Chapter 6

Determinants of Financial Performance In Energy Companies: A Comparative Analysis Before And After Covid-19

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Abstract

The COVID-19 pandemic has had significant economic impacts worldwide. The pandemic has also caused serious effects on businesses, which are one of the key elements of the economy. Although a few sectors benefited from the pandemic, the majority experienced significant negative impacts. One of the sectors affected by the pandemic is the energy sector. The energy sector stands out as an important industry due to its role in sustaining daily life and its direct and indirect connections with other sectors. Based on this, this study investigates the impact of the COVID-19 pandemic on the determinants of the financial performance of businesses in the energy sector. The data for the study were compiled from the financial statements of the 20 largest energy companies by market capitalization listed on the U.S. stock exchanges, and these data were analyzed using the multiple linear regression analysis method. The results of the study reveal that the COVID-19 pandemic had significant effects on the determinants of financial performance in energy companies.

1. Introduction

In times of global peace, the COVID-19 pandemic precipitated one of the most severe and rapid contractions in economic activity in modern history. However, the extent of this impact varied greatly across different sectors of the economy. While some sectors seized the opportunities that emerged during the pandemic and strengthened, many others suffered considerable setbacks due to its negative effects (European Commission, 2021: 1). For example, the surge in interest in digital platform services—

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allowing individuals to access diverse content without physical and temporal restrictions—was driven by the lockdowns. This led to a positive impact on the information technology sector (Erdem et al., 2023: 93). In contrast, the transportation sector, unlike the IT sector, was severely affected as lockdown measures brought transportation activities to a near halt.

The pandemic had a profound impact on most sectors, especially the service sector. The industries most affected were those that rely heavily on personal interaction, such as retail, hospitality, transportation, arts, and entertainment. At the peak of the first wave in the second quarter of 2020, economic activity in these sectors across Europe fell 25% below pre-COVID-19 levels. In contrast, sectors requiring less physical contact between customers or employees, such as manufacturing and construction, were relatively less affected. For example, the manufacturing sector saw a 17% contraction during this period, while the construction sector experienced a 13% contraction. On the other hand, sectors involving highly skilled workers and those more adaptable to remote work, such as information and communication technologies, finance, and real estate, were moderately impacted, with most showing a contraction of less than 5% (Canton et al., 2021: 2). Figure 1 illustrates the impact of the pandemic on various sectors across Europe from different perspectives, including sectoral value added, employment, and working hours.

*Figure 1: Changes in Sectoral Value Added, Employment, and Working Hours, EU27 Average*
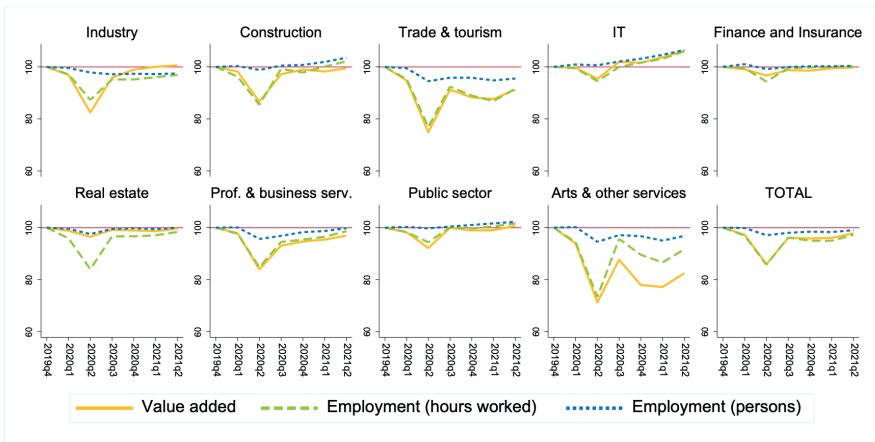
Source: (Canton vd., 2021: 2).

An analysis of Figure 1 reveals that, although sectors across Europe responded differently to the pandemic, as noted earlier, there was an overall significant decline in the relevant indicators. Notably, one of the sectors most affected by the pandemic was the industrial sector, which includes many subsectors, with manufacturing being one of the most prominent. Among these subsectors is the energy sector.

Since energy is a fundamental input for almost all sectors, the energy sector is closely intertwined with other industries. In recent years, factors such as the rapid advancement of technological developments, the dependence of these developments on energy, and the increasing use of automation in production processes have led to a growing global reliance on energy. As a result, energy demand has reached very high levels annually (Sevim, 2014: 1). Therefore, considering its strong ties with other sectors, the energy sector, like the industrial sector, was significantly impacted by the pandemic.

The most significant impact of the pandemic on the energy sector has been a substantial decline in the demand for primary energy resources. The restrictions imposed worldwide during the pandemic brought many sectors, particularly transportation, to a standstill, leading to a drastic reduction in energy demand, which is a crucial input for these industries. For example, approximately 60% of global oil demand originates from the aviation sector. Consequently, the near cessation of the aviation industry due to the pandemic severely impacted global oil demand. By the end of 2020, global oil demand had contracted by 8.8% (Sevim, 2021: 3).

However, it is also true that the pandemic created opportunities, especially for renewable energy. During this period, renewable energy sources—such as wind, solar, geothermal, and biomass—were less affected by the pandemic and began to experience increased demand (Gollakota and Shu, 2023: 94). The effects of the pandemic on global energy demand are summarized in Figure 2.

Figure 2: Distribution of Energy Demand (Comparative 2019-2020)
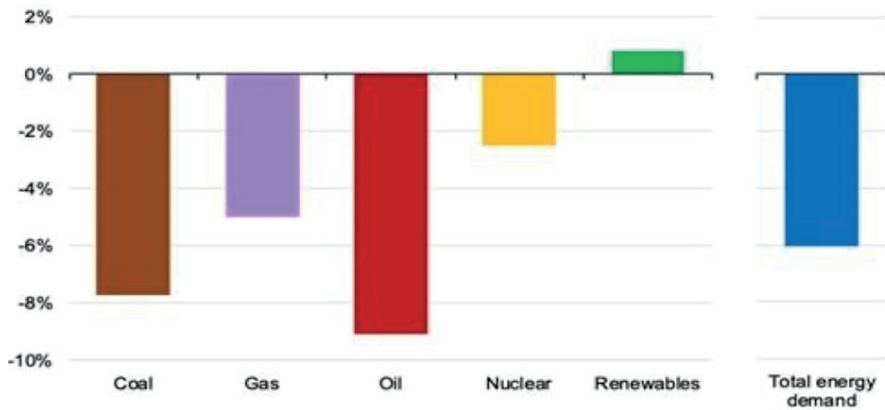
Source: (World Energy Council Turkey, 2020: 1).

As can be seen from the information presented in Figure 2, global energy demand showed an overall decrease of approximately 6% in the first quarter of 2020 compared to 2019, while demand for renewable energy experienced an increase.

The COVID-19 pandemic has had widespread negative effects across various sectors, as previously noted. Assessing these impacts from the perspective of firms is essential, as their performance and condition reflect the severity of the pandemic's effects on each industry. However, when assessed independently of specific sectors, similar factors can be identified as contributing to the negative effects of the pandemic on firms. These factors can be summarized as follows (Deloitte, 2020: 1).

- Declining and unpredictable demand and the deteriorating supply chain create cash and working capital problems in businesses,

- Suppliers failing to deliver critical components to manufacturers, delaying or completely halting the production process,

- The downturn in consumer demand is causing businesses to build up their inventories, making it increasingly difficult for them to clear their inventories,

- Difficulties in collecting receivables from cash-strapped customers on time,

- Delays in supplier payments due to short-term cash flow constraints,

- The fact that post-dated cheques, which play a critical role in commercial life and are used as a receivable financing method, cause serious collection problems due to cash flow problems in this period,

- Because post-dated cheques are used as collateral by businesses, they have certain legal consequences in case of non-payment.

As outlined, the pandemic has significantly disrupted businesses across various sectors, leading to severe negative impacts on their operations and performance. So much so that as of August 2020, it was reported that more than 3 million employees lost their jobs only in the energy sector worldwide (Acar and Saygın, 2020: 3).

As of today, it is seen that businesses are now gradually emerging from the negative effects of the pandemic. Of course, the effects of the damage caused by the pandemic cannot be expected to disappear immediately. However, it should also be considered that businesses are now returning to normal operating processes. During the pandemic process, the impact of the process on businesses has been addressed by many researchers around the world and many findings regarding the period have been put forward. Since a certain period has passed since the pandemic period, it is now important to carry out studies comparing the pre-pandemic and post-pandemic period on various issues such as what are the real effects of the damage caused by the pandemic on businesses and to what extent businesses can recover from the impact of the pandemic.

In this sense, one of the most focused issues for businesses is financial performance. There are many internal and external factors affecting the financial performance of companies. For example, the management structure, liquidity status and capital structure of companies can affect performance, while factors such as gross product, inflation and interest rates can also affect business performance. The pandemic process may have revealed different situations in terms of the effects of these factors on business performance. Considering that the pandemic has caused changes in the operating structures or ways of doing business, it is a question that needs to be investigated whether a factor that is or is expected to be effective on financial performance before the pandemic affects the performance to the same extent after the pandemic. From this point of view, this study investigates the impact of the COVID-19 pandemic on the determinants of the financial performance of companies in the energy sector. For this purpose, in the next part of the study, firstly, the literature on the subject will be presented, and then the study will be completed by presenting an analysis on whether the impact of the financial performance determinants on financial performance in energy companies varies between pre-and post-pandemic periods..

2. LITERATURE REVIEW

2.1. Financial Performance in Energy Companies

Financial performance is an important indicator for the interest groups of the businesses. For this reason, financial performance has been the subject of many studies. Due to the increasing importance of the energy sector over the years, especially in recent years, the number of studies examining financial performance in companies operating in the energy sector has been increasing. Most of these studies focus on the internal and external factors affecting these measures by considering different financial performance measures specific to the energy sector. For example, in their study Luts et al. (2021), focusing on renewable energy firms in Germany and revealed that factors such as current ratio, leverage ratio, firm size, and gross domestic product (GDP) have different effects on different financial performance measures. In the study conducted on 783 firms using panel data analysis method, it is stated that the effect of firm-based (endogenous) determinants on performance is higher than the effect of industry and economy-based (exogenous) determinants. It is also revealed that the current ratio has a positive effect on return on assets (ROA) in small and medium-sized companies (SMEs) and a negative effect on return on equity (ROE) in large companies, while the leverage ratio has a positive effect on financial performance in large companies with the luxury of taking risks. For GDP has a positive effect on ROA especially in small enterprises.

In their study on the determinants of the performance of energy firms in Portugal, Neves et al. (2021) used different financial performance metrics—such as ROE for shareholders, EBITDA for managers, and ROA for other stakeholders—reflecting the expectations of various stakeholders on financial performance. Their findings indicated that different internal determinants have varying effects on different performance measures. In the study, which analyzed data from 457 firms using the GMM model, it was found that leverage and size have a negative effect on ROA, while leverage and liquidity have a positive effect on ROE. For EBITDA, leverage has a positive effect, whereas liquidity has a negative effect. Bunea et al. (2019) conducted a study using ANOVA and linear regression models on 1253 firms operating in the energy sector in Romania and found that leverage ratio has a negative effect on ROE for small firms and a positive effect for medium and large companies, while asset turnover ratio has a positive effect for all business groups. Westerman et al. (2020), in their study conducted using regression analysis on 129 energy firms from 19 European countries, investigated the determinants of financial performance

through a comparative analysis of conventional and renewable energy firms. Unlike other studies, in addition to ROA, they used the Tobin's Q ratio, a market-based financial performance measure. The study's results indicated that, considering Tobin's Q, the performance of renewable energy firms was better than that of conventional firms. Additionally, leverage and firm size had a negative effect on performance in both firm groups, while GDP and inflation rates had no significant effect.

Hussain et al. (2021) conducted a study on the determinants of financial performance on 21 energy companies listed on the Pakistan Karachi Stock Exchange using panel data analysis method and found that receivables turnover and inventory turnover do not have a significant effect on financial performance as a different finding from other studies. Jin et al. (2021) conducted a financial efficiency research with the data of 122 firms using data envelopment analysis in their study considering businesses operating in China on energy conservation and environmental protection. In the study where ROE and EBITDA are used as financial performance measures, it is stated that leverage, GDP and inflation have a negative effect on financial efficiency, while firm size has a positive effect. Gupta (2017) conducted a study on 9799 alternative energy firms from 26 countries and investigated the determinants of financial performance using panel data analysis method. As a result of the study, it is stated that leverage and GDP have a negative effect on financial performance, while firm size has a positive effect.

2.2. Financial Performance in Businesses in the Context of COVID-19 Pandemic

Since it is an important indicator in terms of evaluating the situation of businesses, financial performance has been one of the important focal points of researchers in studies investigating the impact of the COVID-19 pandemic on businesses. In many studies, the effects of the pandemic on businesses have been tried to be revealed through financial performance. For example, in their study aimed at revealing the impact of COVID-19 on businesses through financial performance, Shen et al. (2020) found that the pandemic had a negative effect on business performance in China, and this effect was notably more significant in small-scale businesses. Atayah et al. (2021) examined the impact of COVID-19 on the financial performance of logistics firms in G-20 countries, aiming to compare these firms' financial performance during the pandemic. In the study, which used financial performance indicators such as ROA and ROE, it was found that in 14 of the G-20 countries—except for Germany, South Korea, Russia, Mexico, Saudi Arabia, and the United Kingdom—financial performance in the relevant

sector generally increased significantly during the pandemic, while firms in the other six countries were financially negatively affected during the same period. Also, Ataman et al. (2022) investigated the impact of the pandemic on sectoral performance in Turkey and found that assets, equity and net sales increased in the energy sector during the pandemic period, while net profit, net profit margin and return on assets decreased similar to other sectors. Emirhan and Sakin (2021) analysed the effects of the COVID-19 pandemic on the profitability ratios of firms traded on the stock exchange. In the study of 153 firms, the Du Pont method, a widely known tool for analysing the profitability of firms, was used and return on equity (ROE) was calculated based on total asset turnover (TAT), net profit margin (NPM) and equity multiplier (EM). These ratios were used as variables in the dynamic panel data model applied in the study. The results revealed noteworthy findings that differ from other studies. In the sample that included all firms, the dummy variable representing COVID-19 had a positive effect on ROE but a negative effect on ROA and NPM, with the negative effect on NPM being particularly reported. Furthermore, in the analysis of manufacturing firms, the COVID variable had a negative effect on both ROE and ROA, while surprisingly showing a positive effect on NPM. In the analysis of non-manufacturing firms, COVID had a negative impact on NPM and ROA but a positive impact on ROE. The positive effect on the NPM of manufacturing firms could indicate that these firms managed their costs more efficiently during the pandemic. On the other hand, the negative effects on ROE and ROA might suggest inefficient management of assets and equity.

Alsamhi et al. (2022) examined the effects of the COVID-19 pandemic on the financial performance of firms operating in the construction, tourism and hospitality, food and consumer sectors in India. In the study, comparative analyses were conducted on 371 firms traded on the Bombay Stock Exchange before and after the pandemic, and it was found that while significant decreases in revenue, net sales and profits were observed especially in the tourism and hospitality sectors after the pandemic, the food sector was relatively less affected by the pandemic. Ngo and Duoung (2024), in their study examining the effects of the COVID-19 pandemic on the financial performance of companies operating in different sectors in Vietnam with the difference-in-difference method on 402 firms, revealed that the pandemic caused a significant decline in ROA and ROE of companies. In addition, it was stated that sectors such as retail, construction, real estate and tourism were more negatively affected compared to other sectors. In her study, Valaskova (2023) aimed to analyze the impact of the COVID-19 pandemic on the financial performance of businesses in Slovakia. Using financial

data from the years 2018 to 2021, the research examined the effect of the pandemic on companies' debt ratios. As a result of the analyses conducted using the Friedman test, statistically significant differences were found across the years in critical indicators such as the total debt ratio, equity-to-debt ratio, and financial independence ratio. The study revealed that the pandemic particularly had a negative impact on the debt levels of firms in 2020 and 2021. These findings indicated that companies need to strengthen their long-term financial resilience.

It can be said that the number of studies on the subject directly focusing on the energy sector is relatively less. In this sense, Fu and Shen (2020) investigated the impact of COVID-19 on business performance through companies operating in the Chinese energy sector. In the study, it was stated that the pandemic had a negative impact on the financial performance of companies operating in the energy sector. In some studies, as in this study, the issue has been addressed by associating the determinants of financial performance in energy companies with the COVID-19 pandemic. Makki and Alqahtani (2023) examined the impact of the COVID-19 pandemic on the financial performance of companies in Saudi Arabia's energy sector. The study evaluated changes in financial performance before, during, and after the pandemic by analyzing data from 2019, 2020, and 2021. Using a hybrid Multi-Criteria Decision Making (MCDM) approach, the performance of companies was analyzed across four main financial dimensions: efficiency, profitability, leverage, and liquidity. The results indicated that during the pandemic, the most important financial dimensions were efficiency and profitability, while leverage and liquidity were of lesser importance. In their study, Nurlia et al. (2023) conducted a comprehensive analysis of the global impacts of COVID-19 on energy sector companies. The analysis considered company characteristics, market distinctions (developed and emerging markets), and sector differences (fossil fuels and alternative fuels). Using panel data analysis, the study examined the financial statement data of 1,252 companies across 64 countries from 2018 to 2022. The findings revealed that COVID-19 had a negative impact on the performance of energy sector companies across all market and sector categories. Furthermore, the results emphasized that company characteristics, such as size, liquidity, and capital structure, played a significant role in shaping the performance outcomes of energy sector companies.

3. DATA AND METHODOLOGY

When creating the dataset for the study, a literature review was first conducted to identify the most suitable variables for the purpose of the study.

Upon reviewing the relevant literature, it was observed that various variables have been used in similar studies for measuring financial performance, as well as for assessing the internal and external factors affecting financial performance. However, when evaluated generally, it is noteworthy that studies tend to prefer the ratios of return on assets and return on equity for measuring financial performance. As for the internal factors affecting financial performance, financial ratios such as the current ratio in terms of liquidity, leverage ratio (total debt ratio, debt/equity ratio) in terms of capital structure, and accounts receivable turnover and inventory turnover in terms of asset utilization efficiency are commonly used in the studies. Regarding firm size, total assets and total sales are typically preferred. As for the external factors affecting financial performance, it can be said that studies generally favor gross domestic product and inflation rate. Based on this, information about the variables decided to be used in the study is summarized in Table 1.

Table 1: Information on the Variables Used in the Study

Variable	Defination	Source
Return on Assets (ROA)	Net Profit/Total Assets	Luts vd. 2021, Neves vd. 2021
Cari Oran (LİQ)	Total Current Assets/Total Current Liabilities	Nurlia vd. 2023, Hussain vd. 2021
Debt to Equity Ratio (LEV)	Total Liabilities/Total Shareholders' Equity	Valaskova 2023, Luts vd. 2021
Inventory Turnover Rate (ITR)	Cost of Sales / Average Inventories	Hussain vd. 2021
Business Size (lnTA)	Natural Logarithm of Total Assets	Gupta 2017, Neves vd. 2021
Gross Domestic Product (DGDP)	Growth of Gross Domestic Product	Jin vd. 2021, Luts vd. 2021
Inflation (DINF)	Inflation Rate Growth (Consumer Prices)	Westerman vd. 2020, Jin vd. 2021

In the study, a dataset concerning the variables presented in Table 1 was created using information from the financial statements of the 20 largest energy firms by market value listed on American stock exchanges (NYSE, NASDAQ, NASDAQ Other OTC, NYSE MKT). The financial statement data for the relevant companies were compiled from the Macrotrends website. The dataset was structured to include quarterly data for two distinct periods: the pre-COVID-19 period from 2016 to 2018 and the post-COVID-19 period from 2021 to 2023. In this context, data from the years 2019 and 2020, when the pandemic was impactful, were excluded from the analysis.

The study employed multiple linear regression analysis as its methodological approach. Regression analysis, in its broadest definition, is a statistical method that examines the numerical relationship between dependent and independent variables. The application of regression analysis can vary based on the number of variables used in the analysis. If there is one dependent variable and a single independent variable affecting it, simple regression is applied. Conversely, if there is one dependent variable corresponding to multiple independent variables, multiple regression analysis is used. Additionally, if the relationship between the variables is linear, the analysis is called linear regression analysis; if it is not linear, it is referred to as nonlinear (curvilinear) regression analysis (Deniz and Koç, 2019: 106).

A simple linear regression model is expressed as follows (Karabulut and Şeker, 2018: 1059):

$$Y = \beta_0 + \beta_1 X + \varepsilon \tag{1}$$

In Equation 1, Y represents the dependent variable, while X represents the independent variable. β_0 denotes the constant term (the value of Y when X=0), β_1 represents the regression coefficient (a measure of the change in the dependent variable corresponding to a one-unit change in the independent variable), and ε denotes the error term. Furthermore, a multiple linear regression model with multiple independent variables, for example, k independent variables, is expressed as follows (Deniz and Koç, 2019: 106; Karabulut and Şeker, 2018: 1059):

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots + \beta_k X_k + \varepsilon \tag{2}$$

In Equation 2, Y again represents the dependent variable, while X_1, ……, X_k represent the independent variables. β_0 denotes the constant term, β_0, ……, β_k are the unknown parameters, and ε represents the error term.

Moreover, there are certain assumptions that the relevant model must satisfy for the linear regression method to be applicable. These assumptions can be summarized as follows (Deniz and Koç, 2019: 106):

- It is known that the sample used is a random sample or largely represents the population.

- It is assumed that the dependent variable contains random errors and that the mean error is zero.

- Regression analysis does not encompass systematic errors.

- The variance of the error term is constant, and errors are not dependent on each other over time.

- There is no autocorrelation problem in the model. In other words, the error variance is constant and is assumed not to change between the data points.

- Errors follow a normal distribution.

- There is no multicollinearity problem among the variables, meaning that the independent variables are not related to each other.

Considering the determined data set and the applied method together, two regression models were established within the scope of the study, one for pre-COVID-19 and one for post-COVID-19. The regression models are as follows:

Model 1:

$$ROA_{prec} = \beta_0 + \beta_1 LIQ + \beta_2 LEV + \beta_3 ITR + \beta_4 lnTA + \beta_5 DGDP + \beta_6 DINF + \varepsilon_i$$

Model 2:

$$ROA_{postc} = \beta_0 + \beta_1 LIQ + \beta_2 LEV + \beta_3 ITR + \beta_4 lnTA + \beta_5 DGDP + \beta_6 DINF + \varepsilon_i$$

4. FINDINGS

As part of the findings of the study, descriptive statistics related to the variables will first be presented, followed by findings regarding whether the established models meet the necessary assumptions for the application of multiple linear regression analysis. Finally, the regression results related to the models will be presented and evaluated. Accordingly, Table 2 contains the descriptive statistics for the variables.

Table 2: Descriptive Statistics

Variables	Model 1			Model 2		
	Mean	Standard Deviation	Observation	Mean	Standard Deviation	Observation
ROA	,6232	2,63469	240	2,3464	1,97771	204
LIQ	1,4013	,83914	240	1,2373	,46286	204
LEV	,7564	,55505	240	,8579	,56011	204
ITR	3,1346	2,74457	240	3,4223	2,63998	204
DINF	1,9451	,56807	240	5,9639	2,11170	204
DGDP	,5875	,21645	240	,7306	1,07372	204
lnTA	10,6644	,90752	240	10,9372	,79938	204

When the descriptive statistics presented in Table 2 are evaluated overall, it is observed that the firms included in the study have higher asset profitability in the post-pandemic period compared to the pre-pandemic period, while their liquidity is lower. Additionally, regarding the capital structures of the firms, it is noted that their debt burdens have increased in the post-pandemic period, while their asset sizes have remained at similar levels. Furthermore, in terms of macroeconomic indicators, there is a noticeable positive growth in gross domestic product (GDP) in the post-pandemic period compared to before, while inflation shows a negative growth.

When evaluating whether the established regression models meet the necessary assumptions, the study first investigated whether the variables used in the relevant models follow a normal distribution. It was determined that all variables, in their utilized forms within the models, exhibit a normal distribution.

For issues of multicollinearity and autocorrelation, indicators such as inter-variable correlations, the Durbin-Watson autocorrelation test, and tolerance and VIF values related to the models were considered. Accordingly, as one of the indicators for detecting multicollinearity issues, inter-variable correlations were examined, and the findings from the correlation analysis are summarized in Table 3.

Table 3: Correlation Results Related to the Models

	ROA	CO	BÖS	SDH	DENF	DGSYİH	lnTA
Model 1							
ROA	1,000						
LIQ	-,229	1,000					
LEV	-,043	-,314	1,000				
ITR	,173	-,104	,138	1,000			
DINF	,301	-,099	-,044	,051	1,000		
DGDP	,090	-,082	-,028	,005	,235	1,000	
lnTA	,073	-,296	-,099	-,264	,048	,012	1,000

	ROA	LIQ	LEV	ITR	DINF	DGDP	lnTA
Model 2							
ROA	1,000						
LIQ	,174	1,000					
LEV	-,269	-,204	1,000				
ITR	,103	-,256	,101	1,000			
DINF	,488	,013	-,042	,165	1,000		
DGDP	-,155	,023	,078	-,030	-,284	1,000	
lnTA	-,096	-,098	-,374	,213	-,083	-,055	1,000

When examining the values in Table 3, it can be seen that there are no correlations among the variables used in the relevant models that would lead to a multicollinearity problem[2]. To detect whether there is an autocorrelation problem among the variables, the Durbin-Watson autocorrelation test was conducted. In this context, Table 4 contains both summary information regarding the models established in the study and the findings from the Durbin-Watson test results.

Table 4: Model Summaries

| Model | R | R^2 | Adjusted R^2 | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R^2 Change	F Change	df1	df2	Sig. F Change	
1	,405	,164	,143	2,43954	,164	7,628	6	233	,000	1,576
2	,591	,350	,330	1,61886	,350	17,662	6	197	,000	1,041

When examining the summary information in Table 4 related to the models, it is found that the Durbin-Watson test statistic values for both models fall between 1 and 3, indicating that there is no autocorrelation problem among the variables in the relevant models[3]. Additionally, when looking at the R^2 values presented in the table, it can be observed that the independent variables explain 16.4% of the variance in the dependent variable for Model 1 and 33% for Model 2.

In addition to meeting the assumptions from the perspective of regression analysis, another important aspect is determining whether the regression models established within the analysis are significant as a whole. Table 5 contains the findings from the variance analysis conducted as an indicator of the significance of the relevant models.

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2   The presence of correlations of 0.80 and above among the variables is considered an indicator of multicollinearity problems (Küçüksille, 2016: 267).

3   The fact that the Durbin-Watson test statistic value takes a value ranging between 1-3 is accepted as an indicator that there is no autocorrelation problem among the variables (Karasakaloğlu, 2022: 360).

Table 5: Variance Analysis Table Related to the Models

Model 1	Sum of Squares	Df	Mean Square	F	Sig.
Regression	272,382	6	45,397	7,628	,000
Residual	1386,661	233	5,951		
Total	1659,043	239			
Model 2	**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Regression	277,724	6	46,287	17,662	,000
Residual	516,277	197	2,621		
Total	794,001	203			

When examining the findings presented in Table 5, it is observed that the significance (sig.) value for both models is less than 0.05, indicating that the models established within the study are significant as a whole. The final analysis results related to the models established in the study are summarized in Table 6. The tolerance and VIF values included in the table are evaluated as indicators of whether there is a multicollinearity problem among the variables, similar to the correlation analysis. Accordingly, a VIF value below 10 and a tolerance value above 0.2 are considered indicators that there is no multicollinearity problem among the variables (Tonta, 2008: 30; Karasakaloğlu, 2022: 360; Yılmaz and Erdem, 2021). As can be seen from the information in Table 6, the VIF and tolerance values related to the relevant models meet the specified conditions. Therefore, considering both the inter-variable correlation values and the VIF and tolerance values, it can be confidently stated that there is no multicollinearity problem among the variables used in the models established in the study.

Table 6: Coefficients Table Related to the Models

Model 1	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Err.	Beta			Tolerance	VIF
Cons.	-1,743	2,438		-,715	,476		
LIQ	-,676	,216	-,215	-3,129	,002*	,758	1,319
LEV	-,562	,308	-,118	-1,825	,069	,852	1,174
ITR	,154	,061	,161	2,533	,012**	,889	1,125
DINF	1,222	,288	,263	4,245	,000*	,931	1,074
DGDP	,076	,752	,006	,101	,920	,939	1,065
lnTA	,078	,195	,027	,400	,689	,794	1,259
Model 2	**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**	**Collinearity Statistics**	
	B	Std. Err.	Beta			Tolerance	VIF
Cons.	5,187	2,011		2,580	,011		
LIQ	,516	,261	,121	1,978	,049**	,884	1,131
LEV	-1,100	,231	-,311	-4,768	,000*	,773	1,293
ITR	,102	,047	,136	2,172	,031**	,840	1,190
DINF	,402	,058	,429	6,952	,000*	,866	1,155
DGDP	-,033	,111	-,018	-,300	,764	,910	1,099
lnTA	-,481	,163	-,194	-2,949	,004*	,760	1,316

* It indicates that the coefficients are significant at 1% level.
** It indicates that the coefficients are significant at 5% level.

When examining the findings related to parameter estimates for the variables presented in Table 6, it is observed that the LIQ, ITR, and DINF variables have a significant effect on ROA in both models. However, the LEV and lnTA variables have a significant effect on ROA only in Model 2.

When the findings presented in the table are examined more comprehensively, it is observed that in Model 1, the LIQ variable has a significant negative effect on ROA, while the ITR and DINF variables have significant positive effects. Specifically, a one-unit increase in the LIQ variable results in a decrease of 0.67 units in ROA, whereas a one-unit increase in the ITR and DINF variables leads to increases of 0.15 (ITR) and 1.22 (DINF) units in ROA, respectively. In Model 2, similar to Model 1, the ITR and DINF variables have significant positive effects on ROA. However, while the LIQ variable had a negative effect on ROA in Model 1, it shows a positive effect in Model 2. Additionally, unlike Model 1, it has been determined that the LEV and lnTA variables also have significant

negative effects on ROA in Model 2. A detailed examination of the results of Model 2 reveals that a one-unit increase in the LIQ, ITR, and DINF variables results in increases of 0.51 (LIQ), 0.10 (ITR), and 0.40 (DINF) units in ROA, respectively. Conversely, a one-unit increase in the LEV and lnTA variables leads to decreases of 1.10 (LEV) and 0.48 (lnTA) units in ROA, respectively.

When the findings obtained from the study are compared with the literature, it is notable that the results align significantly with existing studies. A review of the literature reveals findings regarding the positive and negative relationships of liquidity with financial performance. For example, Neves et al. (2021) present findings indicating a negative effect of the current ratio on financial performance, while Gupta (2017) provides evidence of a positive effect of the current ratio on business performance. In this regard, when evaluating the findings of the study, it can be stated that the negative impact of liquidity on financial performance in the pre-pandemic period and its positive impact in the post-pandemic period is a finding consistent with the literature. Additionally, considering that liquidity-based difficulties became prominent during the pandemic, the findings obtained from the study can be interpreted as a shift from the approach of enhancing financial performance through low liquidity before the pandemic to an approach aimed at increasing financial performance through higher and more robust liquidity structures after the pandemic.

Similarly, when evaluating the impact of leverage on financial performance, it is noteworthy that, like liquidity, the literature reports both positive effects (Neves et al., 2021; Luts et al., 2021) and negative effects (Westerman et al., 2020; Bunea et al., 2019). In this regard, the finding from the study that the debt to equity ratio has a negative effect on financial performance can be said to be consistent with the literature. Furthermore, the significant manifestation of the negative effect of leverage on financial performance in the post-pandemic period can be interpreted as businesses preferring to adopt a more robust capital structure due to the adverse effects of the pandemic.

It is also observed that the findings related to inventory turnover and asset size are consistent with the literature. A review of the literature shows that there are findings indicating a positive effect of efficiency ratios on financial performance (Bunea et al., 2019), while business size is reported to have a negative effect (Neves et al., 2021; Westerman et al., 2020). In this regard, it can be stated that the lower flexibility of larger businesses compared to smaller ones has put larger businesses in a more disadvantageous position

in the short term during the transition from pandemic conditions to post-pandemic conditions.

When the literature is evaluated regarding the impact of inflation on financial performance, a similar situation is observed. The literature reports findings indicating both positive effects (Abreu and Mendes, 2001; Vong and Chan, 2006) and negative effects (Supriyono and Herdhayinta, 2019; Jin et al., 2021) of inflation on financial performance. Therefore, it can be stated that the finding from the study indicating a positive relationship between inflation and financial performance is consistent with the literature.

When all the findings obtained from the study are evaluated together, it can be stated that the COVID-19 pandemic has had significant effects on the determinants of financial performance in energy companies. In this regard, it can be said that the pandemic has brought liquidity and capital structure to the forefront in businesses within the energy sector, and the effects of these factors on financial performance have changed significantly between the pre-pandemic and post-pandemic periods. Specifically, the differing effects of the current ratio, considered a measure of liquidity, on financial performance before and after the pandemic can be regarded as an important indicator of this situation.

5. CONCLUSION

The COVID-19 pandemic stands out as one of the most significant events of the modern era in many respects. The pandemic has led to serious economic impacts on both micro and macro levels worldwide. The pressures created by the mandatory measures brought about by the pandemic have naturally reflected on businesses, which are important building blocks of the economy, in various ways. One of the sectors affected by the pandemic is the energy sector. The importance of the energy sector, both for the continuity of daily life and its relationship with other sectors, has made it a significant subject for research concerning the effects of the pandemic. In this context, this study has investigated the impact of the COVID-19 pandemic on the determinants of financial performance in energy companies.

As a result of the study, significant findings have been obtained regarding the determinants of financial performance in energy companies during the pre-pandemic and post-pandemic periods. Accordingly, it has been revealed that the LIQ, ITR, and DINF variables significantly affect the financial performance of companies in both the pre-pandemic and post-pandemic periods, while the effects of the LEV and lnTA variables on financial performance are only valid for the post-pandemic period. In

terms of the effects of the variables on financial performance, it was found that the LIQ variable had a negative effect on financial performance in the pre-pandemic period, while it had a positive effect in the post-pandemic period. Additionally, the ITR and DINF variables were shown to have a positive effect on financial performance in both the pre-pandemic and post-pandemic periods, whereas the LEV and lnTA variables had a negative effect on financial performance in the post-pandemic period.

Overall, it can be stated that the pandemic period has had an impact on the determinants of financial performance in the energy sector. Accordingly, the pandemic period has led to changes in the liquidity and capital structures of energy companies, and findings have been presented regarding the changing effects of these factors on the financial performance of businesses. In other words, in terms of financial performance, liquidity and capital structure elements have become more prominent in the post-pandemic period compared to before in the energy sector. Therefore, it can be stated that a more robust liquidity and capital structure, influenced by the pandemic, is among the key determinants of financial performance in energy companies.

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