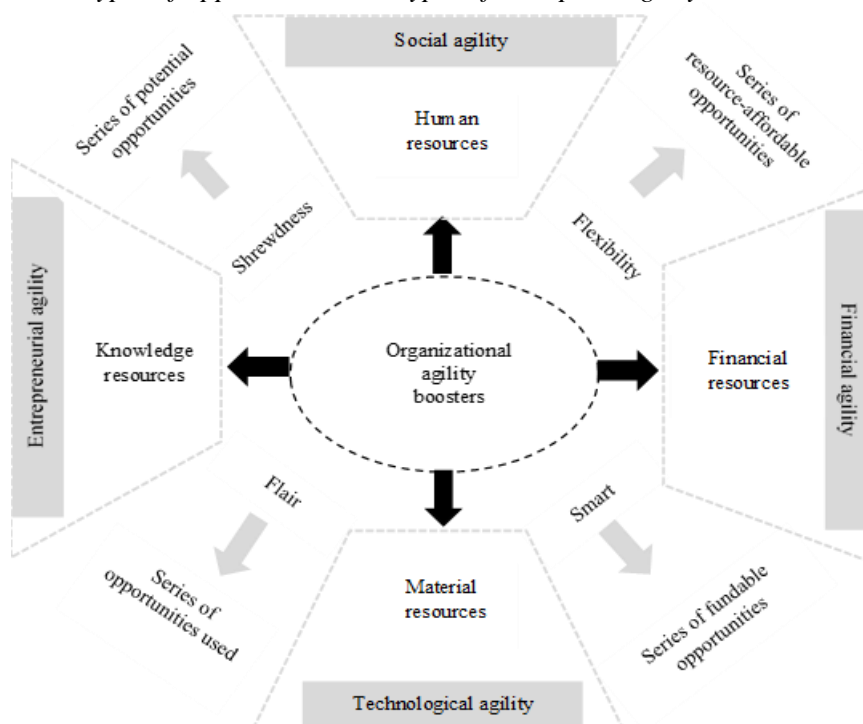
Source: Own study based on 21st Century Manufacturing Enterprise Strategy, An Industry-Led View, Volume 1, November, 1991, Iacocca Institute, Lehigh University, 200 W. Packer Ave., Bethlehem, PA, USA, 215-758-5510.

This time, however, the management's attention is focused on different aspects. What remains unchanged is only the general assumption of the concept, that is the need to adapt the company's infrastructure to the challenges resulting from the clash of the vision and selected focus areas with the operating conditions in unpredictable, changing conditions of the pandemic. These require the focus to be put on business environment awareness, while ensuring access to up-to-date and necessary information and efficient communication. They are necessary for any action for multi-venturing that ultimately guarantees continuous access to various forms of financing of the enterprise. They enable the acquisition and deployment of new technologies, and the maintenance of the potential in the enterprise's

employees and teams. It is a prerequisite for sourcing public aid. The next areas that require the attention of managers are a maintained favourable subcontractor and supplier environment and environmental enhancement. The last objective of managers that want their enterprises to stay agile is to ensure total concurrency of all activities undertaken within the enterprise in counteracting the adverse effects of the pandemic.

The expected and desirable outcome of the described evolution of the agile enterprise concept is to develop such enterprise infrastructures that enable agility to be achieved and upheld. Such enterprises do well in the pandemic, which means that the restrictions imposed or lockdowns put in place do not translate directly into deteriorated financial performance, and in some cases the measures taken even contribute to the defence of favourable performance indicators. This is made possible by taking advantage of opportunities that develop in the business environment, a trace characteristic of agile enterprises. Various aspects of both emerging opportunities and types of agility are noteworthy at this point. They are shown in Figure 10.

Figure 10. Types of opportunities and types of enterprise agility



Source: Based on Włodarkiewicz-Klimek H., 2016, *Koncepcje i modele zwinnego przedsiębiorstwa (Concepts and models of an agile enterprise)* Zeszyty Naukowe Politechniki Poznańskiej, no. 71, p. 216.

Enterprise agility should be the subject of further, in-depth research, as there is no doubt that the renaissance of the concept in the conditions of pandemic-related restrictions is a fact and opens up the room for questions on the underlying causes of failures and successes in specific industries and individual companies. Continued observation should bring answers to uncertainty on how to manage enterprises in an increasingly turbulent environment, in which, due to demand side shocks and a variety of crisis situations and disaster-like events, it is more and more difficult to achieve market success with traditional operating methods.

5. Conclusions

The year 2020 went down in the history of the world economy as a special year, a year of a global crisis caused by a non-economic factor, the Covid-19 pandemic, which has since entailed multiple social and economic consequences. As a result of the pandemic, the paradigms of health care, economic and social life around the world will change dramatically. The global economy and individual countries have had to face unprecedented problems. These affected both the enterprise sector, the household sector and the public sector, and first and foremost, the health care sector.

In enterprises, a crisis situation may arise at any stage of business operation and may threaten continued economic activity. A crisis in an enterprise may be caused by a multitude of factors that vary depending on the conditions of its business. While managers know how to manage a crisis situation in the context of internal conditions (depending on the enterprise itself), the problem is with managing a company in a crisis caused by extraordinary circumstances such as the current pandemic, armed conflicts or natural disasters. In 2020, most enterprises were forced to downsize their operations due to the lockdowns, supply chain disruptions, increased infection rates and the necessary isolation of employees, the quarantine requirements, and a reduced demand for goods and services. The future and financial standing of individual enterprises will be contingent on the scale and scope of countermeasures taken by enterprises and their resilience to stress caused by the pandemic.

In the current global economic reality, enterprises, to operate successfully in the market, must have the ability to effectively manage their resources and quickly adapt to changes in their business environment. They have to be able to accurately assess the company's situation, its market position and anticipate the future developments inside the organization and in its surroundings. With the pandemic-related crisis, the need has been confirmed to develop such features of an enterprise that will allow it not only to respond quickly to changes in the environment, use its competitive advantages, minimize risks and threats, but also use any opportunities that arise. Enterprise management must be strategic, creative, innovative, flexible, ahead of the developments around the enterprise,

open to market pioneering ideas, as only such enterprises can build a sustainable competitive edge.

In the view of the authors:

- the financial standing of enterprises in the pandemic-related crisis depends on the internal characteristics of the enterprise, including, the way it responds to changes, the ability to manage a crisis in the enterprise, the skills of managers to correctly diagnose the situation and predict future events, manage emerging risks, manage knowledge and crises in the enterprise, its creativity and flexibility,
- companies with the characteristics of an agile enterprise win in the crisis.

This research and its results may be helpful for CEO in management of crisis in enterprises and for the government in adjusting the scope and forms of support for enterprises affected by the pandemic.

References:

- Agiomirgianakis, G.M., Magoutas, A.I., Sfakianakis, G. 2013. Determinants of Profitability in the Greek Tourism Sector Revisited: The Impact of the Economic Crisis. *Journal of Tourism and Hospitality Management*, 1(1).
- Alvarez, F., Argente, D., Lippi, F. 2020. A Simple Planning Problem for COVID-19 Lockdown. mimeo.
- Atkeson, A. 2020. What Will Be the Economic Impact of COVID-19 in the US? Rough Estimates of Disease Scenarios. Working Paper 26867. National Bureau of Economic Research.
- Bai, Ch., Quayson, M., Sarkisc, J. 2021. COVID-19 pandemic digitization lessons for sustainable development of micro-and small- enterprises, *Sustainable Production and Consumption* 27, 1989-2001. <https://doi.org/10.1016/j.spc.2021.04.035>.
- Baldwin, R., Weder di Mauro, B. 2020. Economics in the Time of COVID-19. VoxEU CEPR Press.
- Ben-Ahmed, K., Ayadi, I., Hamad, S.B. 2021. COVID-19 impact on digital companies' stock return: A dynamic data analysis, *Finance Research Letters*, ISSN 1544-6123. <https://doi.org/10.1016/j.frl.2021.102340>.
- Bloom, N. 2007. The Impact of Uncertainty Shocks. NBER Working Papers Series, Working Paper 13385.
- Boschi, M., Goenka, A. 2012. Relative risk aversion and the transmission of financial crises. *Journal of Economic Dynamics and Control*, 36(1), 85-99. <https://doi.org/10.1016/j.jedc.2011.07.005>.
- Burns, W.J., Peters, E., Slovic, P. 2011. Risk Perception and the Economic Crisis: A Longitudinal Study of the Trajectory of Perceived Risk. *Risk Analysis*, 32(4), 659-677. <https://doi:10.1111/j.1539-6924.2011.01733.x>.
- Chen, M.H., Demir, E., García-Gómez, C.D., Zaremba, A. 2020. The impact of policy responses to COVID-19 on U.S. travel and leisure companies. *Annals of Tourism Research Empirical Insights*, 1(1), 100003. <https://doi.org/10.1016/j.annale.2020.100003>.

- Chomiccki, M., Mierzejewska, K. 2020. Przygotowanie polskich przedsiębiorstw do świadczenia pracy zdalnej w okresie pandemii Covid-19. e-mentor, Dwumiesięcznik Szkoły Głównej Handlowej w Warszawie, 5(87), 46.
- Coibuib, O., Gorodnichenko, Y., Weber, M. 2020. The cost of the COVID-19 Crisis: Lockdown, Macroeconomic Expectations, and Consumer Spending. NBER Working Papers Series, Working Paper 27141.
- Dai, R., Feng, H., Hu, J., Jin, Q., Li, H., Wang, R., Wang, R., Xu, L., Zhang, X. 2021. The impact of COVID-19 on small and medium-sized enterprises (SMEs): Evidence from two-wave phone surveys in China. *China Economic Review*, 67, 101607. <https://doi.org/10.1016/j.chieco.2021.101607>.
- de-Ramon, S., Francis, W., Qun, H. 2016. Bank Capital Requirements and Balance Sheet Management Practices: Has the Relationship Changed after the Crisis? Bank of England, Working Paper No. 635. Available at SSRN: <https://ssrn.com/abstract=2885244> or <http://dx.doi.org/10.2139/ssrn.2885244>.
- Devi, S., Warasniasih, N.M.S., Masdiantini, P.R., Musmini, L.S. 2020. The Impact of COVID-19 Pandemic on the Financial Performance of Firms on the Indonesia Stock Exchange. *Journal of Economics, Business, and Accountancy Ventura*, 23(2), 226-242. <https://doi.org/10.14414/jebav.v23i2.2313>.
- Drop, J. 2001. Rodzaje szoków gospodarczych a unia walutowa. *Zeszyty Naukowe Akademii Ekonomicznej w Krakowie* 589, 23.
- Eichenbaum, M.S., Rebelo, S., Trabandt, M. 2020. The Macroeconomics of Epidemics. Working Paper 26882. National Bureau of Economic Research.
- Fabeil, N.F., Pazim, K.H., Langgat, J. 2020. The Impact of COVID-19 Pandemic Crisis on Micro-Enterprises: Entrepreneurs' Perspective on Business Continuity and Recovery Strategy. *Journal of Economics and Business*, 3(2), 837-844.
- Fernandez-Villaverde, J., Guerron-Quintana, P.A. 2020. Uncertainty shocks and business cycle reserach. *Review of Economic Dynamic*, 37, 118-146.
- Fornaro, L., Wolf, M. 2020. Covid-19 Coronavirus and Macroeconomic Policy. Technical Report, CEPR.
- Fuertes-Callén, Y., Cuellar-Fernández, B. 2019. Inter-relationship between firm growth and profitability in a context of economic crisis. *Journal of Business Economics and Management*, 20(1), 86-106. <https://doi.org/10.3846/jbem.2019.6928>.
- Golubeva, O. 2021. Firms' performance during the COVID-19 outbreak: international evidence from 13 countries. *Corporate Governance*. <https://doi.org/10.1108/CG-09-2020-0405>.
- Grammatikos, T., Vermeulen, R. 2012. Transmission of the financial and sovereign debt crises to the EMU: Stock prices, CDS spreads and exchange rates. *Journal of International Money and Finance*, 31(3), 517-533. doi:10.1016/j.jimonfin.2011.10.00.
- Grima, S., Dalli Gonzi, R., Thalassinos, I.E. 2020. The Impact of COVID-19 on Malta and its Economy and Sustainable Strategies. Available at: SSRN: <https://ssrn.com/abstract=3644833>.
- Guerrieri, V., Lorenzoni, G., Straub, L., Werning, I. 2020. Macroeconomic implications of COVID-19: can negative supply shocks cause demand shortages. NBER Working Paper 26918.
- Hyman, M., Mark, C., Imteaj, A., Ghiaie, H., Rezapour S., Sadri, A.M., Amini M.H. 2021. Data analytics to evaluate the impact of infectious disease on economy: Case study of COVID-19 pandemic. *Patterns*, 2(8), 10031. <https://doi.org/10.1016/j.patter.2021.100315>.

- Joh, S.W. 2003. Corporate governance and firm profitability: evidence from Korea before the economic crisis. *Journal of Financial Economics*, 68(2), 287-322.
[https://doi.org/10.1016/s0304-405x\(03\)00068-0](https://doi.org/10.1016/s0304-405x(03)00068-0).
- Jorda, O., Singh, S.S., Taylor, A.M. 2020. Longer-run economic consequences of pandemics. mimeo.
- Jouida, S. 2019. Bank capital structure, capital requirements and SRISK across bank ownership types and financial crisis: panel VAR approach. *Rev Quant Finan Acc*, 53, 295-325. <https://doi.org/10.1007/s11156-018-0750-5>.
- Kaczmarek, T., Perez, K., Demir, E., Zaremba, A. 2021. How to survive a pandemic: The corporate resiliency of travel and leisure companies to the COVID-19 outbreak. *Tourism Management*, 84, 104281. <https://doi.org/10.1016/j.tourman.2020.104281>.
- Kaplan, G., Violante, G. 2018. Microeconomic Heterogeneity and Macroeconomic Shocks. *Journal of Economic Perspectives*, 32(3), 167-194.
- Khan, S., Rabbani, R.M., Thalassinos, I.E., Atif, M. 2020. Corona Virus Pandemic Paving Ways to Next Generation of Learning and Teaching: Futuristic Cloud Based Educational Model. Available at SSRN: <https://ssrn.com/abstract=3669832>.
- Kozeniauskas, N., Orlik, A., Veldkamp, L. 2017. *What Are Uncertainty Shocks?* New York University and Federal Reserve Board.
- Manolova, T.S., Brush, C.G., Edelman, L.F., Elam, A. 2020. Pivoting to stay the course: How women entrepreneurs take advantage of opportunities created by the COVID-19 pandemic. *International Small Business Journal*, 38(6), 481-491.
- Margherita, A., Heikkilä, M. 2021. Business continuity in the COVID-19 emergency: A framework of actions undertaken by world-leading companies. *Business Horizons*. <https://doi.org/10.1016/j.bushor.2021.02.020>.
- Maria del Rio-Chanona R., Mealy, P., Pichler, A., Lafond, F., Farmer, J.D. 2020. Supply and demand shocks in the COVID-19 pandemic: an industry and occupation perspective. *Oxford Review of Economic Policy*, 36(S1), 94-137.
- Markovic, S., Koporcic, N., Arslanagic-Kalajdzic, M., Kadic-Maglajlic, S., Bagherzadeh, M., Islam, N. 2021. Business-to-business open innovation: COVID-19 lessons for small and medium-sized enterprises from emerging markets. *Technological Forecasting and Social Change*, 170, 120883. <https://doi.org/10.1016/j.techfore.2021.120883>.
- Nguyen, H.H., Ngo, V.M., Tran A.N.T. 2021. Financial performances, entrepreneurial factors and coping strategy to survive in the COVID-19 pandemic: case of Vietnam. *Research in International Business and Finance*, 56, 101380. <https://doi.org/10.1016/j.ribaf.2021.101380>.
- Orlik, A., Veldkamp, L. 2012. *Understanding Uncertainty Shocks*. Preliminary draft.
- Rababah, A., Al-Haddad, L., Sial, M.S., Chunmei, Z., Cherian, J. 2020. Analyzing the effects of COVID-19 pandemic on the financial performance of Chinese listed companies. *Journal Public Affairs*, e2440. <https://doi.org/10.1002/pa.2440>.
- Rachdi, H., Mokni, R.B.S., Khemiri, S. 2013. The Impact of the International Financial Crisis on the Stock Market Return: The Case of Tunisian Stock Exchange. *Journal of Empirical Economics*, 1(2), 67-74.
- Rowe, N. 2020. Blog Post: Relative supply shocks, Unobtainium, Walras' Law, and the Coronavirus. *Worthwhile Canadian Initiative: A mainly Canadian economics blog*.
- Saez, E., Zucman, G. 2020. *Keeping Business Alive: The Government as Buyer of Last Resort*. mimeo Berkeley.
- Sharma, M., Sharma, V. 2020. COVID-19 and Economic Shocks: An analysis in Indian Context. *Mainstream*, LVIII(18), New Delhi.
- Shen, H., Fu, M., Pan, H., Yu, Z., Chen, Y. 2020. *The Impact of the COVID-19 Pandemic on*

- Firm Performance. *Emerging Markets Finance and Trade*, 56(10), 2213-2230. <https://doi:10.1080/1540496x.2020.1785863>.
- Sukharev, O.S. 2020. Economic crisis as a consequence COVID-19 virus attack: risk and damage assessment. *Quantitative Finance and Economics*, ISSN: 2573-0134.
- Susilavati, S., Falefi, R., Purvoko, A. 2020. Impact of COVID-19's Pandemic on the Economy of Indonesia. *Budapest International Research and Critics Institute-Journal*, 3(2), 1147-1156.
- Thalassinos, E., Pintea, M., Ratiu, P.I. 2015. The recent financial crisis and its impact on the performance indicators of selected countries during the crisis period : a reply. *International Journal of Economics & Business Administration*, 3(1), 3-20.
- Walter, J.R. 2019. US Bank Capital Regulation: History and Changes Since the Financial Crisis Economic Quarterly 1Q, 1-40. Available at SSRN: <https://ssrn.com/abstract=3350699>.
- Williams, C.C., Kayaoglu, A. 2020. The Coronavirus Pandemic and Europe's Undeclared Economy: Impacts and a Policy Proposal. *South East European Journal of Economics and Business*, 15(1), 80-92.
- Wu, H., Xu, B. 2021. Did state-owned enterprises do better during COVID-19? Evidence from a survey of company executives in China. *Journal of Economics and Business*, 115, 105991. <https://doi.org/10.1016/j.jeconbus.2021.105991>.
- Yüksel, S. 2017. Determinants of the Credit Risk in Developing Countries After Economic Crisis: A Case of Turkish Banking Sector. In: Hacıoğlu, Ü., Dinçer, H. (Eds.), *Global Financial Crisis and Its Ramifications on Capital Markets. Contributions to Economics*. Springer, Cham. https://doi.org/10.1007/978-3-319-47021-4_28.