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IFRS 16 and Its Impact on NFP and EBITDA: a Theoretical and Empirical Analysis in European Companies

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ABSTRACT

PURPOSE: For a long time, the IASB and the FASB have worked jointly to find a solution to improve the transparency in the financial statements of lessees, as requested by a large group of stakeholders. This was to better highlight the implicit debt incorporated in some lease contracts and eliminate the distinction between operating and finance leases. The objective of this paper is twofold: on one hand, to define a theoretical analysis of the changes brought about by the adoption of the new IFRS 16 on corporate performance; on the other hand, it aims to analyze through a multiple linear regression analysis the impacts on the financial statements of listed companies of the new IFRS 16 (mandatorily adopted from 2019) and to verify whether companies have quantified the most significant alternative performance indicators, in particular NFP and EBITDA, considering the values determined with the new standard. *METHODOLOGY*: This work proposes a primary study based on the financial statements of listed companies with the following aims: (A) Provide a theoretical analysis of the changes introduced by IFRS 16; (B) Evaluate the impact of IFRS 16 on the financial statements; (C) Define the choices in terms of defining the most important alternative performance indicators (NFP and EBITDA). The analysis of any adjustments made to NFP and EBITDA to neutralize the effects of IFRS 16 can help to understand whether the financial statement values quantified according to the standard help to define the fundamental performance measures better or undermine their significance. *ORIGINALITY AND PRACTICAL IMPLICATIONS:* The article is novel because it aims to describe and evaluate how the introduction of the new accounting standard IFRS 16 might influence the performance, at the balance sheet level, of listed companies. Furthermore, the distinctive feature of this project is that, at least for now, in Europe, no study has yet been conducted on this matter, as no study has focused on what concerns alternative performance principles, always focusing on performance indicators (profitability, liquidity, financial structure). The results of this research could be relevant to raise awareness of what the introduction of this standard has entailed and, above all, the potential benefit brought to investors. The topic appears particularly timely as European rules on leasing and similar contracts still need to be developed, and the study could provide useful elements for assessing the significance of the information prepared by applying this standard.

OBIETTIVO: Da molto tempo lo IASB e il FASB collaborano per trovare una soluzione che consenta di migliorare la trasparenza dei bilanci dei locatari, come richiesto da un ampio gruppo di parti interessate. Ciò al fine di evidenziare meglio il debito implicito incorporato in alcuni contratti di leasing ed eliminare la distinzione tra leasing operativo e leasing finanziario. L'obiettivo del presente lavoro è duplice: da un lato, definire un'analisi teorica dei cambiamenti indotti dall'adozione del nuovo IFRS 16 sulla performance aziendale; dall'altro, ha l'obiettivo di analizzare attraverso un'analisi di regressione lineare multipla gli impatti sui bilanci delle società quotate del nuovo IFRS 16 (adottato obbligatoriamente dal 2019) e di verificare se le aziende hanno quantificato gli indicatori alternativi di performance più significativi, in particolare PFN ed EBITDA, considerando i valori determinati con il nuovo standard. *METODOLOGIA*: Il presente lavoro propone uno studio primario basato sui bilanci delle società quotate con i seguenti obiettivi: (A) Fornire un'analisi teorica delle modifiche introdotte dall'IFRS 16; (B) valutare l'impatto dell'IFRS 16 sul bilancio; (C) Definire le scelte in termini di definizione dei più importanti indicatori alternativi di performance (PFN ed EBITDA). L'analisi di eventuali rettifiche apportate alla PFN e all'EBITDA per neutralizzare gli effetti dell'IFRS 16 può aiutare a capire se i valori di bilancio quantificati secondo il principio aiutano a definire meglio gli indicatori fondamentali di performance o ne minano la significatività. *ORIGINALITÀ E IMPLICAZIONI PRATICHE:* L'articolo è nuovo perché mira a descrivere e valutare come l'introduzione del nuovo principio contabile IFRS 16 possa influenzare la performance, a livello di bilancio, delle società quotate. Inoltre, la caratteristica distintiva di questo progetto è che, almeno per ora, in Europa, non è stato ancora condotto alcuno studio in merito, in quanto nessuno studio si è focalizzato su ciò che riguarda i principi alternativi di performance, concentrandosi sempre sugli indicatori di performance (redditività, liquidità, struttura finanziaria). I risultati di questa ricerca potrebbero essere rilevanti per aumentare la consapevolezza di ciò che l'introduzione di questo standard ha comportato e, soprattutto, del potenziale beneficio apportato agli investitori. L'argomento appare particolarmente attuale in quanto le norme europee in materia di leasing e contratti assimilati devono ancora essere sviluppate e lo studio potrebbe fornire elementi utili per valutare la significatività delle informazioni predisposte applicando tale standard.

Keywords: IFRS 16, Leasing, OLS, Listed Companies, Assets

1 – Introduction

The International Financial Reporting Standard (IFRS) 16, issued by the International Accounting Standards Board (IASB), introduced a significant change in the accounting treatment of lease contracts, reflecting the growing need to provide a faithful representation of economic transactions and companies' financial positions. Effective from January 1, 2019, IFRS 16 replaced the previous standard, IAS 17, requiring most lease contracts to be recognized as assets and liabilities on the balance sheet. This new approach eliminates the historical distinction between operating and finance leases, ending the practice that allowed many companies not to report operating leases on the balance sheet, thus artificially improving key financial indicators such as leverage and liquidity.

The need for this reform was driven by academic and practical criticisms, which argued that IAS 17 did not adequately reflect the economic substance of leasing transactions. IFRS 16, therefore, aims to offer a more transparent and comprehensive representation of companies' financial positions, directly impacting debt ratios and financial performance indicators (Magli, Nobili & Ogliari, 2018; Stancheva-Todorova & Valinova-Sokolova, 2019). Moreover, this new approach is part of a broader regulatory evolution aimed at improving the quality of financial information and reducing discrepancies between accounting statements and economic realities.

The choice of the 2018-2019 period for analysis is based on the transition phase to IFRS 16 and its immediate effects. This period represents a critical moment to observe the initial impact of the new standard on financial indicators and balance sheet practices.

In light of these aspects, this study's **research question** is:

> RQ: *What is the effect of IFRS 16 implementation on EBITDA and Net Financial Position (NFP) in European listed companies?*

This paper aims to provide an in-depth analysis of the consequences of adopting IFRS 16, focusing on its impact on key alternative performance indicators such as Net Financial Position (NFP) and EBITDA (Ozturk & Sercemeli, 2016). This analysis is crucial in light of IFRS 16's potential to reshape the financial landscape, providing companies and stakeholders with a clearer view of economic reality and financial transparency. By highlighting the significance of this shift, we aim to underline how adopting IFRS 16 addresses longstanding issues in lease accounting and introduces new considerations for financial reporting and performance assessment.

The structure of the paper is as follows: *Section 2* presents a review of relevant literature and the theoretical framework; *Section 3* outlines the research methodology adopted; *Section 4* discusses the empirical and qualitative results; and finally, *Section 5* draws conclusions and suggests possible directions for future research.

2 – Literature review

The International Financial Reporting Standard (IFRS) 16, issued by the International Accounting Standards Board (IASB) in January 2016, came into effect on January 1, 2019, replacing IAS 17. This new accounting standard aims to enhance financial transparency by requiring companies to recognize most lease contracts on the balance sheet (IASB, 2016). IFRS 16 eliminates the distinction between operating and finance leases for lessees, requiring that most lease contracts, with few exceptions, be reported on the balance sheet. This includes recognizing a right-of-use asset and a lease liability for future lease payments (Beattie, Goodacre & Thompson, 2006).

Several studies have highlighted the significant impacts of IFRS 16 on company financial statements. According to a Deloitte study (2019), introducing IFRS 16 led to an increase in company assets and liabilities, altering key financial ratios and reducing the leverage effect (Deloitte, 2019). Sectors such as retail, transportation, and energy have been particularly affected by implementing the standard (PwC, 2018; *PwC, 2023*). Research conducted by BDO (2019, 2023) showed that companies experienced a significant impact on profitability ratios, such as return on assets (ROA), due to the increase in recognized assets (BDO, 2019). KPMG (2018) also found that the standard led to an increase in lease liabilities, resulting in a reduction in debt coverage ratios (KPMG, 2018).

A study by Leuz and Wysocki (2016) highlighted that IFRS 16 substantially impacted companies' operating and investment decisions, influencing financing and investment strategies (Leuz & Wysocki, 2016). Morales-Diaz and Zamora-Ramirez (2018) also documented an increase in total liabilities and total assets on company balance sheets due to IFRS 16, significantly altering financial performance indicators and affecting perceptions of solvency and

financial soundness (Morales-Diaz & Zamora-Ramirez, 2018). Giner and Pardo (2018) examined the relevance of operating lease liabilities under IFRS 16, demonstrating how this new standard improves the transparency of financial information, allowing investors to better assess companies' leverage and future obligations (Giner & Pardo, 2018).

Studies focusing on regional impacts, such as those by Stancheva-Todorova and Valinova-Sokolova (2019) and *Białek-Jaworska, Dobroszek, and Szatkowska (2022)*, confirm that IFRS 16's effect on financial reporting and corporate performance metrics is both significant and complex. *Białek-Jaworska et al. (2022)* specifically investigated the impact on key financial ratios in Polish listed companies, finding substantial changes in leverage and liquidity metrics, similar to observations in other European contexts (*Białek-Jaworska, Dobroszek & Szatkowska, 2022*).

The study by *Susanti, Ardana, and Dewi (2021)* further extends this analysis to Indonesian companies, examining how IFRS 16 (PSAK 73) implementation affected financial ratios, particularly in the wake of the economic challenges posed by the COVID-19 pandemic (*Susanti, Ardana & Dewi, 2021*). *Nugroho and Gantyowati (2023)* also evaluated IFRS 16's effects on firm value during COVID-19, highlighting a potentially stronger impact on corporate valuations during periods of economic volatility (*Nugroho & Gantyowati, 2023*).

In addition, Perin (2020) explored the theoretical profiles and practical application of IFRS 16, highlighting how the standard affects both accounting aspects and the overall representation of corporate liabilities. Perin's work is significant as it provides an empirical analysis of the challenges that companies face in managing leasing contracts, highlighting the importance of a solid theoretical approach in adopting the standard (Perin, 2020).

The influence of IFRS 16 on financial decisions and market perception has also been widely studied. KPMG (2018) noted that increased transparency due to IFRS 16 generally improved investor confidence, although some analysts expressed concerns about the rise in reported liabilities on company balance sheets (KPMG, 2018). Moody's (2019) suggested that IFRS 16 could lead to more conservative valuations by rating agencies, potentially increasing the cost of capital for some companies (Moody's, 2019). In Jordan, *Qatawneh, Alqtish, and Hmaidat (2021)* found that IFRS 16 notably impacted the financial statements of Alia Royal Jordanian Airlines, underscoring the standard's relevance to industries with high leasing volumes (*Qatawneh, Alqtish & Hmaidat, 2021*).

The adoption of IFRS 16 has presented operational and technical challenges. According to *Gulchekhra (2023)*, companies have encountered issues in identifying lease contracts and have invested significantly in technology and contract review to comply with the standard (*Gulchekhra, 2023*). *Carley and Harold (2021)* documented similar challenges among technology and telecommunications companies listed on the Johannesburg Stock Exchange, emphasizing the need for systematic approaches to the recognition and management of lease liabilities (*Carley & Harold, 2021*). Finally, Humayun and Rahman (2018) explored how the IASB leveraged a conceptual framework in developing IFRS 16, detailing adjustments made to address stakeholder concerns regarding implementation costs (Humayun & Rahman, 2018).

Raoli (2021), in his study on the impact of IFRS 16 on corporate financial performance in Italy, found that the standard has significantly affected profitability and liquidity ratios. Raoli highlights how the adoption of IFRS 16 has accentuated the focus on the management of leasing contracts, with specific implications for Italian companies in terms of adapting financial metrics and competitiveness in the market (Raoli, 2021).

3 – Data and Methodologies

This study adopts a mixed-method approach, combining a theoretical analysis of the changes introduced by IFRS 16 with an empirical study on a sample of European companies. The theoretical analysis examines all the transformations brought about by this standard, while the empirical study employs a multiple linear regression model on a sample of 600 European companies. This approach bridges the gap between theoretical expectations and observed financial outcomes.

3.1 – *Theoretical framework*

IFRS 16, introduced to replace IAS 17, governs the accounting treatment of lease contracts in corporate financial statements, enhancing transparency and comparability. Before IFRS 16, leases were classified as either finance or operating leases: the former were reported on the balance sheet as assets and liabilities, while the latter were treated solely as operating expenses, leading to an undervaluation of liabilities and poor comparability between companies.

With IFRS 16, lessees are required to recognize a "right-of-use" asset and a lease liability for contracts longer than 12 months, except for low-value leases. This change improves the transparency and visibility of lease liabilities on corporate balance sheets. The amortization of the "right-of-use" asset and interest on the lease liability affect various performance indicators, such as the debt-to-equity ratio. The adoption of IFRS 16 thus enhances the transparency and comparability of financial statements, providing stakeholders with a clearer understanding of a company's financial obligations and boosting market confidence. In summary, IFRS 16 represents a significant shift in lease accounting, transforming how companies manage and report their lease contracts.

3.2 – *Empirical analysis*

Regarding the empirical analysis, this study aims to examine the impact of IFRS 16 on corporate performance using multiple linear regression methodology, focusing on EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) and NFP (Net Financial Position) as dependent variables. The company data for the dependent and independent variables were extracted from the Orbis database. Before proceeding with the analysis, the data were cleaned by removing observations with missing values, resulting in a final sample of 600 companies.

This methodology involves several key steps:

1 – *Data Collection.* Financial data were collected from a sample of publicly listed companies, both before and after the implementation of IFRS 16. The dependent variables analyzed are EBITDA and NFP. For EBITDA, the independent variables include ROA (Return on Assets), Book Value of Debt, Fixed Assets/Total Assets, and Depreciation/Total Costs. For NFP, the independent variables include ROA, Book Value of Debt, Fixed Assets/Total Assets, and Equity/Total Costs. These variables were chosen to reflect business efficiency and financial solidity, key elements for understanding the impact of IFRS 16.

2 - *Definition of the Multiple Linear Regression Model*. To quantify the impact of IFRS 16 on corporate performance, a multiple linear regression model was implemented, based on the models of Beaver et al. (1970) and Glova (2014).

3 - The *general form of the model* is as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \epsilon_i$$

where:

- Y_i represents the dependent variables (EBITDA, NFP) for the company *i;*
- β_0 is the intercept;$\beta_1, \beta_2, \beta_3, \beta_4$ are the coefficients for each independent variable;
- X_{1i}, X_{2i}, X_{3i}, X_{4i}, represent the independent variables for the EBITDA dependent variable (ROA, Fixed Asset/Total, BVofdebt, Depreciation/Total Costs) and represent the independent variables for the NFP dependent variable (ROA, Fixed Asset/Total Asset, BVofdebt, Equity/Total Liabilities, Depreciation/Total costs) for the company *i;*
- ϵ_i is the error term for company *i.*

Here's our model:

$$\text{EBITDA} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{Fixed Asset/Total Asset} + \beta_3 \text{BVofdebt} + B_4 \text{Depreciation/Total Costs} + \varepsilon$$

$$\text{NFP} = \beta_0 + \beta_1 \text{ROA} + \beta_2 \text{Fixed Asset/Total Asset} + \beta_3 \text{BVofdebt} + B_4 \text{Equity/Total Liabilities} + \varepsilon$$

The dependent variables, EBITDA and NFP, are used to measure the impact of IFRS 16 on profitability and net financial position. The independent variables selected, including ROA, Book Value of Debt, Fixed Assets/Total Assets, and Depreciation/Total Costs, reflect a company's ability to manage resources and liabilities stemming from lease contracts. These variables are crucial for understanding how IFRS 16 affects corporate balance sheets (Table 1).

Table 1 – Measures (Source: Our elaboration)

Variables	Description	Source
ROA2018/2019	Indicator to evaluate a company's efficiency in managing its resources.	ORBIS
BOOK VALUE OF DEBT 2018/2019	Indicator that assesses the impact of financial debt on the total debt and equity.	ORBIS
FIXED ASSET/TOTAL ASSET 2018/2019	Indicator that assesses the proportion of fixed assets to total assets.	ORBIS
EQUITY/TOTAL COSTS 2018/2019	Indicator that assesses how much net profit is generated for each unit of total cost.	ORBIS
DEPRECIATION/TOTAL COSTS 2018/2019	Indicator that measures the proportion of total costs represented by amortization.	ORBIS

Using the statistical software "RStudio", we calculated the multiple linear regression. The results, summarized in Table 2 and Table 3, show that the selected independent variables have a significant impact on the dependent variables EBITDA and NFP. The adoption of IFRS 16 had a significant impact on both the Net Financial Position (NFP) and EBITDA of the companies analyzed during the 2018-2019 period. The empirical analysis revealed that, for NFP, the effectiveness of the multiple linear regression model in explaining the variability of this variable decreased in 2019 compared to 2018. Specifically, the R-squared fell from 41.07% to 34.7%, and the adjusted R-squared dropped from 40.67% to 34.26%, indicating a reduction in the model's ability to explain NFP variations. This decline can be attributed to dynamic changes in corporate policies or external economic factors introduced with the implementation of IFRS 16. However, the model remained statistically significant in both years, with most independent variables showing strong relevance.

As for EBITDA, the model showed an improvement in predictive capacity between 2018 and 2019. The R-squared increased from 57.12% to 59.38%, with an improvement in the adjusted R-squared from 56.83% to 59.10%. This suggests that, in the second year of IFRS 16 adoption, the model better explained EBITDA variability, likely due to companies' improved understanding and application of the standard. The increase in the F-statistic and the significance of the independent variables further support this conclusion.

In summary, while the effect of IFRS 16 on NFP led to a reduction in the model's explanatory power, EBITDA showed an improvement in predicting variations, highlighting how the adoption of the new accounting standard had differentiated effects on corporate financial metrics. These results will be discussed in greater detail in the following section, where the practical and theoretical implications of the observed impacts will be analyzed.

4 –Results

4.1 – *Model statistic*

R-squared for EBITDA 2018 and 2019 (R^2): 57.12 (2018), 59.38 (2019). This relatively high value indicates that the model explains approximately 57% of the variability in the dependent variable in 2018, increasing to about 59% in 2019. This signifies a positive trend, indicating an improvement in operational performance. The model can be judged as effective and could be confidently used for future analyses.

Adjusted R-squared: 56.83 (2018), 59.10 (2019), adjusted for the number of variables in the model.

F-Statistic: 198.2 (2018), 217.4 (2019). This statistic tests the hypothesis that all regression coefficients (except the intercept) are equal to 0. A high value and its increase in 2019 indicate that the 2019 model is significantly better at explaining the EBITDA variability than the 2018 model. This increase reflects an improvement in the model's quality and its ability to use the independent variables to predict EBITDA, suggesting that the included variables are appropriate and relevant for the analysis.

P-value: 2.2e-16 (2018), < 2.2e-16 (2019). The P-value associated with the F-statistic indicates the likelihood that the observed results are due to chance. A P-value of 2.2e-16 in 2018 and <

2.2e-16 in 2019 (well below 0.05) suggests that it is extremely unlikely that the observed effect is due to chance. Therefore, we can reject the null hypothesis and conclude that at least one of the predictors is significantly associated with the dependent variable.

R-squared for NFP 2018 and 2019 (R^2): 41.07 (2018), 34.70 (2019). This relatively high value indicates that the model explains about 41% of the variability in the dependent variable in 2018 and about 35% in 2019. This decrease could be attributed to various reasons, such as the need to comply with new accounting requirements that may have led to unexpected variations or increased volatility in financial data, thereby increasing financial complexity.

Adjusted R-squared: 40.67 (2018), 34.26 (2019), adjusted for the number of variables in the model.

F-Statistic: 103.7 (2018), 79.04 (2019). This statistic tests the hypothesis that all regression coefficients (except the intercept) are equal to 0. A high value, despite the reduction in 2019, indicates that the model is significantly better compared to a model without predictors (only intercept). The possible reasons for this reduction could include the need to comply with new accounting requirements, resulting in increased unexplained variability due to increased financial complexity.

P-value: < 2.2e-16 (2018), < 2.2e-16 (2019). The P-value associated with the F-statistic indicates the likelihood that the observed results are due to chance. A P-value of < 2.2e-16 in 2018 and < 2.2e-16 in 2019 (well below 0.05) suggests that it is extremely unlikely that the observed effect is due to chance. Therefore, we can reject the null hypothesis and conclude that at least one of the predictors is significantly associated with the dependent variable.

4.2 – *Regression Coefficients*

4.2.1 – Dependent variable EBITDA (Table 2):

ROA2018: (coefficient = 0.95778, P-value < 2e-16). The regression coefficient for the independent variable in this case suggests that for every one-unit increase in the independent variable, the dependent variable increases by 0.95778 units, holding other variables in the model constant. The P-value indicates the significance of the coefficient. A P-value less than 2e-16 implies very strong statistical evidence against the null hypothesis. This means that we can be highly confident that the observed relationship is statistically significant and not due to chance;

ROA2019: (coefficient = 0.94449, P-value < 2e-16). The regression coefficient for the independent variable in this case suggests that for every one-unit increase in the independent variable, the dependent variable increases by 0.94449 units, holding other variables in the model constant. A P-value less than 2e-16 implies very strong statistical evidence against the null hypothesis. This means that we can be highly confident that the observed relationship is statistically significant and not due to chance;

Book Value of Debt (2018): (coefficient = 5.28911, P-value = 0.0087). The regression coefficient for the independent variable in this case suggests that for every increase in the independent variable, we expect a 5.28911 unit increase in the dependent variable, holding all other variables in the model constant. This direct relationship suggests that the independent variable has a positive effect on the dependent variable. A P-value of 0.0087 implies very strong

statistical evidence against the null hypothesis. This means that we can be very confident that the observed relationship is statistically significant and not due to chance;

Table 2 – Results (Source: Rstudio)
[Note: *p<0.1; **p<0.05; ***p<0.01]

	Dependent variable:	Dependent variable:
	EBITDA2018	EBITDA2019
ROA2018	0.958***	0.944***
	(0.064)	(0.071)
BvofDebt	5.289***	5.160***
	(2.009)	(2.002)
FA/TA	22.829***	19.518***
	(2.056)	(2.086)
Depr/Total Costs	-102.993***	-102.511***
	(6.722)	(5.832)
Constant	-7.893***	-6.492***
	(1.266)	(1.289)
Observations	600	600
R2	0.571	0.594
Adjusted R2	0.568	0.591
Residual Std. Error	8.306 (df = 595)	8.035 (df = 595)
F Statistic	198.154*** (df = 4; 595)	217.423*** (df = 4;595)

Book Value of Debt (2019): (coefficient = 5.16026, P-value = 0.0102). The regression coefficient for the independent variable, in this case, suggests that for every increase in the independent variable, we expect a 5.16026 unit increase in the dependent variable, holding all other variables in the model constant. This direct relationship suggests that the independent variable has a positive effect on the dependent variable. A P-value of 0.0102 implies very strong statistical evidence against the null hypothesis. This means that we can be very confident that the observed relationship is statistically significant and not due to chance;

Fixed Asset/Total Asset (2018): (coefficient = 22.82923, P-value < 2e-16). The regression coefficient for the independent variable is 22.82923, suggesting that for every increase in the independent variable, we would expect a 22.82923 unit increase in the dependent variable, holding all other variables in the model constant. The associated P-value is less than 2e-16, suggesting that the coefficient is statistically significant at a very high confidence level. A P-value this small indicates very strong evidence againt the null hypothesis;

Fixed Asset/Total Asset (2019): (coefficient = 19.51802, P-value < 2e-16). The regression coefficient for the independent variable is 19.51802, suggesting that for every increase in the independent variable, we would expect a 19.51802 unit increase in the dependent variable,

holding all other variables in the model constant. The associated P-value is less than 2e-16, suggesting that the coefficient is statistically significant at a very high confidence level. A P-value this small indicates very strong evidence against the null hypothesis;

Depreciation/Total Costs (2018): (coefficient = -102.99331, P-value < 2e-16). The regression coefficient for the independent variable is -102.99331, suggesting that for every increase in the independent variable, we would expect a decrease of 102.99331 units in the dependent variable, holding all other variables in the model constant. The associated P-value is less than 2e-16, suggesting that the coefficient is statistically significant at a very high confidence level. A P-value this small indicates very strong evidence against the null hypothesis;

Depreciation/Total Costs (2019): (coefficient = -102.51094, P-value < 2e-16). The regression coefficient for the independent variable is -102.51094, suggesting that for every increase in the independent variable, we would expect a decrease of 102.51094 units in the dependent variable, holding all other variables in the model constant. The associated P-value is less than 2e-16, suggesting that the coefficient is statistically significant at a very high confidence level. A P-value this small indicates very strong evidence against the null hypothesis.

4.2.2 – Dependent variable NFP (Table 3):

ROA2018: (coefficient = 0.145252, P-value = 0.705). The regression coefficient for the independent variable in this case suggests that for every one-unit increase in the independent variable, the dependent variable increases by 0.145252 units, holding the other variables in the model constant. The P-value of 0.705 is much higher than the common threshold of 0.05, indicating that the coefficient is not statistically significant. This means there is insufficient evidence to reject the null hypothesis, suggesting that the observed relationship could be due to chance;

ROA2019: (coefficient = 0.380531, P-value = 0.419). The regression coefficient for the independent variable in this case suggests that for every one-unit increase in the independent variable, the dependent variable increases by 0.380531 units, holding the other variables in the model constant. The P-value of 0.419 is much higher than the common threshold of 0.05, indicating that the coefficient is not statistically significant. This means there is insufficient evidence to reject the null hypothesis, suggesting that the observed relationship could be due to chance;

Book Value of Debt (2018): (coefficient = 105.403264, P-value < 2e-16). The regression coefficient for the independent variable, in this case, suggests that for every increase in the independent variable, we expect a 105.403264 unit increase in the dependent variable, holding all other variables in the model constant. This direct relationship suggests that the independent variable has a positive effect on the dependent variable. A P-value less than 2e-16 implies very strong statistical evidence against the null hypothesis. This means we can be very confident that the observed relationship is statistically significant and not due to chance;

Book Value of Debt (2019): (coefficient = 114.605847, P-value < 2e-16). The regression coefficient for the independent variable, in this case, suggests that for every increase in the independent variable, we expect a 114.605847 unit increase in the dependent variable, holding all other variables in the model constant. This direct relationship suggests that the independent

variable has a positive effect on the dependent variable. A P-value less than 2e-16 implies very strong statistical evidence against the null hypothesis. This means we can be very confident that the observed relationship is statistically significant and not due to chance;

Fixed Assets/Total Assets (2018): (coefficient = 139.081527, P-value < 2e-16). The regression coefficient for the independent variable, in this case, suggests that for every increase in the independent variable, we expect a 139.081527 unit increase in the dependent variable, holding all other variables in the model constant. This direct relationship suggests that the independent variable has a positive effect on the dependent variable. A P-value less than 2e-16 implies very strong statistical evidence against the null hypothesis. This means we can be very confident that the observed relationship is statistically significant and not due to chance;

Fixed Assets/Total Assets (2019): (coefficient = 137.312026, P-value < 2e-16). The regression coefficient for the independent variable, in this case, suggests that for every increase in the independent variable, we expect a 137.312026 unit increase in the dependent variable, holding all other variables in the model constant. This direct relationship suggests that the independent variable has a positive effect on the dependent variable. A P-value less than 2e-16 implies very strong statistical evidence against the null hypothesis. This means we can be very confident that the observed relationship is statistically significant and not due to chance;

Table 3 – Results (Source: Rstudio)
[Note: *p<0.1; **p<0.05; ***p<0.01]

	Dependent variable:	Dependent variable:
	NFP2018	NFP2019
ROA2018	0.145	0.381
	(0.383)	(0.470)
BvofDebt	105.403***	114.606***
	(11.970)	(13.215)
FA/TA	139.082***	137.312***
	(11.463)	(12.073)
Equity/Total Costs	-0.028***	0.032***
	(0.003)	(0.007)
Constant	-83.635***	92.593***
	(7.504)	(8.424)
Observations	600	600
R2	0.411	0.347
Adjusted R2	0.407	0.343
Residual Std. Error	49.563 (df = 595)	53.084 (df = 595)
F Statistic	103.659*** (df = 4; 595)	79.044*** (df = 4;595

Equity/Total Costs (2018): (coefficient = -0.028085, P-value < 2e-16). The regression coefficient for the independent variable is -0.028085, suggesting that for every increase in the

independent variable, we would expect a decrease of 0.028085 units in the dependent variable, holding all other variables in the model constant. The P-value less than 2e-16 implies very strong statistical evidence against the null hypothesis. This means we can be very confident that the observed relationship is statistically significant and not due to chance;

Equity/Total Costs (2019): (coefficient = 0.032366, P-value = 3.19e-06). The regression coefficient for the independent variable is 0.032366, suggesting that for every increase in the independent variable, we would expect an increase of 0.032366 units in the dependent variable, holding all other variables in the model constant. The P-value of 3.19e-06 implies very strong statistical evidence against the null hypothesis. This means we can be very confident that the observed relationship is statistically significant and not due to chance.

4.2.3 – Multicollinearity Analysis

"Multicollinearity" occurs when two or more independent variables in the regression model are highly correlated with each other. To assess the presence of multicollinearity, as suggested by O'Brien (2007), we used the Variance Inflation Factor (VIF) tool (O'Brien, 2007):

- **VIF = 1:** No correlation between an independent variable and the other independent variables;
- **1 < VIF < 5:** Moderate correlation; generally considered acceptable;
- **VIF > 5:** High correlation. It may be concerning and requires attention;
- **VIF > 10:** Very high correlation; severe multicollinearity that could compromise the results of the regression analysis.

In our analysis of EBITDA, the VIF values are as follows (Table 4):

ROA2018: (1.074193). This value below 5 suggests that there is no concerning multicollinearity with the other variables in the model. The correlation between ROA2018 and the other variables is practically absent;

ROA2019: (1.101027). This value below 5 suggests that there is no concerning multicollinearity with the other variables in the model. The correlation between ROA2019 and the other variables is practically absent;

Book Value of Debt (2018): (1.171760). This value suggests that the variable has a very low correlation with the other independent variables. There are no multicollinearity issues;

Book Value of Debt (2019): (1.193443). This value suggests that the variable has a very low correlation with the other independent variables. There are no multicollinearity issues;

Fixed Asset/Total Asset (2018): (1.252913). This value, being just above 1, suggests that this variable is not strongly correlated with the other variables in the model. There are no multicollinearity issues;

Fixed Asset/Total Asset (2019): (1.323191). This value is very close to 1, indicating very low multicollinearity between the independent variables. Although the value is slightly above 1, it remains well below the commonly accepted threshold of 5. Therefore, it can be concluded that there are no multicollinearity issues;

Depreciation/Total Costs (2018): (1.184418). This value is very close to 1, indicating that this variable is practically independent of the other variables in the model. There are no multicollinearity issues;

Depreciation/Total Costs (2019): (1.269809). This value is very close to 1, indicating that this variable is practically independent of the other variables in the model. There are no multicollinearity issues.

Tab. 4 – Results VIF (Source: Rstudio)

Variable	VIF 2018 - EBITDA
ROA2018	1.074193
Bvofdebt	1.171760
FA/TA	1.252913
Depr/TotCosts	1.184418
Mean	1.170821

Variable	VIF 2019 - EBITDA
ROA2019	1.101027
Bvofdebt	1.193443
FA/TA	1.323191
Depr/TotCosts	1.269809
Mean	1.221867

In summary, all the provided VIF values are below 5, indicating that there are no significant multicollinearity issues among the independent variables in our regression model. Therefore, it can be concluded that multicollinearity is unlikely to substantially affect the regression coefficient estimates in this model.

In our analysis of NFP, the VIF values are as follows (Table 5):

ROA2018: (1.074394). This value indicates very low multicollinearity among the independent variables in the regression model. Being very close to 1, it suggests that there is no significant correlation between the variables. Therefore, multicollinearity should not be a concern, and the coefficient estimates can be considered reliable;

ROA2019: (1.097780). This value indicates very low multicollinearity among the independent variables in the regression model. Being very close to 1, it suggests that there is no significant correlation between the variables. Therefore, multicollinearity should not be a concern, and the coefficient estimates can be considered reliable;

Book Value of Debt (2018): (1.167831). This value suggests that the variable has a very low correlation with the other independent variables. There are no multicollinearity issues;

Book Value of Debt (2019): (1.191267). This value suggests that the variable has a very low correlation with the other independent variables. There are no multicollinearity issues;

Fixed Asset/Total Asset (2018): (1.093460). This value indicates very low multicollinearity among the independent variables in the regression model. Being very close to 1, it suggests that there is no significant correlation between the variables. Therefore, multicollinearity should not be a concern, and the coefficient estimates can be considered reliable;

Fixed Asset/Total Asset (2019): (1.124137). This value is very close to 1, indicating that this variable is practically independent of the other variables in the model. There are no multicollinearity issues;

Equity/Total Costs (2018): (1.002305). This value is very close to 1, indicating that this variable is practically independent of the other variables in the model. The model is free of significant multicollinearity issues;

Equity/Total Costs (2019): (1.034943). This value is very close to 1, indicating that this variable is practically independent of the other variables in the model. The model is free of significant multicollinearity issues.

In summary, all the provided VIF values are below 5, indicating that there are no significant multicollinearity issues among the independent variables in our regression model. Therefore, it can be concluded that multicollinearity is unlikely to substantially affect the regression coefficient estimates in this model.

Table 5– Results VIF (Source: Rstudio)

Variable	VIF 2018 - NFP
ROA2018	1.074394
Bvofdebt	1.167831
FA/TA	1.093460
E/TotCosts	1.002305
Mean	1.084497

Variable	VIF 2019 - NFP
ROA2019	1.097780
Bvofdebt	1.191267
FA/TA	1.124137
E/TotCosts	1.034943
Mean	1.112032

4.2.4 – Autocorrelation Analysis

Autocorrelation occurs when the residuals of the regression model are not independent of each other. Following the models proposed by Granger (1969), Green (2003), and Hamilton (2020), we used the Durbin-Watson (DW) test to evaluate the presence of autocorrelation.

The value of the Durbin-Watson statistic is always between 0 and 4. A DW value close to 2 indicates no autocorrelation. Values below 1.5 or above 2.5 suggest the presence of strong positive or negative autocorrelation, respectively. The associated P-value of the test indicates the likelihood of obtaining an extreme Durbin-Watson statistic under the assumption of no autocorrelation in the data. A low P-value provides sufficient evidence to reject the null hypothesis of no autocorrelation, while a high P-value suggests insufficient evidence to reject this hypothesis.

In our case, for the analysis of the dependent variable EBITDA, the Durbin-Watson statistic takes a value of **2.0117** in 2018 (Table 6), suggesting a total absence of autocorrelation. The associated P-value is **0.5557** (greater than 0.05), indicating that there is insufficient statistical evidence to conclude that there is no statistically significant effect. We can conclude that there is a total absence of autocorrelation.

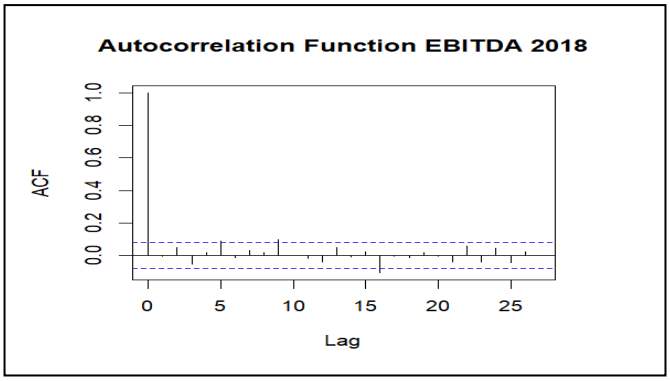
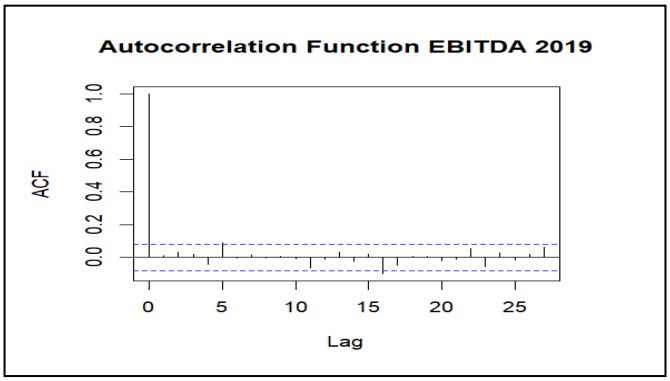
For 2019, the statistic takes a value of **1.9786** (Tab. 6), suggesting that there is no strong autocorrelation in the residuals. The associated P-value is **0.3941** (greater than 0.05), indicating that there is insufficient statistical evidence to conclude that there is enough evidence to reject the null hypothesis of no autocorrelation. In other words, the result is not statistically significant, and thus, we can conclude that there is no evidence of autocorrelation.

The absence of autocorrelation can also be observed in the autocorrelation plot.
The plot has the following characteristics:

- **On the x-axis,** we have the lags. A lag of 1 means we are comparing each point with the next point in the time series, a lag of 2 with the second next point, and so on;
- **On the y-axis,** we have the autocorrelation values. These values range between -1 and 1:
  – A value close to 1 indicates a strong positive correlation;
  – A value close to -1 indicates a strong negative correlation;
  – A value close to 0 indicates weak or no autocorrelation.
- **Significance lines:** The dashed horizontal lines indicate the significance limits. If a bar exceeds these lines, the autocorrelation is considered statistically significant.

In our case, all bars in the autocorrelation plot fall within the significance lines. Therefore, we do not have significant correlations in the data beyond what would occur by chance. In other words, there is no notable autocorrelation in the time series analyzed.

Table 6 – Durbin-Watson test and autocorrelation plot (Source: Rstudio)

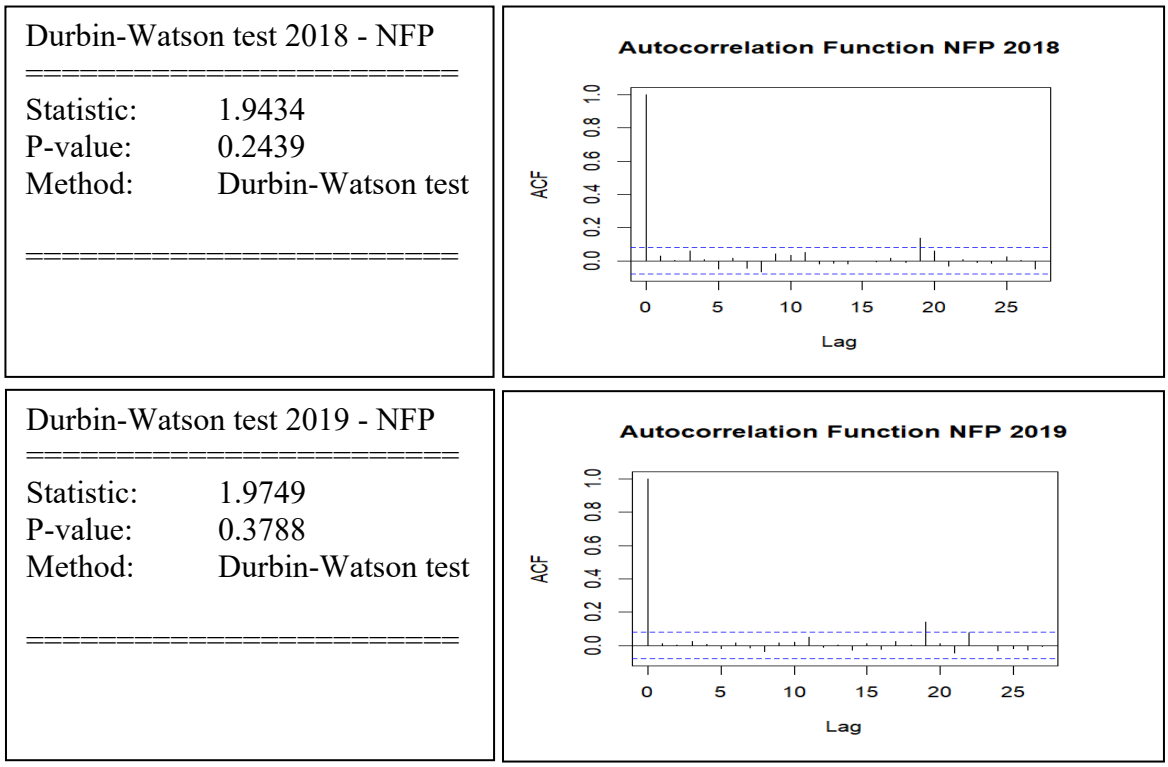
Durbin-Watson test 2018 - EBITDA ========== Statistic: 2.0117 P-value: 0.5557 Method: Durbin-Watson test ==========	
Durbin-Watson test 2019 - EBITDA ========== Statistic: 1.9786 P-value: 0.3941 Method: Durbin-Watson test ==========	

Regarding the analysis of the dependent variable NFP, the Durbin-Watson statistic takes a value of **1.9434** in 2018 (Tab. 7), suggesting that there is no strong autocorrelation in the residuals of the model. The associated P-value is 0.2439 (greater than 0.05), indicating that there is insufficient statistical evidence to reject the null hypothesis of no autocorrelation. In other words, autocorrelation in the residuals is not statistically significant.

For 2019, the statistic takes a value of 1.9749 (Table 7), suggesting that the model's residuals do not show strong autocorrelation. The associated P-value is 0.3788 (greater than 0.05), indicating that there is insufficient statistical evidence to reject the null hypothesis of no autocorrelation. Therefore, autocorrelation is not statistically significant. The absence of autocorrelation can also be observed in the autocorrelation plot.

In our case, all the bars in the autocorrelation plot fall within the significance lines. Therefore, we do not have significant correlations in the data beyond what would occur by chance. In other words, there is no notable autocorrelation in the time series analyzed.

Table 7 – Durbin-Watson test and autocorrelation plot (Source: Rstudio)



4.2.5 – Heteroscedasticity Analysis (Wooldridge, 2010)

"Heteroscedasticity" occurs when the variance of the errors is not constant. To assess the presence of heteroscedasticity, we will use the following tests:

- **Breusch-Pagan Test** (Breusch-Pagan, 1979): This test evaluates whether the variance of the errors is a function of the independent variables. A low p-value (i.e., below 0.05) suggests the presence of heteroscedasticity;
- **White Test** (White, 1980): This test considers not only linearity but also interactions between the dependent variables;
- **Breusch-Pagan Plot:** This plot is used to diagnose the presence of heteroscedasticity in the model.

Regarding the Breusch-Pagan test for the EBITDA variable, the following values were obtained for 2018:

- BP = 78.159
- DF = 4
- P Value = $4.274e^{-16}$

This test, for the same variable in the year 2019, presents the following values:

- BP = 21.57
- DF = 4
- P Value = 0.0002441

In summary, the results of the Breusch-Pagan test suggest that there is significant heteroscedasticity in the residuals of the regression model.
However, this presence of heteroscedasticity is not confirmed by the White test, which provides the following values for the year 2018:

- Chi-square = 76.5868
- DF = 1
- P Value = 0.3815

The test, regarding the same variable for the year 2019, presents the following values:

- Chi-square = 66.1461
- DF = 1
- P Value = 4.187e-16

The results for the year 2018 indicate that there is insufficient evidence to reject the null hypothesis. This means that there is no significant evidence of heteroscedasticity in the residuals. In contrast, the data for the year 2019 show strong evidence of heteroscedasticity, suggesting that the variance of the errors is not constant.

The presence of heteroscedasticity is also confirmed in the Breusch-Pagan plot for the EBITDA variable. The graph has the following features:

– X-Axis (Predicted Values): Represents the predicted values from the regression model;

– Y-Axis (Standardized Residuals): Shows the standardized residuals, which are the differences between the observed and predicted values, divided by the standard deviation of the residuals.

In the presence of heteroscedasticity, there would be a clear pattern in the residuals, such as a fan-shaped structure that widens or narrows. The red line represents the 0 value of the standardized residuals. The points should be randomly distributed around this line if there is no heteroscedasticity.

In our case, for the year 2018, the points appear to have a certain dispersion that is not constant along the X-axis. For instance, the residuals around predicted values between 0 and 30 appear more concentrated, while there is greater dispersion when predicted values are high (above 30). This behaviour suggests that the variance of the errors increases as predicted values increase. In summary, for higher estimated EBITDA values, the model tends to produce more variable errors. Although there are a few outliers, their presence and the greater dispersion of points in certain ranges may indicate that heteroscedasticity is related to specific ranges of predicted values.

In 2019, we observe a distribution of residuals similar to 2018, with variation in dispersion. However, here the increasing variance pattern seems less pronounced than in 2018. The distribution of residuals around the predicted values appears more compact compared to 2018, with a slight tendency for increased dispersion for higher predicted values. This confirms the presence of heteroscedasticity, although less pronounced than in 2018.

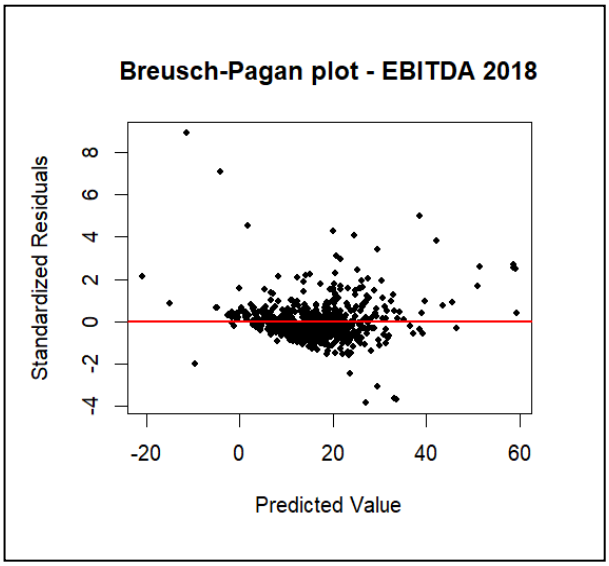
Both graphs indicate heteroscedasticity, with stronger evidence in 2018 compared to 2019, as also shown in the Breusch-Pagan and White tests. This means that, especially in 2018, the

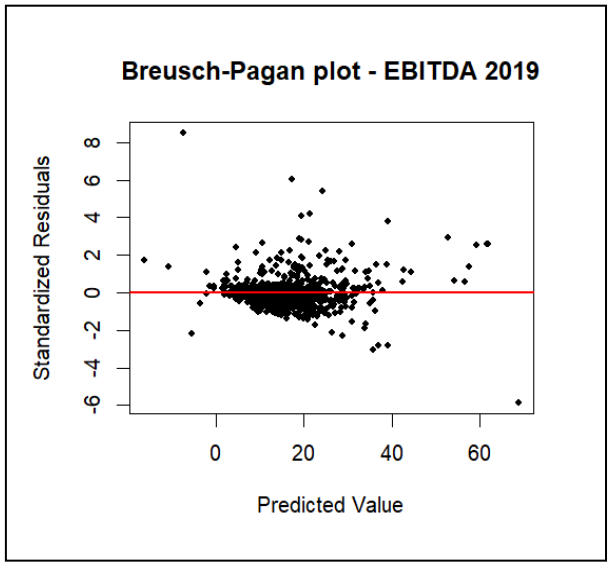
residuals are not uniformly distributed, and the variance increases with the predicted values. For 2019, the situation seems slightly improved, but there are still signs of non-constant variance. This requires corrective measures in the model to ensure more reliable estimates and inferences. The results are summarized in Table 8:

Table 8 – Breusch-Pagan test and White test – EBITDA (Source: Rstudio)

Breusch-Pagan test	2018	2019
Statistic BP:	78.159	21.57
DF:	4	4
P-value :	$4.274e^{-16}$	0.0002441
Method: Breusch-Pagan test		

White test	2018	2019
Chisquare:	76.5868	66.1461
DF:	1	1
P-value:	0.3815	$4.187e^{-16}$
Method: White test		





Regarding the Breusch-Pagan test on the NFP variable, the following values are obtained for the year 2018:

- BP = 27.567
- DF = 4
- P Value = $1.526e^{-05}$

This test, regarding the same variable for the year 2019, presents the following values:

- BP = 66.277
- DF = 4
- P Value = 1.384e-13

In summary, the results of the Breusch-Pagan test suggest that there is significant heteroscedasticity in the residuals of the regression model. This presence of heteroscedasticity is confirmed by the White test, which provides the following values for the year 2018:

- Chi-square = 382.259
- DF = 1
- P Value < 2.22e-16

This test, regarding the same variable for the year 2019, presents the following values:

- Chi-square= 80.4740
- DF = 1
- P Value < 2.22e-16

The results for the year 2018 indicate that there is insufficient evidence to reject the null hypothesis. This means there is no significant evidence of heteroscedasticity in the residuals. In contrast, the data for the year 2019 show strong evidence of heteroscedasticity, suggesting that the variance of the errors is not constant. The presence of heteroscedasticity is also confirmed in the Breusch-Pagan plot for the NFP variable. In our case, for the year 2018, there appears to be a clustering of points for lower predicted values (between 0 and 100), while the points become more dispersed as the predicted values increase.

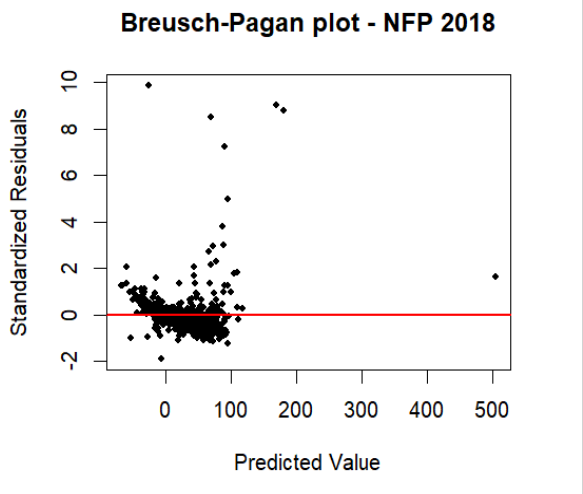
The increasing dispersion of standardized residuals with higher predicted values suggests the presence of heteroscedasticity. We must reject the null hypothesis of homoscedasticity in the model. For the year 2019, we observe a concentration of points around the lower predicted values (between 0 and 50). Moreover, there is a visible dispersion of the residuals for predicted values above 50, with some points deviating significantly from the horizontal red line (0), confirming the presence of heteroscedasticity.

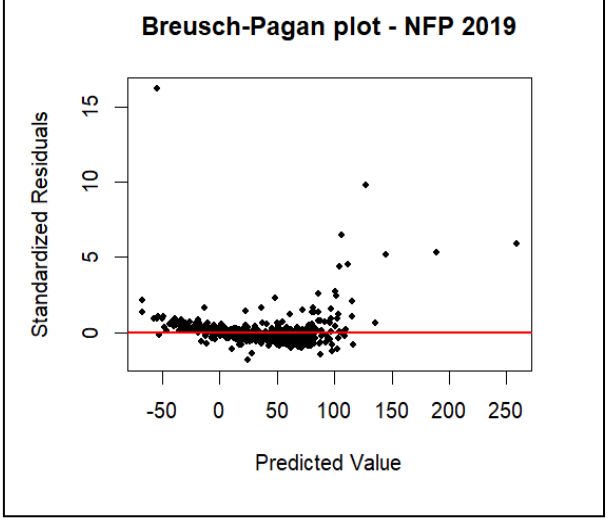
In summary, both graphs show signs of heteroscedasticity, though in slightly different ways. In 2018, the increase in dispersion is more apparent for larger predicted values, while in 2019, the dispersion is more evenly distributed. This suggests that corrective techniques, such as robust standard error estimation, may be necessary to address heteroscedasticity before making inferences with these models. The results are summarized in Table 9**:**

Table 9 – Breusch-Pagan test and White test – NFP (Source: Rstudio)

Breusch-Pagan test	2018	2019
Statistic BP:	27.567	66.277
DF:	4	4
P-value :	$1.526e^{-05}$	$1.384e^{-16}$
Method: Breusch-Pagan test		

White test	2018	2019
Chisquare:	382.2591	80.47409
DF:	1	1
P-value:	$< 2.22e^{-16}$	$< 2.22e^{-16}$
Method: White test		





In the presence of these values indicating heteroscedasticity, to address this issue and ensure reliable estimates of the coefficients, we applied the robust correction of the covariance matrix using the Huber-White method (Huber, 1967; White, 1980).

The estimated coefficients remained unchanged in both results, while the robust correction produced different standard errors compared to those obtained with the linear regression model, reflecting the heteroscedasticity present in the data and providing more reliable estimates for significance tests (Table 10; Tab. 11).

This correction has therefore allowed us to obtain robust standard errors, thus improving the validity of statistical inferences about the model's coefficients. The results suggest that the inferences based on the corrected standard errors are more reliable than those based on uncorrected standard errors (Huber, 1967; White, 1980).

Table 10 – Results Huber-White model – EBITDA (Source: Rstudio)
[Note: *p<0.1; **p<0.05; ***p<0.01]

	Dependent variable:	Dependent variable:
	EBITDA2018	EBITDA2019
ROA2018	0.958***	0.944***
	(0.096)	(0.096)
BvofDebt	5.289***	5.160**
	(1.575)	(2.028)
FA/TA	22.829***	19.518***
	(4.657)	(3.634)
Amm/Total Costs	-102.993***	-102.511***
	(25.290)	(17.449)
Constant	-7.893***	-6.492***
	(1.957)	(1.539)
Observations	600	600
R2	0.571	0.594
Adjusted R2	0.568	0.591
Residual Std. Error	8.306 (df = 595)	8.035 (df = 595)
F Statistic	198.154*** (df = 4; 595)	217.423*** (df = 4;595)

The results of this multiple linear regression analysis provide several practical and theoretical insights:

- **First**, the significant independent variables identified should be the focus of further studies and interventions, as they are the ones that most influence the dependent variable;
- **Second**, the absence of multicollinearity and autocorrelation (also demonstrated in the plots) in the residuals confirms the robustness of the model, making the coefficient estimates reliable.

Table 11 – Results Huber-White model – NFP
[Note: *p<0.1; **p<0.05; ***p<0.01]

	Dependent variable:	Dependent variable:
	NFP2018	NFP2019
ROA2018	0.145	0.381
	(0.292)	(0.350)
BvofDebt	105.403***	114.606***
	(11.627)	(12.712)
FA/TA	139.082***	137.312***
	(18.159)	(29.953)
Equity/Total Costs	-0.028***	0.032
	(0.011)	(0.058)
Constant	-83.635***	92.593***
	(11.854)	(13.356)
Observations	600	600
R2	0.411	0.347
Adjusted R2	0.407	0.343
Residual Std. Error	49.563 (df = 595)	53.084 (df = 595)
F Statistic	103.659*** (df = 4; 595)	79.044*** (df = 4;595

However, the presence of heteroscedasticity requires a cautious approach to interpretations. The use of the Huber-White robust model represents an appropriate solution to obtain more accurate estimates, but it may be useful to further explore the causes of heteroscedasticity to improve the model and ensure that the inferences remain statistically valid.

5 – Conclusions

The adoption of IFRS 16 had a significant impact on both the Net Financial Position (NFP) and EBITDA of the analysed companies during 2018-2019 when the new standard came into effect.

5.1 – *Impact on NFP*

In 2018, the regression model for NFP showed an R-squared of 41.07%, which decreased to 34.7% in 2019. The adjusted R-squared decreased from 40.67% in 2018 to 34.26% in 2019, indicating a slight reduction in the model's ability to explain the variability of the data in the second year.

The F-statistic also decreased from 103.7 to 79.04, signalling a reduction in the overall significance of the model. However, the P-value remained statistically significant in both years, highlighting the significance of the independent variables used in the model. Most of the dependent variables (3 out of 4) were highly significant.

No multicollinearity or autocorrelation problems were detected, as indicated by the Durbin-Watson test. Heteroscedasticity in the residuals, identified through the Breusch-Pagan and White tests, was corrected using the Huber-White model.

The decrease in R-squared indicates that the model was less effective in explaining NFP variabili

ty in 2019 than in 2018. This decrease is in line with previous studies, such as those by Morales-Díaz and Zamora-Ramírez (2018) and Magli et al. (2018), who found that IFRS 16 can introduce variability in financial reporting, especially during the first period of adoption, with effects that tend to stabilise thereafter.

This decrease can be attributed to several factors:

- **Changes in economic or business dynamics**: the adoption of IFRS 16 may have affected companies differently in 2019, introducing variability not captured by the model's independent variables;
- **Introduction of new factors**: the first year of adoption of a new accounting standard often leads to more substantial adjustments in financial statements, with effects stabilising in the second year;
- **Changes in corporate policies**: companies may have changed their financial or leasing policies in response to the new standard, reducing the model's ability to capture all relevant variables in 2019 (Raoli, 2021).

5.2 – *Impact on EBITDA*

For EBITDA, the model showed an improvement in predictive ability between 2018 and 2019. The R-squared increased from 57.12% to 59.38%, and the adjusted R-squared increased from 56.83% to 59.10%, indicating a greater ability of the model to explain the variability of EBITDA in the second year. The F-statistic increased from 198.2 to 217.4, signalling a higher overall significance of the model in 2019. The P-value remained highly significant in both years, reinforcing the significance of the independent variables. All four dependent variables in the model were highly significant.

Again, no multicollinearity or autocorrelation problems were found, as indicated by the Durbin-Watson test. Heteroscedasticity, again assessed through the Breusch-Pagan and White tests, was present but was corrected using the Huber-White model. The improved performance of the EBITDA model between 2018 and 2019 can be attributed to several factors:

- **Better understanding and application of IFRS 16**: with one year of experience, companies may have applied IFRS 16 more consistently, reducing unexplained variability and improving the accuracy of the model (Beattie, Goodacre & Thomson, 2006);
- **Stabilisation of effects**: after the initial implementation of IFRS 16 in 2018, companies may have stabilised their processes and policies, making the effects on EBITDA more predictable (Magli et al., 2018);

- **Adaptation of accounting practices**: companies may have adapted their accounting and financial practices to better reflect the impact of the new standard, allowing the model to better capture relevant variables (Öztürk & Serçemeli, 2016).

The reduction in the model's ability to explain NFP variability and the improvement in EBITDA prediction appears to reflect this dynamic, suggesting that, as Raoli (2021) highlights, companies may have adjusted their leasing and financial management policies in response to the new standard. Similarly to findings by Beattie, Goodacre, and Thomson (2006), this study highlights that greater experience with the standard allows companies to reduce unexplained variability in financial models, as seen in the increase in R-squared for EBITDA in the second year.

This aligns with the literature, which emphasizes that the introduction of a new accounting standard requires an adjustment period for companies to stabilize their accounting and operational processes.

In line with Öztürk and Serçemeli (2016), the results suggest that, once the transition phase is overcome, companies tend to adapt their accounting and management practices to better reflect the impacts of the new standard, thereby contributing to greater accuracy in prediction models.

5.3 – *Limitations of the study*

Despite the significant results, it is important to acknowledge some limitations of this study. First, the sample used, consisting of 600 European listed companies, could be considered relatively small compared to the vast number of large companies in Europe. Consequently, the results may not capture all the nuances of IFRS 16 adoption on a continental scale. Moreover, the analysis is limited to the period 2018-2019, a relatively short timeframe that may not fully reflect the long-term effects of IFRS 16 adoption. A longer period of analysis could provide a more complete understanding of the impact of the standard (Leuz & Wysocki, 2016).

Finally, economic or industry-specific factors, not included in the model variables, could have influenced the financial performance of companies. The exclusive use of secondary data from the Orbis database may introduce limitations related to data quality and updating, compared to an analysis based on primary data collected directly from companies.

In summary, the introduction of IFRS 16 had a significant impact on the financial metrics considered. While NFP showed a slight reduction in the explanatory power of the model in 2019, EBITDA showed an improvement in the second year of adoption of the new accounting standard.

The statistical analyses confirm the validity of the models used, with significant results and no problems with multicollinearity or autocorrelation, and with adequately corrected heteroschedasticity. These results underline the importance of IFRS 16 in reshaping the representation of corporate liabilities and performance in financial statements.

In conclusion, the reduction in R-squared for NFP and the increase for EBITDA reflect how the adoption and stabilisation of IFRS 16 had different effects on the models' ability to explain changes in these two financial metrics. NFP showed a reduction in the explanatory power of the model, while EBITDA showed an improvement, probably due to the stabilisation and adaptation of companies to the new accounting standard in the second year of adoption.

6 – References

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