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Zombies or Still Alive.
Who Took Advantage of COVID-19 State Aid?

Abstract

Theoretical background: The SARS-CoV-2 pandemic has caused violent reactions from the governments of almost all countries in the world. The attempt to contain a pandemic by restricting the mobility of society has had a huge impact on people and some businesses. As a result of COVID-19 restrictions, it became necessary to introduce special state aid programs for those businesses that were most affected by these restrictions. This was also the case in Poland. We based our analysis on welfare economics (Harberger, 1971), in which government support for enterprises is legitimized when their situation would have been worse without these interventions.

Purpose of the article: The aim of this article is to assess the impact of public aid granted to large companies in Poland on their financial condition. The research problem is to answer the question whether the companies that received the aid needed it. In assessing the appropriateness of aid, liquidity, debt level and profitability indices were used, which directly resulted from the objectives of COVID-19 aid granted in Poland. The added value of the study is combining the analysis of data from financial statements with information on state aid published by the Office of Competition and Consumer Protection (UOKiK).

Research methods: The research sample consisted of 1,201 large Polish enterprises from the non-financial sector. The study used non-parametric statistical tests and quartile analysis.

Main findings: The results show that the aid went to entities that were already in a worse financial situation before the pandemic. At the same time, it was demonstrated that the aid did not distort the market mechanism, i.e. it neither excessively improved the situation of supported entities nor significantly worsened the situation of entities that did not benefit from the aid.

Introduction

The outbreak of the COVID-19 crisis prompted EU authorities to urgently adopt exceptional state aid regulations amid the threat of mass unemployment and the partial or total closure of many sectors. Bloom et al. (2020) point out that the impact of the pandemic was different for various sectors. This means that some sectors needed very little or no support, while others were in urgent need. Among the sectors that were not affected by the pandemic were the food industry, the food trade and that part of the medical sector that provided COVID-19 protection. E-commerce and IT companies, especially those offering remote working tools, also benefited from the pandemic. Some entities were affected by the pandemic in the short term and their activity quickly returned to pre-pandemic levels once restrictions on moving were lifted. For these entities, a sharp drop in revenues and liquidity problems were noticeable. It is also possible to identify entities that experience a permanent shock during a pandemic (e.g. hotels, airlines, cinemas). Figures for five EU countries (Croatia, Finland, the Netherlands, Slovakia, Slovenia) show that the pandemic led to a significant short-term decline in productivity, understood as the ratio of value added to employment (Bighelli et al., 2022). Research by Guerrieri et al. (2020) indicates that the negative effect of the pandemic on the condition of economic entities is due to both the demand and supply side. On the one hand, lockdowns, and restrictions to contain the spread of COVID-19 led to temporary closures of many firms, stopped production, disrupted supply chains and contributed to supply shocks affecting firm performance. On the other hand, demand in many sectors of the economy has either disappeared or been significantly reduced. Service sectors,

including airlines, restaurants, and tourism, have seen the number of customers fall, and the risk to workers' incomes has become an impetus to reduce consumption. In such a situation, state intervention aimed at supporting companies that have suffered the negative consequences of the pandemic is justified.

According to the views of welfare economics (Harberger, 1971), government support for private businesses is legitimized when their situation would have been worse without these interventions. Government intervention to provide a net benefit to the economy by supporting businesses often encounters several problems. Two well-known problems of government intervention are deadweight loss and substitution effects, which may also play a role in supporting the economy during the COVID-19 pandemic. In the medium run, business support may lead to deadweight loss when taxpayers' money is spent on firms that would have survived the crisis without government support (Santarelli & Vivarelli, 2002). In the long run, there is a risk of substitution effects: the lack of selection for public assistance of firms with a chance of survival means that firms without such chances stay alive at their expense. This hinders reallocation of production factors (Barrero et al., 2020) and leads to a loss of organisational capital. Such organisational capital disappears when a firm ceases to exist. Therefore, the question arises to what extent state aid in relation to COVID-19 goes to the companies that need it now (no deadweight loss effect), and whether it contributes to the productivity of the economy in the long run (no substitution effect). State aid for those entities that will not be able to survive is questionable, especially with sectors perceived as declining. The rationale for using state aid for a variety of sectors was analysed in the work of Fumagalli et al. (2020). These assumptions became the basis for the regulation of aid rules in EU countries.

General regulations on state aid in the EU are set forth in Article 107 of the Treaty on the Functioning of the European Union (TFEU, 2012). The granting of state aid is an interference in the free market rules, it threatens to distort competition by favouring certain businesses or the production of certain goods, in so far as it affects trade between Member States. Hence, measures applicable to all businesses in the form of wage subsidies, suspension of payment of corporate income tax and VAT or social security contributions are not considered state aid. The new Temporary Framework (adopted in March 2020 and amended several times) made it possible to turn state aid policy into a useful tool for Member States to support those most affected by the pandemic. As regards direct aid (targeted at certain companies affected by the COVID-19 crisis), the Commission considered that it could be granted under the General Block Exemption Regulation (GBER) without prior notification to the European Commission. Moreover, considering the catastrophic economic impact of the COVID-19 crisis, Member States can make full use of Article 107(3) (b) TFEU, which allows the granting of state aid to deal with serious disturbances in the economy. A review of state aid solutions during the first months of the COVID-19 pandemic indicates that, in addition to funds for support of vaccine research and the production of protective materials and disinfectants, targeted support in the form of deferral of tax payments

or suspension of social security contributions played a significant role (Drăgoi, 2020). In addition, some Member States recognised the need to support businesses facing a lack of liquidity, as long as they were not insolvent at the time of applying for aid. The solutions adopted in Poland concerning state aid in connection with the pandemic were adopted in the Act of 2 March 2021 on specific solutions related to preventing, counteracting, and combating COVID-19, other infectious diseases and crisis situations caused by them (Journal of Laws of 2021, item 2095, hereinafter the "COVID Act"), which was subject to successive amendments resulting from the changing situation in the country. Based on the provisions of the COVID Act, most of the aid programmes aimed at remedying the negative economic consequences caused by COVID-19 have been developed, in line with the objectives and conditions of state aid laid down in the EU temporary framework. A special role among institutions involved in granting state aid in Poland is played by the Polish Development Fund, which implements aid programmes under the so-called "anti-crisis shield". The share of this institution in financing state aid in Poland for counteracting the effects of COVID-19 amounted in 2020 to 65% of the total amount of COVID aid, which amounted to almost PLN 94 billion (UOKiK, 2021). The main objectives of this assistance were to provide rapid access to financial liquidity, particularly needed to finance working capital; to provide financial compensation to entrepreneurs whose projections indicate that they are unable to pursue a stable financial policy due to debt spikes and financial losses as a result of COVID-19; to provide access to capital, in situations of significant capital market disruptions and problems with the valuation of the cost of capital; to protect jobs, with detailed arrangements that involved differentiating the rules for providing assistance according to the size of the company. In reality, this meant different aid programmes for micro, small and medium-sized enterprises and for large corporations (PFR, 2020). The aim of this article is to assess the impact of the financial aid that was granted to large companies in Poland on the condition of these companies.

According to the adopted crisis aid rules, these are entities that at the end of 2019 met cumulatively the following criteria: 1) a minimum of EUR 50 million turnover, 2) a minimum of EUR 43 million in total assets; 3) a minimum of 250 employees. The inclusion of large enterprises in the survey was due to the fact that this group of entities was supported very selectively. Consequently, relatively few large enterprises received aid. In such a situation there is a high risk of distortion of the market mechanism and distortion of competition, as entities benefiting from the support could obtain additional market advantage in relation to those that did not receive aid. The problem addressed in our article was to answer the question of whether the companies that received aid needed it. The criteria that were used for the purpose of assessing the legitimacy of the aid were liquidity, debt level and profitability – which directly resulted from the objectives of the granted COVID aid. In addition, the study also took into account other measures crucial for describing the financial situation of the entities under examination, such as: the volume of revenue from sales, employment costs and the number of employees.

**The impact of state aid on firm performance during a pandemic –
a literature review**

Most studies on the economic impact of the pandemic focus on its effects on the
financial market, with particular attention to stock market volatility (Narayan & Phan,
2020; Baek et al., 2020), market liquidity (Just & Echaust, 2020), and rates of return
(Narayan et al., 2020; Shen et al., 2020). There are still relatively few studies devoted
to the impact of pandemics on firm outcomes, mainly due to delays in accessing finan-
cial statement data. Hu and Zhang (2021) using quarterly report data for the first three
quarters of 2020 from over 16,000 firms from 107 countries show that firm ROA is
negatively related to the cumulative number of COVID cases in the countries studied.
Secondly, it appears that firms operating in a country with a better health system, a better
financial system and better governance can thrive during a pandemic.

Research on the effects of pandemics on the financial standing of enterprises should
consider the criterion of enterprise size. Large companies have more competitive power
compared to small companies due to their larger market share, better access to capital,
experience, and operational efficiency (Ichev & Marinic, 2018). In view of this, large
players are less exposed to the effects of the COVID-19 pandemic than smaller firms
(Baldwin & Weder di Mauro 2020). Thus, a company's size is a factor that significantly
influences the response to a pandemic (Golubeva, 2021). At the same time, Levy (2020)
points out that coronavirus-related restrictions have increased the revenues of large
technology and pharmaceutical companies, while negatively affecting many smaller
companies that are more dependent on the traditional economy.

As part of the financial support given to companies by many countries to min-
imise the negative effects of COVID-19, instruments such as subsidies targeted at
the sectors most affected by the pandemic, loans, tax relief and deferrals, and even
regulations temporarily abolishing the possibility of company bankruptcy were used.
These measures saved many companies and jobs in the short term. The aid was
particularly targeted at SMEs due to their smaller cash buffers compared to larger
companies, their lower use of digital tools and technology, and their overrepresen-
tation in the industries most affected by the pandemic. Despite some differences
between countries, employment (wage) subsidies or short-time work schemes (part-
time and full-time) were the most common and largest measures adopted in EU
countries (Bighelli et al., 2022). These measures have alleviated the liquidity needs
of firms in the face of a sudden drop in sales, while at the same time enabling them
to resume operations more quickly after closure by maintaining employment. Such
action is justified since in times of crisis corporate liquidity management policies
change (Campello et al., 2010), with companies with weaker financial capabilities
suffering the most, as banks and financial institutions are the first to cut funding to
them (Ivashina & Scharfstein, 2010). Hence the need to design liquidity support
and employment subsidies targeted only at those firms negatively affected by the
shock (Motta & Peitz, 2020). This means that those companies that are not affected

by the pandemic shock should not benefit from the liquidity support scheme. This also applies to state aid to cover the company's labour costs.

Historically, low bankruptcy rates in many economies prompt the question of whether these measures have led to a misallocation of resources (e.g. Cros et al., 2021; Gourinchas et al., 2020) and the rise of so-called zombie firms: firms that would have gone bankrupt without the COVID-19 crisis but survived thanks to state support. The micro-econometric analysis carried out allowed indicating whether the aid was well-targeted by reaching firms that are not only heavily affected by the pandemic but also able to survive. Helping entities that are strongly affected but lacking chances of survival regardless of external conditions would hinder Schumpeter's process of creative destruction by disrupting the efficient reallocation of resources (Barrero et al., 2020).

Bennedsen et al. (2020) find evidence that government support policies announced in Denmark – like those in several European countries – were effective in reducing unemployment during the pandemic. These authors also show that firms that experienced the largest revenue declines were the most likely to benefit from support measures. An assessment of the first months of public aid directed to Portuguese firms shows that those entities that benefited from public aid were in a relatively more precarious situation, both in terms of business status (closures) and turnover losses during the period analysed, and in terms of liquidity conditions. In July 2000, the liquidity situation improved significantly, with the improvement being more pronounced in firms that benefited from aid (Manteu et al., 2020).

The need to diversify aid is demonstrated by the results of Buchheim et al. (2020), who show that relatively weak pre-crisis companies in Germany were hit harder and tended to opt for more drastic mitigation strategies, in particular reductions in employment and investment.

A systematic literature review conducted by Dvoulety et al. (2021) indicates that in EU countries, government support for enterprises positively impacts firms' survival, employment, sales volume, labour productivity and the total productivity of production factors. However, these authors point to differences due to the different time horizon of the analyses (considering short-term and long-term effects) and the importance of factors such as company size, lifespan, region of operation, sector, and scope of support.

Based on a study of 1,151 Dutch firms, it has been shown (Groenewegen et al., 2021) that state aid is mainly directed to better managed entities that, at the same time, expect their revenues to deteriorate with a high level of uncertainty. This means that COVID-19 pandemic aid tends to go to firms that need it most and are more likely to be profitable in the long term, as indicated by the high quality of their management practices.

A comparative analysis of the size of employment in relation to the size of state aid received indicates that pandemic support was distributed quite efficiently, i.e. towards "deserving" firms and only marginally towards "zombie" and unprofitable firms. At the same time, these studies show that support had limited impact on productivity changes. Larger or older firms and firms providing hotel and catering services were more likely

to receive support. The likelihood of receiving support was higher for domestic or developing businesses, and support was more likely to reach firms in less developed regions. In terms of the relative size of support, it appears that more productive firms received relatively lower subsidies. These studies show that relatively rapid and effective state aid is likely to have reduced not only the long-term impact of the pandemic on the labour market, but also on production and productivity.

Methodology and data

The aim of the study is to evaluate the support provided in 2020 to companies affected by the economic impact of the COVID 19 pandemic. In particular, the analysis was devoted to answering two questions – whether the support was properly addressed and whether the amount of aid provided was adequate to the needs.

The first question addressed was whether the companies that received aid in 2020 prior to the pandemic were in a worse situation than the rest of the surveyed group. A positive answer to this question could provide justification for the aid provided by the state. Carrying out this part of the analysis required a comparison of basic indicators of financial situation in two groups of enterprises (those that received aid and those that did not). For this purpose, indicators such as ROA, ROE, CR, total debt ratio, sales revenue, employment costs and number of employees were used. The adopted set of indicators was aimed at describing the financial situation of the studied entities. The further part of the study was also aimed at identifying measures taken by enterprises to minimise the impact of the pandemic on their financial standing by reducing employment or wages. The use of two ratios in the profitability analysis (ROA and ROE) resulted from the fact that in the further part of the research significant changes in the level of debt ratios were found, which could cause different reaction of the return on equity and return on assets ratios. The non-parametric Mann–Whitney test for independent samples was used to determine whether the differences in the level of the ratios studied could be considered statistically significant. The choice of this method resulted from the fact that all analysed variables were not characterised by a normal distribution – which was found using the Shapiro–Wilk test. Therefore, more precise parametric tests could not be used. The study was supplemented with an analysis of aid distribution considering the division into quartiles determined for individual measures of financial condition.

It was then examined whether the impact of the pandemic on the condition of the surveyed enterprises was significant in the case of both surveyed groups – for this purpose the Wilcoxon signed rank test for dependent samples was used, which was determined for each of the surveyed groups separately. This part of the study was aimed at determining whether the aid granted by the state was adequate to the needs. In a situation in which the condition of the supported entities significantly deteriorated in comparison with the control group, it could mean that the aid was insufficient. On the other hand, if the aid obtained caused the condition of the supported entities to

significantly strengthen in relation to the control group, it would mean that the aid was too high. In order to finally determine whether the state support granted affected the competitiveness of enterprises, the dynamics of the indicators of the financial position of both groups of entities in 2019–2020 were compared. For relative values such as ROA, ROE or CR indicators, the dynamics was determined as the difference between the value of the indicator in 2020 and the value in 2019. For absolute indicators taking positive values, indices were used as a measure of dynamics. To test the significance of differences in changes of the condition of entities covered and not covered by support, the Mann–Whitney test was used.

The data used in the study comes from two sources. The first one is the Orbis database, which was used to select the largest companies in Poland. The qualification rules applied were consistent with the guidelines adopted in the regulations defining the permissible purpose and scope of the aid for large companies (PFR, 2020). This made it possible to select 1,201 companies from the Orbis database, which jointly met the following criteria (according to data as at the end of 2019): 1) minimum turnover of EUR 50 million, 2) minimum total assets of EUR 43 million; 3) minimum 250 employees. This list does not include entities from the banking and insurance sectors. For the 1,201 largest Polish companies, information on aid granted to these entities in the last three years was obtained from the Office for Competition and Consumer Protection. From these data only those measures were selected which were granted in connection with the COVID-19 pandemic. The statistics of state aid granted in connection with COVID for the selected companies are shown in Table 1.

Table 1. Number of large entities in Poland and amounts of granted COVID aid
in 2020 and 2021 (million PLN)

	Number of companies that received aid		
	Year 2020	Year 2021	Years 2021 and 2022 jointly
Number of companies with COVID aid	172	138	231
Number of companies without COVID aid	1,029	1,064	970
Total	1,201	1,201	1,201
	Aid amount in million PLN		
	Year 2020	Year 2021	Years 2021 and 2022 jointly
A1. Subsidies	128.1	169.7	297.8
A2. Tax credits	8.7	155.4	164.1
B1. Capital infusion	1,126.3	0.0	1,126.3
C1.1 Preferential loans	523.1	262.7	785.8
C2. Deferrals and repayments in instalments	0.2	8.3	8.5
D1.2 Guarantees	346.0	334.6	680.6
Total	2,132.4	930.8	3,063.2

Source: Authors' own study.

The number of large companies that received COVID aid was 172 companies in 2020, which is 14.3% among the largest Polish companies identified in the Orbis database. A limitation of the study may be the identification of all large companies in Poland. If an entity meets the criteria of a large company and is not present in the

Table 2. Descriptive statistics of economic and financial data and indicators used in the study for 2019 and 2020 (thousand PLN)

Variable	N	Mean	Std. Dev.	Min	Pctl. 25	Pctl. 50	Pctl. 75	Max
Year 2019								
ROE using Net income (%)	1,167	10.6	39.2	-527.9	3.9	10.8	19.2	269.6
ROA using Net income (%)	1,200	5.1	9.1	-97.1	1.6	4.5	8.5	90.7
Gearing (%)	1,074	68.4	101.3	0.0	9.3	33.8	88.0	863.3
Sales (thou. PLN)	1,201	1,673,186.4	4,738,774.6	510.0	390,938.0	664,855.0	1,292,474.0	111,203,000.0
Fixed assets (thou. PLN)	1,201	984,068.4	3,671,101.5	6,952.0	122,143.0	233,724.0	550,605.0	65,055,000.0
Number of employees	1,202	1,896.6	4,195.6	250.0	491.0	811.5	1,680.5	68,159.0
Costs of employees (thou. PLN)	826	165,497.9	448,703.8	8,487.0	37,497.0	65,115.0	129,912.0	5,594,000.0
Solvency ratio (Liability based) (%)	653	49.2	26.4	0.1	28.1	47.9	69.9	100.0
Ordinary dividends (thou. PLN)	133	-25,980.8	90,970.3	-639,500.0	-3,393.0	0.0	0.0	0.0
Year 2020								
Gross total PLN aid 2020	172	12,397.7	117,856.1	0.1	141.1	1,356.9	3,609.4	1,544,771.6
ROE using Net income (%)	1,058	8.1	57.5	-881.4	3.9	10.5	19.6	656.6
ROA using Net income (%)	1,088	5.3	10.2	-95.3	1.4	5.0	9.2	72.1
Gearing (%)	976	67.6	103.3	0.0	9.7	36.2	80.3	850.2
Sales (thou. PLN)	1,089	1,682,676.9	4,503,754.9	77,525.0	405,596.0	647,551.0	1,244,882.0	86,180,000.0
Fixed assets (thou. PLN)	1,089	1,063,088.1	4,116,354.4	2,442.0	131,331.0	242,308.0	592,716.0	66,498,000.0
Number of employees	1,035	1,929.1	4,437.2	202.0	475.0	801.0	1 664.0	70,750.0
Costs of employees (thou. PLN)	750	176,015.4	498,082.3	8,593.0	38,919.0	67,320.5	128,734.8	5,951,300.0
Solvency ratio (Liability based) (%)	564	50.8	26.3	0.1	29.3	49.8	71.9	99.9
Ordinary dividends (thou. PLN)	132	-133.7	1,535.8	-17,645.0	0	0	0	0

Source: Authors' own study.

Orbis database, it has not been included in the survey. We are not able to verify the completeness of entities in a simple manner, but their number indicates that the list is close to the actual situation within the Polish economy. For the analysis, information from financial statements published as part of the disclosure obligations of companies listed on the Warsaw Stock Exchange and, in the case of other companies, in connection with disclosure obligations to the Registry Courts was used. The descriptive statistics of the data used in the study from the financial statements for the financial year ending 2019 and 2020 and the ratios calculated on their basis are summarised in Table 2. The table also provides the average size of employment and the amount of assistance from COVID-19 restrictions in 2020.

Research findings and discussion

In line with the description of the methodology presented earlier, the first research question was whether the aid granted by the state had been properly addressed. To answer this question, we analysed the basic parameters of the financial condition of the aided enterprises just before the pandemic, comparing them with similar values determined for enterprises that did not receive aid. It was then examined whether the values of the financial condition indicators for the entities that received support were statistically significantly different from those for the control group. The results of the analyses are presented in Table 3.

Table 3. Financial standing of the surveyed entities

	Without aid Median	With aid Median	Mann–Whitney test	
			Z	p
ROE	11.3%	8.92%	2.709	0.0068
ROA	4.87%	3.41%	4.054	0.0001
CR	1.33	1.15	3.020	0.0025
Overall debt ratio	28.14%	86.49%	-8.408	0.0000

Source: Authors' own study.

The data in Table 3 show that both the return on equity and return on assets of the entities that received anti-COVID shields in 2020 were significantly lower than for the control group. A similar situation applies to the level of the current liquidity ratio. Prior to the outbreak of the pandemic, aid beneficiaries were also characterised by debt levels more than four times higher than those of unaided entities. Considering the Mann–Whitney test values, it should be stressed that all the differences found in the level of financial condition parameters were statistically significant. These results are consistent with the findings of Bennedsen et al. (2020) for Danish companies and Manteu et al. (2020) for Portuguese companies, who found that the aid was mainly targeted at entities that showed liquidity deterioration. At the same time, the fact that

aid went mainly to firms that were characterised by high indebtedness confirms the postulates indicating that aid should be directed primarily to those entities that suffer from the negative effects of the shock (Motta & Peitz, 2020).

A more detailed analysis of the allocation of aid under the anti-COVID shields can be made by examining the distribution of aid in relation to the value of individual financial standing indicators (Table 4).

Table 4. Distribution of aid by basic characteristics of financial condition

Quartile	ROA	ROE	CR	Change in fixed assets	Employment	Sales	Debt
1	30%	27%	24%	23%	28%	25%	8%
2	34%	33%	39%	26%	20%	21%	14%
3	27%	27%	26%	24%	25%	26%	31%
4	9%	13%	12%	27%	26%	28%	47%

Source: Authors' own study.

Table 4 shows that of all the entities that received aid, 30% were in the first quartile of companies in respect of ROA and 27% were in the first quartile in respect of ROE. The most aided companies were in the second quartile in both ROE and ROA. A similar observation can be made in the case of ranking enterprises in order of their current liquidity ratio. The presented analysis shows that the most supported entities were not those belonging to the group of 25% of companies with the lowest liquidity, but enterprises belonging to the second quartile. Considering criteria reflecting the size of the business, such as sales volume or employment level, it is difficult to unequivocally identify the group of entities that have received the most support. It is different in the case of the debt level. The analyses presented clearly show that support was addressed mainly to entities with high indebtedness. Summing up the analyses carried out, it can be concluded that aid related to COVID-19 was intended mainly for entities at risk of insolvency, and to a lesser extent for low-profit companies at risk of losing financial liquidity. These results indicate that it was the level of debt that was the primary differentiating factor between firms that received pandemic aid. Our findings are consistent with the results of Ivashina and Scharfstein (2010) according to which aid goes to entities with the greatest difficulties in obtaining debt financing. Companies with a high level of debt generally have greater difficulty in obtaining new debt, and hence the rationale for support for this group of companies. This thesis is confirmed by the fact that, apart from the largest beneficiary of aid to large enterprises, namely PLL LOT, which benefited from recapitalisation, most enterprises received support in the form of loans and guarantees. This form of aid has replaced market-based debt financing.

In the second part of the study, an attempt was made to answer the question whether the pandemic significantly affected the financial condition of enterprises in both groups. For this purpose, the Wilcoxon signed rank test was used, the results of which are presented in Table 5.

Table 5. Results of the Wilcoxon test for the indicators values of the studied entities in 2019–2020

Group	Non-aided enterprises		Aided enterprises	
Indicator	Z	p	Z	p
ROE	-0.059	0.9532	0.598	0.5497
ROA	-1.936	0.0529	0.149	0.8815
CR	-5.884	0.0000	-2.116	0.0343
Debt ratio	2.763	0.0057	1.404	0.1605
Sales	-1.252	0.2107	2.27	0.0232
Employment cost	0.023	0.3207	1.52	0.1285
Labour cost	-8.222	0.0000	-0.25	0.8025
Fixed assets	-4.071	0.0000	-1.64	0.1009

Source: Authors' own study.

The data presented in Table 5 show that the pandemic did not have a significant impact in both groups of the studied entities on the level of return on equity and sales volume. However, in the group of non-aided entities the level of return on assets increased significantly (at $\alpha = 0.1$ significance level), while in the case of aided entities the increase in this indicator was not statistically significant. This means that in the case of non-aided companies the profitability of assets increased, while state-supported companies did not record a significant improvement in this area. Similarly, in the non-aided group there was a significant reduction in the debt ratio, while aided enterprises did not significantly reduce their debt. The analysis of such indicators as labour costs and fixed assets shows that unaided firms have fared well in the pandemic period by significantly increasing their employment expenditure and net fixed assets. In the group of aided firms, however, no significant change was observed in either of these two figures, which may indicate some kind of stagnation. The indicator that improved significantly for both groups of entities was the current liquidity ratio. In contrast, the aided enterprises experienced a significant decline in sales volume while there was no significant change in sales volume in the unaided group. To conclude this part of the study, it has to be said that the aided companies, despite the support they received, coped somewhat worse with the economic impact of the COVID-19 pandemic. The question arises, therefore, whether the aid granted by the state was sufficient to maintain the *status quo* of entities requiring support. An adequate level of aid should be one that is high enough not to allow the situation of the aided entities to deteriorate significantly, but at the same time does not distort competition. Table 6 presents the impact of the pandemic on the dynamics of basic parameters of financial condition of entities considering the division into companies that received state aid and companies that did not benefit from state aid. In addition, an attempt was made to answer the question of whether the impact of the pandemic was similar for both groups of entities. For this purpose, the non-parametric Mann–Whitney test was used.

Table 6. Influence of the pandemic on the dynamics of basic measures of financial condition of economic entities

	Not supported entities (median value of indicator)	Supported entities (median value of indicator)	Z	p
ROE dynamics	0.19	0.06	0.468	0.6398
ROA dynamics	0.28	0.12	0.943	0.3458
CR dynamics	0.04	0.03	0.806	0.4202
Sales dynamics	0.01	-0.02	2.847	0.0044
Labour costs dynamics	0.04	0.02	0.296	0.7675
Employment dynamics	0.00	-0.01	1.479	0.1392
Debt dynamics	-0.02	-0.02	0.326	0.7442
Wages dynamics	1.04	1.03	1.513	0.1302

Source: Authors' own study.

Assessing the dynamics of median indicators of financial condition of aided and not aided companies (Table 6), it can be seen that the parameters characterising the change in the situation of the first group are slightly better. However, the analysis of Mann–Whitney test results leads to the conclusion that the differences found in the dynamics of financial indicators of both groups are not statistically significant in most cases. The only exception here is the sales growth rate, which was negative in the case of the aided enterprises while it was positive in the group of firms that did not receive aid. The conclusion is therefore that, thanks to the aid provided, companies that were in a weaker position before the pandemic managed to maintain the *status quo* in relation to stronger players. This therefore contradicts the thesis put forward by Santarelli and Vivarelli (2002) that aid goes to entities that would cope without additional support.

Conclusions

The analyses carried out allow us to conclude that aid to large enterprises registered in Poland was addressed properly – it was granted to companies that were in a worse financial situation. It should be stressed, however, that aid was more often granted to entities in the second quartile in terms of financial condition measured by liquidity and profitability ratios than to those classified in the first quartile. This may mean that companies with a low probability of survival have not received aid. An alternative explanation for this phenomenon is the low level of activity in applying for aid by firms characterised by a very weak financial condition.

The fact that the aid provided was not too great is evidenced by the fact that there was a significant improvement in the financial situation of enterprises that did not receive aid – while in the case of supported enterprises the changes in most

parameters were statistically insignificant. Therefore, the aid granted allowed the *status quo* to be maintained. This conclusion is confirmed by the fact that comparing the dynamics of indicators in the case of most of the analysed values there were no significant differences between the two groups of entities. Only in the case of sales dynamics there was a statistically significant difference between entities which received support and those which did not receive aid to the disadvantage of the former. It can therefore be concluded that the aid granted by the State did not cause either excessive improvement in the situation of supported entities or its significant deterioration in relation to entities without aid – it therefore seems that its scale was adequate to needs.

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