# The Variables That Influence Value: An Analysis of European Listed Companies

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## Abstract

This paper proposes an analysis of the factors that most influence the corporate value of 64 European listed companies surveyed through Amadeus Bureau van Dijk's database over the 2020 period. Following the prevailing literature, for our study we adopt the multiple linear regression model with ROE, as dependent variable explicative of value, and LIQUID, LEVERAGE, SIZE, CFTA, DATA as explanatory variables. The result of our model indicates that value is positively affected by all explanatory variables except the SIZE variable.

**Keywords:** Value, financial performance, listed companies, Energy sector

## 1. Introduction

The issue of the ultimate goal of the enterprise and the existence of a multiplicity of sub-goals to be achieved has long been the focus of numerous studies in the field of Corporate Finance. Evidence shows that enterprise it generates value for all its stakeholders. The various stakeholders contribute to business activity with different and often conflicting goals: customers aim to obtain services on the most assistive terms, workers press for the improvement of their working conditions and wages, and shareholders aim to maximize the return due to their participation in venture capital. It is by concerting these mutually divergent goals that the enterprise's ability to create new value is declined since it will have laid the foundation for its success. So, if the survival of the enterprise is linked to its ability to create new value, the goal of the system will be the creation of value. Hence the birth of a new awareness among scholars and practitioners who see profit as incapable of explaining, measuring and ensuring the viability and durability of the enterprise system. So, scholars find as their target the research of the value and its generation, to which all business activities must be oriented, a concept born starting from 1980s and then spreading internationally. In this context the analysis of economic and financial performance and of their contribution to value creation, become relevant. Performance summarizes the result of the management of economic resources and the efficiency of operational, investment and financing activities. The objective of this study is to propose an investigation of the factors that influence corporate value in the Energy sector in Europe. Specifically, the variables considered are: liquidity, leverage, size, CFTA and DATA. The reason for this study lies in the lack of existing literature on the subject for our country. Therefore, this analysis can be used as cause of reflection for various stakeholders, especially creditors, investors, management and shareholders. This article is organized into several sections as follows: section 1.1 briefly proposes those contributions considered as the most significant in the literature on the theme, section 2 explains the survey methodology and data set, section 3 presents the results, and finally, section 4 presents the conclusions of this study.

*1.1 Literature review*

Numerous studies have attempted to identify the economic and financial variables that mainly influence firm value in different industries. We will pause in this section to analyse the most significant contributions from the 1990s to the present.

Grinyer and McKiernan (1991) conducted their research on a sample of 45 companies belonging to the UK electricity sector. Multiple regression analysis showed that market share, capital intensity, sales growth, disciplined management of working capital and decentralization were the variables that exhibited a positive and statistically significant correlation in terms of corporate profitability. Bennenbroek and Harris (1995), in their empirical investigation dwell on the determinants of profitability of industries in the New Zealand manufacturing sector in the period 1986-1987. The results show that profitability is influenced by market power and production efficiency. Through a simple regression analysis Feeny (2002) shows that, on a sample consisting of 180,738 tax subjects from complete Australian Tax Office (ATO) tax return data, calculated as averaged for the period 1994/1995

- 1996/1997, the variables size and capital intensity have a positive relationship with profitability.

Goddard et al. (2005) studied what the determinants of profitability in the manufacturing and service sectors in Belgium, France, Italy and the United Kingdom, for the period 1993-2001 were. The research found that there was a stronger positive relationship in the manufacturing sector than in the service sector between market share and profitability and, on the other hand, a negative relationship between size, debt ratio and profitability.

Keith G. (1998), applying an econometric methodology, investigated what was the impact of size, age and location on 38 small manufacturing firms in the Tayside region.

Asimakopoulos et al. (2009) analyse the firm-specific and Greek economy-specific determinants of firm profitability for the period 1995-2003. The research results show that the profitability of Greek firms was positively affected by size, sales growth and investment, and negatively by leverage and current assets.

Nunes et al. (2009) identified which variables influence the profitability of the Portuguese service industry. The research shows that the most profitable companies are the larger ones, with higher growth, lower level of debt and lower level of fixed assets.

Liargovas P. and Skandalis K. (2010), in an attempt to provide as complete a picture of Greek industrial firms as possible, recognize financial and non-financial factors related to firm performance. Their analysis was conducted on a sample of 102 companies belonging to 15 industries and listed on the Athens Stock Exchange for the period 1997-2004. The two authors, in the 3 panel regression models, uses ROS, ROE, and ROA as dependent variables, assuming that leverage, liquidity, capitalization ratio, investment, age, size, location, exports, and management efficiency can influence firm performance. The research results show that leverage, exports, size, location, and managerial competence ratio are positively and significantly related to firm performance.

Bhayani (2010) identified which variables influence the profitability of the Indian cement industry. The author applies a regression analysis on a sample of 28 companies listed on the Bombay Stock Exchange for the period 2001-2008. The empirical results show that profitability is influenced to a greater extent by liquidity, firm age, operating profit ratio, interest rate, and inflation.

Stierwald (2010) uses a panel consisting of 961 large Australian firms for the period 1995-2005 to identify the determinants of firm profitability. In the first instance, it is noted from the estimation results that profitability is determined more by firm-level characteristics than by sectoral effects. In the second instance, it is noted that dependence on profits lags and firm size contribute mainly to the explanation of profitability heterogeneity. In the third instance, productivity and productivity persistence have a positive effect on firm profitability.

Ito and Fukao (2010) question how the location of procurement, sales and management contributes to the profitability of Japanese multinational overseas affiliates for the period 1989-2002. The study shows that the profitability of Japanese affiliates is positively

associated with the local sourcing relationship, and both local purchasing and sales expansion contribute to higher profitability in China.

Burja (2011) studies the factors influencing the business performance of Romanian companies belonging to the chemical industry during 1999-2009. Results of models based on regression analysis, with profitability expressed by ROA, show that the factors with positive impact on the dependent variable are inventory efficiency, debt level, leverage, and capital efficiency.

Malik (2011) analysed the determinants of profitability of 35 listed insurance companies of Pakistan for the period 2005-2009. The profitability expressed by ROA was found to be significantly and positively correlated with the size and capital volumes of the companies, significantly but negatively correlated with leverage and loss ratio, and, finally, unrelated to the age of the company.

Charumathi (2012), addressing his investigation to the Indian insurance industry, studies a sample consisting of 23 companies for fiscal years 2008-2009, 2009-2010, and 2010-2011. The profitability expressed by ROA is found to be: significantly and positively correlated with size and liquidity, significantly and negatively correlated with leverage, premium growth, and logarithm of equity capital, and uncorrelated with underwriting risk.

Almajali A. Y. et al. (2012) aimed to investigate the variables that most affect Jordanian insurance companies in terms of financial performance. The target population has 25 insurance companies registered with the Amman Stock Exchange for the period 2002-2007. The results of the research show that the performance of the companies, as measured by ROA, is positively affected by leverage, liquidity, size, and managerial competence index, in contrast to the age variable which has no influence and correlation with the dependent variable.

Mistry (2012) analyses the effects of various factors on the profitability of 48 companies belonging to the Indian automotive industry for the period 1998-2012. The regression model showed that profitability largely depends on the variables: Operating Ratio, Current Ratio, Return on Capital Employed Ratio, Net Income to Total Debts Ratio, Inventory Turnover Ratio, and Long Term Debt to Equity Ratio.

Al-Jafari M.K. and Al Samman H. (2015) conducted their research on a sample of 17 industrial companies listed on the Muscat Securities Market for the period 2006-2013. The methodology involves the use of ROA and profit margin as dependent variables and the use of 6 independent variables, namely, average tax rate, size, growth, ratio of fixed capital to total assets, leverage and working capital. The research results show a positive and statistically significant relationship between profitability, firm size, growth, fixed assets and working capital and a negative relationship with average tax rate and leverage.

The work of M. Ahmad and N. Malik (2017) focuses on the determinants of financial performance of the Pakistani energy sector; on a sample consisting of 29 listed companies for the period 2009-2016. The research objective focuses on the impact of macroeconomic and

company-specific determinants on financial performance as measured by ROA and ROE. The research results show that ROA is positively affected by growth, size, risk, liquidity, and GDP, while it is negatively affected by leverage and age. ROE is positively affected by leverage, growth, liquidity and GDP, while it is negatively affected by risk, tangibility and inflation rate.

T. Schabek (2020), in his study, identifies variables describing the financial performance of private and public sustainable energy producers from 16 emerging markets over the period 2000-2017. From the author's work, it can be seen that: renewable energy producers have improved their financial performance compared to fossil fuel producers, ROE and ROA are positively affected by company size, solar power generation has a statistically significant effect on performance in contrast to wind power generation, the share of electricity from renewable sources has a negative impact on financial performance, public companies appear to have lower ROE but ROA is not affected by legal status, and, finally, the level of debt has an impact on ROA but not ROE.

*1.2 Hypotheses*

Based on previous literature review, we formed the following hypotheses in order to evaluate any relationships between ROE, a key indicator and driver of the value creation for shareholder, and a set of variables.

**Hypothesis 1:** there is no relationship between value and the independent variables.

**Hypothesis 2:** there is relationship between the dependent variable and the independent variables.

## 2. Method

The empirical analysis is based on European listed companies, belonging to the Energy sector, extracted using Amadeus Bureau van Dijk's database with reference to the year 2020. Specifically, data from states in the Europe 28 area were considered: Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Finland, France, Germany, Greece, Ireland, Italy, Lithuania, Luxembourg, Montenegro, Netherlands, North Macedonia, Norway, Poland, Moldova, United Kingdom, Czech Republic, Romania, Russia, Serbia, Spain, Sweden, Switzerland, Turkey, Ukraine. According to the Statistical Classification of Economic Activities in the European Community, or NACE code, the Energy sector, is placed within category D (35) - Electricity, gas, steam and air conditioning supply, which, in turn, is divided into the sub-categories:

-*D35.1 - Electric power generation, transmission and distribution*

- D35.1.1 - Production of electricity

- D35.1.2 - Transmission of electricity

- D35.1.3 - Distribution of electricity

- D35.1.4 - Trade of electricity

- *D35.2 - Manufacture of gas; distribution of gaseous fuels through mains*

- D35.2.1 - Manufacture of gas

- D35.2.2 - Distribution of gaseous fuels through mains
- D35.2.3 - Trade of gas through mains
- *D35.3 - Steam and air conditioning supply*
- D35.3.0 - Steam and air conditioning supply

For the purpose of this investigation, sub-category D35.1 - Electric power generation, transmission and distribution was considered. Given the subject matter of the research, focused as mentioned above on the Energy sector, the reference population turns out to initially consist of 149 European listed companies. For the construction of the sample, those companies with unavailable data were excluded. The variables to be used in the statistical model were defined. ROE as the dependent variable, widely used as a measure of economic and financial performance. Monteiro (2006), states that ROE is the most important ratio for the investor to consider in the shareholders perspective. Also Arouri et al. (2010) and Visali et al. (2011) in their work mention that ROE is a key indicator in the value creation for shareholders and emphasize its importance for managers and owners as it reflects the firm's overall financial efficiency and performance. Liquid, leverage, size, CFTA and DATA as explanatory or predictor variables (Maria Elisabete Neves, Carla Henriques and João Vilas, 2019). The dependent variable, was calculated as the ratio of net income to shareholders' equity:

*ROE = NET INCOME/SHAREHOLDERS EQUITY*

The independent variables, were calculated as:

*LIQUID= CURRENT ASSET/CURRENT LIABILITIES,*
*LEVERAGE= TOTAL DEBT/TOTAL ASSET,*
*SIZE=log TOTAL ASSET,*
*CFTA= CASH FLOW/TOTAL ASSET,*
*DATA= DEPRECIATION & AMORTIZATION/TOTAL ASSET.*

To test for the existence of relationship between dependent and independent variable, as in the prevailing literature (Grinyer and McKiernan 1991, Liargovas P. and Skandalis K. 2010, Bhayani 2010, Burja 2011, Mistry 2012, Al-Jafari M.K. and Al Samman H. 2015, M. Ahmad and N. Malik 2017, T. Schabek 2020), we use the multiple linear regression model. This methodology turns out to be an extension of simple linear regression, whereby we make use of two or more explanatory or predictive variables to understand how they influence the dependent or response variable. A weight is assigned to each predictor to obtain the maximum predictive ability from the model on the set of explanatory variables belonging to the linear combination. However, said predictive ability is limited if there is correlation between the independent variables.

The model, which relates the dependent or response variable Y to p explanatory or predictor variables, can be written as:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_p x_p + \varepsilon \tag{1}$$

where:

- $\beta_0, \beta_1, ..., \beta_p$ unknown constant quantities called regression coefficients;

- $x_1, x_2, ..., x_p$ the values taken by the explanatory or predictor variables $X_1, X_2, ..., X_p$;

- $\varepsilon$ random variable with expected value equal to zero and variance $\sigma^2$ called error or variance.

Based on model (1), the regression function represented by the present study is as follows:

*ROE = $\beta_0 + \beta_1$ LIQUID + $\beta_2$ LEVERAGE + $\beta_3$ SIZE + $\beta_4$ CFTA + $\beta_5$ DATA + $\varepsilon$.*

The null hypothesis is that there is no relationship between value and the independent variables:

$$H_0 = \beta_1 + \beta_2 = ... = \beta_p = 0,$$

whereas the alternative hypothesis is the existence of relationship between the dependent variable and the independent variables:

$$H_1 = at\ least\ \beta_p \neq 0.$$

## 3. Results

For the year 2020, the sample, after eliminating unavailable values, turns out to consist of 64 European listed companies.

Through the least squares method, the values of the regression coefficients were calculated, which turn out to be respectively:

$$\beta_0 = -3.66,\ \beta_1 = 0.94,\ \beta_2 = 13.25,\ \beta_3 = 0.34,\ \beta_4 = 254.73,\ \beta_5 = -311.82$$

Therefore, the estimated multiple regression model is:

*ROE = -3.66 + 0.94\*LIQUID + 13.25\*LEVERAGE + 0.34\*SIZE + 254.73\*CFTA − 311.82\*DATA*

Table 1. Regression statistics

| *Regression statistics* | |
|---|---|
| R multiple | 0.93 |
| R squared | 0.87 |
| Adjusted R squared | 0.86 |
| Standard error | 5.76 |
| N. Observations | 64 |

The value of R squared is 0.87, so this means that the five variables explain about four-fifths of the variance in the dependent variable. The predictors, taken as a set, account for 87 percent of the variance in ROE. Looking at the adjusted R squared value, that is, the index that also takes into account the number of explanatory variables included in the model and the sample size, it can be said that 86 percent of the variance in ROE can be explained by the proposed model.

Table 2. Analysis of variance

|  | gdl | SQ | MQ | F | Significance F |
|---|---|---|---|---|---|
| Regression | 5 | 12,686.33 | 2,537.27 | 76.50 | 0.00 |
| Residual | 58 | 1,923.59 | 33.17 |  |  |
| Total | 63 | 14,609.92 |  |  |  |

To understand the significance of the model we also look at the F statistic, which has a much lower value of 0.05 for the 95 percent confidence level.

Table 3. Regression analysis results

|  | Coefficients | Standard error | Stat t | Significance value | Lower 95% | Upper 95% | Lower 95% | Upper 95% |
|---|---|---|---|---|---|---|---|---|
| Intercept | -3.66 | 3.96 | -0.92 | 0.36 | -11.59 | 4.27 | -11.59 | 4.27 |
| LIQUID | 0.94 | 0.43 | 2.18 | 0.03 | 0.08 | 1.81 | 0.08 | 1.81 |
| LEVERAGE | 13.25 | 3.85 | 3.44 | 0.00 | 5.55 | 20.95 | 5.55 | 20.95 |
| SIZE | 0.34 | 0.68 | 0.50 | 0.62 | -1.02 | 1.70 | -1.02 | 1.70 |
| CFTA | 254.73 | 13.73 | 18.55 | 0.00 | 227.24 | 282.22 | 227.24 | 282.22 |
| DATA | -311.82 | 35.68 | -8.74 | 0.00 | -383.25 | -240.39 | -383.25 | -240.39 |

Furthermore, as can be seen more than one $\beta_p$ coefficient is different from zero, therefore, there is sufficient evidence to reject the null hypothesis in favour of the alternative hypothesis. It can be said that the model is statistically significant because at least one independent variable is linearly related to Y. Specifically, by analysing the significance values we can see that the variable SIZE, is the only one with a value greater than 0.05. Therefore, this variable is not linearly related to ROE. On the contrary, the variables LIQUID,LEVERAGE,CFTA and DATA present a significance value less than 0.05 and consequently they turn out to be linearly related to ROE.

## 4. Discussion

This paper aimed to test the factors that influence firm value in the Energy sector in Europe. The study covered the universe of European listed companies, surveyed through Bureau van Dijk's Amadeus database, over the 2020 period. In constructing the sample, we excluded

values not available for the reference year. This discrimination produced a total number of 64 observations. Based on the literature review, the variables were selected. ROE was considered the dependent variable, while, LIQUID,LEVERAGE,SIZE,CFTA and DATA the explanatory variables. ROE appears to be positively influenced by LIQUID,LEVERAGE,CFTA and DATA ratio and negatively by the SIZE variable. The study contributes to the existing literature given the scarcity of similar research focused on Italy. The analysis is useful for various stakeholders because it offers them various insights. Further development of this analysis may involve extending the study to unlisted companies, as well as the inclusion of additional variables in the model.

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**Appendix A**

Financial indicators used

| | |
|---|---|
| ***ROE*** | *NET INCOME/SHAREHOLDERS EQUITY* |
| ***LIQUID*** | *CURRENT ASSET/CURRENT LIABILITIES* |
| ***LEVERAGE*** | *TOTAL DEBT/TOTAL ASSET* |
| ***SIZE*** | *log TOTAL ASSET* |
| ***CFTA*** | *CASH FLOW/TOTAL ASSET* |
| ***DATA*** | *DEPRECIATION & AMORTIZATION/TOTAL ASSET* |