Erasmus School of Economics

Influence of IFRS 16 on Key Accounting Ratios for listed firms – Evidence from firms in the United Kingdom

Student name : Sachin Perera
Student ID : 535811
Supervisor : Prof.dr. Ying Ghan
Second assessor : Prof.dr. Jingwen Zhang

Abstract

The purpose of this research paper is to look into the changes that have occurred in accounting ratios due to the implementation of IFRS 16. The new standard requires all the leases to be recognized in the statement of financial position, therefore amending the accounting application followed by IAS 17, which is the previous standard. To conduct this research, I use firms listed in the London stock exchange and carry out a regression analysis. My results show that IFRS 16 has a significant influence on the key accounting ratios such as solvency, gearing, liquidity and profitability. Further my results also suggest that the implementation of IFRS 16 will have a substantial influence on the accounting ratios of different industries. The extent of the influence depends on the industry in which the firm operates.

Keywords: Leases, ratios, IFRS 16, accounting standards, adoption, IAS 17

Table of Contents

1. Introduction

The prime focus of this research is to look into the IFRS 16 impact, on key accounting ratios. Previous applicable accounting standard which was International counting standard (IAS) 17 was no longer applicable for reporting periods commencing after 1 January 2019. Leasing is a contractual agreement between a lessor (A lessor is defined as an individual or an entity who is an owner of an asset willing to rent or lease the said asset for a specific time period under an agreement) and a lessee (A lessee is an individual or an entity who receives an asset for rent or lease under a lease contract).

There has been much confusion regarding the recognition and application of leases in the current literature and in the practical business world and has been criticized by accounting professionals due to its lack of economic reality. For instance, a well-known example is the case of aircrafts. Under the IAS 17 model, aircrafts will fail to meet the asset or liability recognition requirement and therefore the financial statements will lack appropriate disclosure. The leasing project's goal is to develop a substitute for IAS 17, which currently differentiates two types of leases. Under a finance lease, risk and rewards are entirely transferred to the lessee with an option towards the end of the lease tenure to purchase an asset. With an operating lease, lessee doesn’t have the right to account for an asset or a liability in the balance sheet nor does it have the possibility to purchase the leased asset when the lease period comes to an end.

The primary goal of the International accounting standards board (IASB) was therefore to address these concerns in IAS 17 as it was quite evident that many leases are not shown in the balance sheet when it clearly qualifies the conditions to be recognized. Therefore, many analysts had to make their own alternations and adjustments accordingly to align all leases in the balance sheet which led to major inconsistencies in financial results and thereby the outcome of major business decisions involving financials. This interpretation difficulty faced by accountant’s, analysts and financial statements users, led to the development of a new lease accounting module that will

ensure consistency among financial statements and accurate reflection of the financial situation of a business.

Under IFRS 16, the existing issues in the previous standard were eliminated as there are substantial changes to the recognition criteria. IFRS 16 requires all leases to be accounted in the balance sheet as an asset and a corresponding liability as well thereby bringing all leases to the balance sheet and eliminating off-balance sheet leases.

The key idea of the adaptation of the IFRS 16, on the United Kingdom listed companies is being centralized as the main research core for this thesis compilation. Accordingly, when analyzing the context of the application for IFRS 16 it is notable that the standards have created wide implications in a firms financial statements.

As a result, the key rationale and the centric ideology for the research are revolving around the implications of adopting such standards on the performance and position of such listed firms. The implications of the new standard have an impact on the key decisions made by the economic stakeholders who are relying on the efficient market hypothesis for the adaptation of decisions pertaining to areas such as dividends, the retention and resale of shares and many other aspects including tax implications from a macro perspective. As a result, the following research question emerges:

RQ: Does the adaptation of IFRS 16 create an unfavorable outcome on financial performance and position in trends of the ratios such as liquidity, profitability, gearing risk and capital structure?

It is important to have an answer for this question because there seems to be a mixed reaction in the market about the impact of IFRS 16 due to its recency and due to limited research, which has been undertaken as of now. Several studies have looked into the market reaction to the new accounting standard due to the changes and the implications caused. The capitalization of leases will substantially change the outlook of the balance sheet and will in turn have a substantial influence on the accounting ratios of a firm which is the primary focus of this study.

This thesis will also further study how different industries will be affected due to the implementation of IFRS 16 and will evaluate if the extent of the effect depends on the industry in which a firm operates. For instance, firms operating in the Airline industry, prior to IFRS 16 did not recognize most assets in their balance sheets and were considered as off-balance sheet activities. Therefore, it is important to identify the pre-adaptation status of financial performance and position of firms and the degree of the impact of IFRS 16 on post adaptation.

To answer this research question, I follow previous studies and develop an ordinary least squares regression model. This model will be used as a starting point to answer the research questions. My research will be primarily focusing on the listed companies in the UK and I will require relevant data for both hypotheses prior to the mandatory implementation, which is 2017 and 2018, as well as years after adoption, which will be 2019 and 2020.

This model will determine the statistical significance of the ratios after the implementation of the new standard and I will further discuss about the economic significance of adopting IFRS 16 and the implications for a firm and on an industry level.

My findings for the first hypothesis suggest that IFRS 16 has a significant influence on the key accounting ratios of the listed firms. I analyze key accounting ratios such as liquidity, profitability, earnings and solvency ratios and I perform a regression analysis. The results show that the implementation of the new standard has a positive influence. According to the findings of the second hypothesis, the implementation of IFRS 16 will cause a substantial effect on balance sheet ratios in various industries. The extent of the impact is determined by the industry in which it operates.

The thesis will be organized in the following manner: I'll begin by discussing the theoretical review and institutional context, after which I'll discuss the research question in detail and discuss about the changes in accounting ratios due to capitalization of leases. After that, I'll go over my hypotheses and the methodology for testing them. Following that, I will discuss about my

empirical findings, the statistical and economical significance of the results. Finally, In the conclusion chapter, I will discuss about the possible answer to my research question and will discuss about the potential limitations of my research and recommendation for future research.

2. Literature review and development of hypothesis

2.1 Institutional background and Recent research

A new financial reporting standard was introduced to the accounting framework by the IASB on January 2016. The new reporting standard IFRS 16 is applicable for financial accounting periods starting after 1 January 2019. The implementation of the new standard is compulsory for all companies both public and private. However, for entities reporting under Financial Reporting Standard 102 is not required mandatorily to report under IFRS 16 as of yet. It is still uncertain when FRS 102 will be updated to reflect the changes of the new standard, but it's unlikely to materialize before 2023.

For many years, IASB had been taking into consideration modifying the standard on lease accounting. IAS 17 which was the previous accounting standard categorized leases as operating and finance leases. The main objective of developing a new lease standard by IASB is to enhance the financial reporting quality and to increase transparency thereby ensuring the financial performance of a company truly reflects a representation of its assets and liabilities.

IFRS 16 does not segregate leases between operating and finance leases as it replaces it with a single approach which is equivalent to a finance lease. With operating leases, the lessee will have the right to use the asset but with no effect on the balance sheet. Therefore, the accounting application would be to charge the lease rental to the income statement. For finance leases, the asset would be considered as purchased therefore the standard allows it to be recognized in the balance sheet. All future lease rentals would be present valued and would be capitalized as a liability and depreciation expense would be accounted in the income statement.

The implications of IFRS 16 will provide an initial surprise to stakeholders in firms that are affected, predominantly firms with significant operating leases for instance airline industry, construction and consumer goods such as retail which will be the most impacted. Ideally, IFRS 16 should not cause an economic effect on a firm from a cash flow perspective or how it is planning

to conduct its operations. However, it is possible that the new standard will cause a substantial influence on how a company operates and takes decisions. For example, firms will tend to negotiate the terms of the lease to be favorable in order to avoid presenting in the balance sheet or would seriously consider purchasing capital assets as it might be beneficial from a firm's perspective. Firms will also place emphasis on the disclosure of leases in their financial statements and the effect on accounting ratios and the additional reporting requirements to financial institutions to obtain debt.

Under IFRS 16, except for situations where exemptions are allowed (for instance, if the value of the asset is USD 5,000 or equivalent or if the lease term is less than a period of 12 months) all operating leases is required to be accounted in the balance sheet. Therefore, as a consequence of the IFRS 16, the financial statements of a firm will significantly be impacted despite the fact that the extent of the change will be determined by the firms lease portfolio and the lease term and conditions. At the initial recognition point, when a lease is recognized in the balance sheet a corresponding liability would also need to be recognized in the same amount. In the subsequent measurement, the right of use asset is depreciated as per the requirements of IAS 16 and will be capitalized on a straight-line basis accordingly. The lease liability is measured by discounting using an effective interest rate or incremental borrowing rate against all lease payments which are due at the initial commencement date. As a result, in the subsequent period, the right of use asset and the corresponding liability would not be equal.

IFRS 16 requires firms to recognize all most all the leases except for the exemptions discussed about earlier including leases that are recognized as operating leases in the previous standard. The requirements of IFRS 16 will increase the transparency in the balance sheet as assets and corresponding liabilities are both shown in the financial statements. Many analysts are currently adjusting financial statements to represent off-balance sheet lease transactions by usually increasing fixed assets and debt by seven times the yearly operating lease outflow.

The implementation of IFRS 16, would enable financial analysts to see firms own independent valuation of their lease assets and liabilities. IFRS 16 will also increase the values of total assets and total liabilities presented in the balance sheet. This could mainly have an impact on a range of industries, for example, airline industry and the firms operating in the retail industry. The higher the lease portfolio, the higher the impact on important metrics of reporting – on the balance sheet. Firms will often seem to be a higher asset base, but they will also be more deeply in debt while operating expenses will reduce and be substituted by depreciation of the right-of-use asset and a finance cost on the income statement.

2.2 Theoretical review

The new accounting standard on leases is an outcome of a collaboration between the IASB and the FASB, the accounting body responsible for setting financial reporting standard's in the United States. The main objective of this establishment was to deal with the concerns expressed by financial statement users on the limited comparability as the two accounting bodies applies two different accounting treatments which reduce the comparability across different jurisdictions. To tackle these issues, the two organizations created the new IFRS 16 methodology to lessee accounting that includes the following requirements:

A lease asset and a liability to be accounted by the lessee for the right and obligations and to improve the quality of the lease disclosures to better represent financial information for users of financial statements. IFRS 16 is applicable for all assets with a right of use including subleases except for certain items covered under other standards such as Leases for the exploration or use of natural gas, minerals, oil and other non-renewable resources, Biological assets that fall under IAS 41 Agriculture, Intellectual property licenses which fall under IFRS 15 Revenue from Contracts with Customers and licensing agreements which falls under IAS 38 Intangible assets, for example, patent, copyrights and videography.

Lease accounting is a project which was carried out by IASB and FASB jointly. One of FASB's first priorities was to address lease accounting issues; accordingly, a team of experts was assigned to the task to ensure all doubts and concerns were erased once and for all (Monson, 2001:275). Lease accounting principles have been criticized by users of financial statements, regulators and academics for years as being overly complicated and unproductive in the way they represented liabilities resulting from leasing agreements in the statement of financial position of the lessees (Monson, 2001).

Leases have been studied by a number of academics (Bowman, 1980; Imhoff, E. and Thomas, J. 1988); The majority of researchers have concentrated on the outcome in capitalizing operating leases on key financial indicators (Ashton, R.K. 1985; Durocher, 2009; El-Gazzar, 1993;). A recent research by Durocher, conducted in 2009, developed a model in which assumptions unique to a firm such as tax rates, interest rates and remaining useful life of lease assets were used for a sample of Canadian publicly traded firms, to analyze the outcome in capitalizing operating leases on key accounting ratios. The results of this research concluded that the debt to assets ratio will be increased and the current ratio will be significantly reduced if leases are to be capitalized. The results were the same irrespective of the industry in which the firms operate except for earnings per share, return on assets and return on equity where a significant impact was noted for three industries financial services, gas and oil and merchandising and lodging (Durocher, 2009).

In 2008, a similar research was conducted in Germany by Fülbier, Pferdehirt, & Lirio, where they analyzed for the years 2003 and 2004, the outcome of operating lease capitalization of 95 firms using three main indices (SDAX, MDAX and DAX 30). Based on the results it was shown that there is a substantial effect on the firms operating in the retail industry and fashion industry. A similar research was carried out by Jesswein in 2009. For this analysis, Jesswein used a sample of 600 firms from the US. The results of this research indicated that ratios such as Interest coverage, quick ratio, current ratio, return on invested capital (which evaluate the credit rating of the firm) and gearing ratio were significantly affected by the lease capitalization. According to the findings,

nearly a quarter of the firms that were previously thought to be relatively credit risk-free would no longer be considered so if the operating leases were accounted as per the requirements of IFRS 16 (Jesswein, 2009:83).

A similar study was conducted by Singh in 2012 where he analyzed a sample of 235 companies, which included 171 retail companies and 66 restaurants for the period between 2006 and 2008. He discovered significant relative and absolute differences in accounting ratios relating to interest coverage, profitability and leverage between the two industries (Singh, 2012). Nirvana (2015) set out to investigate the factors that influence operating lease policies such as firm size and growth, asset values and financial constraints and the effect of operating lease constructive capitalization on a firm's key accounting ratios. It was decided based on the findings that all determinants, other than financial constraints, have an impact on operating lease policies even though some factors other than economic determinants account for the majority of operating leases (Nirvana, et al., 2015).

2.3 Development of hypothesis

I analyze the effect of implementing IFRS 16 on Leverage/ balance sheet, Interest coverage, Liquidity and Profitability ratios, testing our first hypothesis:

H1-Adaptation of IFRS 16 has no impact on the key accounting ratios of Leverage/ balance sheet, Interest coverage, Liquidity and Profitability ratios, UK listed firms.

According to previous research, some industries use operating leases more frequently than others. This is an alternative strategy adopted by firms to avoid investing large chunks of capital as investments which allow firms to have more flexibility in their structure. This is a practice that is commonly followed in the retail industry for example clothes retail and food retail etc. in which firms lease retail estate goods (business locations and retails shops). In fact, previous papers have identified the retail industry as the sector that will be most impacted by the application of IFRS 16

(Bostwick et.al. 2013; Giner, B. Pardo, 2018; Kostolansky, J & Stanko, B. 2011). Transportation and hotels are two other industries that have been identified as most impacted according to Fitó et al., 2013.

The new accounting standard for leases will require all lease contracts to be accounted in the statement of financial position of the lessee. According to estimates, this modification will add billions of dollars in additional lease obligations to the airline balance sheets all over the world. According to a recent study conducted by PricewaterhouseCoopers on the impact of IFRS 16, it was revealed that the retail industry would be the most affected closely followed by the airline industry which demonstrates the impact of IFRS 16 on different industries. Considering these factors, the following second hypothesis is suggested in this context as follows:

H2-The influence of IFRS 16 on key accounting ratios does not depend on the industry in which the firm operates, UK listed firms.

3. Research Design

In this section, I will explain the empirical design to test my two hypotheses. I will start with an explanation of the accounting ratios that I will use to test my hypothesis. Afterwards, I will describe the sample selection.

3.1 Methodology

To test the hypotheses, I will be comparing the means of Leverage, Profitability, Coverage and Liquidity ratios before/after the adoption of IFRS 16. I follow prior studies to calculate the difference of all the ratios selected for the study, by using a comparability index. To compute this, I will use the following formula (Fitó et al., 2013).

$$Ci = \frac{Post.Ri - Pre.Ri}{Pre.Ri}$$

where:

Post.Ri measures the accounting ratio score after the adaptation of IFRS 16 for firm i.

Pre.Ri measures the accounting ratio score prior to the adaptation of IFRS 16 for firm i.

Ci represents the comparability score for firm i

3.2 Regression Model

To examine how the adoption of IFRS 16, affect key ratios, I develop an ordinary least squares regression model based on previous research. This model, which is shown below, will be used as a starting point to answer the research question.

$$Ci = \alpha + \beta_1 \text{Total Assets} + \beta_2 \text{Market Value} + \beta_3 \text{Loss}_{it} + \beta_4 \text{Sales Growth} + \beta_5 \text{R\&D} + \beta_6 \text{Subsidiaries} + \beta_7 \text{Industry} + \beta_8 \text{IFRS16} + \varepsilon$$

3.3 Dependent variable - Accounting Ratios

To understand the impact of IFRS 16 and compare my findings to those of previous studies, I conduct a study by analyzing six accounting ratios by dividing them into four groups as Leverage/ balance sheet, Interest coverage, Liquidity and Profitability ratios. All of the ratios calculated are shown in Table 1.

I calculate, Leverage/balance sheet as follows:

- The change in total assets (Var.Assets).

- The change in total liabilities (Var.Liability).

- Leverage is computed as Debt divided by Equity (DE).

- Leverage computed as Debt divided by Assets (DA).

I calculate, interest coverage ratio as follows:

-Interest coverage is measured as EBITDA divided by Interest cost

Analysts frequently use this interest coverage to examine the relationship between a company's cash flows generated and their interest cost. If the ratio is high, the risk for debt holders will be lower, as the firm creates enough positive cash flows to cover interest costs.

In relation to liquidity, I calculate:

- Current ratio is measured as current assets/current liabilities.

Table 1. Accounting ratios

Accounting ratios	**Expression**
Increase in assets	$Var\,iance = \frac{Pre.Assets}{Post.Assets} - 1$
Increase in liabilities	$Var\,iance = \frac{Pre.Liabilities}{Post.Liabilities} - 1$
Leverage ratios	
Debt/Equity Ratio prior to adoption of IFRS 16	$Pre.DE = \frac{Pre.Debt}{Pre.Equity} - 1$
Debt/Equity Ratio after adoption of IFRS 16	$Post.DE = \frac{Post.Debt}{Post.Equity} - 1$
Comparability index of Debt/Equity Ratio	$C.DE = \frac{Post.DE - Pre.DE}{Pre.DE} - 1$
Debt/Asset Ratio prior to the adoption of IFRS 16	$Pre.DA = \frac{Pre.Liabilities}{Pre.Assets} - 1$
Debt/Asset Ratio after the adoption of IFRS 16	$Post.DA = \frac{Post.Liabilities}{Post.Assets} - 1$
Comparability index of Debt/Asset Ratio	$C.DA = \frac{Post.DA - Pre.DA}{Pre.DA} - 1$
Profitability ratios	
ROA prior to the adoption of IFRS 16	$Pre.ROA = \frac{Pre.EBIT}{Pre.Assets}$
ROA after the adoption of IFRS 16	$Post.ROA = \frac{Post.EBIT}{Post.Assets}$

Comparability index of ROA

$$C.ROA = \frac{Post.ROA - Pre.ROA}{Pre.ROA}$$

EPS prior to the adoption of IFRS 16

$$Pre.EPS = \frac{Pre.Profit/loss}{Pre.No\ of\ shares}$$

EPS after the adoption of IFRS 16

$$Post.EPS = \frac{Post.Profit/loss}{Post.No\ of\ shares}$$

Comparability index of EPS

$$Post.EPS = \frac{Post.Profit/loss}{Post.No\ of\ shares}$$

Coverage ratios

Interest coverage prior to IFRS 16

$$Pre.ICR = \frac{Pre.EBITDA}{Pre.INTEXP}$$

Interest coverage after IFRS 16

$$Post.ICR = \frac{Post.EBITDA}{Post.INTEXP}$$

Comparability index of interest coverage after IFRS 16

$$C.ICR = \frac{Post.ICR - Pre.ICR}{Pre.ICR}$$

Liquidity ratios

Current Ratio before IFRS 16

$$Pre.CR = \frac{Pre.CA}{Pre.CL}$$

Current Ratio after IFRS 16

$$Post.CR = \frac{Post.CA}{Post.CL}$$

Comparability index of Current Ratio

$$C.CR = \frac{Post.CR - Pre.CR}{Pre.CR}$$

I calculate, profitability ratios as follows:

-Return on assets (ROA) is computed as net profit divided by total assets

-Earning per share (EPS) is calculated number of outstanding shares in use/ net profit

It's worth noting that the method used to calculate ROA in past studies differs from one author to the next. ROA is computed by some researchers as profit before tax divided by total assets or even in some cases total average assets (Duke et al, 2009 and Mulford et al, 2007). Other authors calculate ROA by dividing earnings prior to interest and tax (EBIT) by total assets or total average assets. However, In the ROA formula, interest expense is not adjusted. Some researchers (Singh 2012) even alter the formula to remove unusual items from the numerator. However, in my opinion, the interest cost has to be changed in the denominator because ROA is the return that a firm gets from its assets regardless of who funded its investment (Penman, 2007; Subramanyam & Wild, 2009). Furthermore, after implementing the new lease standard, firms will have an even higher cost expense due to the recognition of the lease liability that will need to be adjusted accordingly. As a result, the return appears to be higher as there is an increase in assets whereas the numerator will also be increased.

The new accounting standard will have a number of implications for financial statements and balance sheet items. Several studies have looked at how the market reacts to changes in accounting standards that affect key accounting ratios. In the table given below, I have summarized the expectation from each ratio when performing a test on the hypotheses.

Table 2. Ratio expectation

Metric	What it measures	Expected effect of IFRS 16	Explanation
Debt to Equity Ratio	Leverage	⬆ Increase	Expected to increase as the financial liabilities increase while the equity is expected to reduce.
Debt-to-Asset Ratio	Leverage	Depends	Financial liabilities and financial assets both will increase. The characteristics of the lease portfolio will determine the change in the ratio.
Return on assets (ROA)	Profitability	Depends	Financial assets and EBIT will both increase as a result of IFRS 16. The characteristics of the lease portfolio will determine the change in the ratio.
Earnings per share	Profitability	Depends	The effect on income statement is determined by the characteristics of the lease portfolio as well as the tax implications.
Interest Cover	Long term solvency	Depends	Interest expense and EBITDA will both increase as a result of IFRS 16. The characteristics of the lease portfolio will determine the change in the ratio.
Current Ratio	Liquidity	⬇ Decrease	Expected to reduce as the current liabilities increase while current assets stays the same.

3.4 IFRS Variable

In the regression, the IFRS 16 variable takes the form of a dichotomous variable. The firm years leading up to the new standard's implementation, which is 2017 and 2018, are coded with (0). The years 2019 and 2020 are coded (1) as the years following the implementation. The pre-implementation and post-implementation years would then be compared with each other.

3.5 Control variables

Control variables will be added in the regression model to control for firm size, profitability, growth, and industry fixed effects.

To control for the size, I use market value and total assets. I believe that larger companies with greater growth potential and more complex business operations will suffer more repercussions as a result of the new standard than smaller-scale companies. To measure the firm size I will use market value measured as the most recent share price times the quantity of shares. As a proxy for size, I also use total assets as changes in the standard could have a material impact on the total assets of the firm.

Similarly, net profit or net loss of the firm was used as a proxy for profitability as I expect that larger firms with higher profits to have a substantial influence on their financial statements due to the adoption of the new lease standard.

Firms were also classified according to growth characteristics. A firm was categorized as exhibiting above-average growth or below-average growth according to a comparison of its per cent change in sales.

The complexity of a firm is further increased by the number of subsidiaries of a client. More subsidiaries imply a greater amount of change in the balance sheet due to the adoption of IFRS 16 in consolidation and in eliminating intragroup transactions (Pong and Whittington, 1994). I will also use research and development as a proxy for firm complexity.

Additionally, this study will also contain industry fixed effects. As per the study of Morales Diaz et al. (2018), implementation of the new standard is significant in industries with higher operating lease costs. As a result, there could be cross-sectional differences among sectors, with certain sectors facing more severe repercussions as a result of the of the implementation of the new lease standard than others.

3.6 Sample selection

Since my research focuses on primarily on listed firms in the United Kingdom, I will need information from all of the firms listed on the London Stock Exchange. I will need relevant data for both hypotheses prior to the mandatory implementation, which is 2017 and 2018, as well as years after adoption, which will be 2019 and 2020. The adoption of IFRS 16 became mandatory on January 1, 2019, for reporting periods beginning on or after.

To carry out this study, I downloaded net income, total assets, return on assets, total liabilities, long-term debt, EBIT, interest expense, total equity, and SIC codes from the Orbis database. Afterwards, I used the extracted data to conduct a time series analysis to collect data on the other variables. Since there was no information to quantify certain ratios, some observations were removed from the sample in order to refine the dataset. Therefore, the final sample consists of 1172 companies after these have been removed.

The sample selection is as follows;

Table 3. Sample description	
Total sample (N)	1,142
Companies without financial information	(233)
Outliers	(38)
Total sample	**871**
Distribution of the sample by Industry	**N**
Banking, Insurance & Financial Services	187
Business Services	115
Mining & Extraction	90
Property Services	77
Industrial, Electronic & Machinery	71
Hotels & Leisure	53
Chemicals, Rubber & Plastic	49
Retail	37
Wholesale	36
Food & Tobacco Manufacturing	29
Communications	28
Transport, Freight & Storage	28
Construction	26
Utilities	19
Printing & Publishing	15
Textiles & Clothing Manufacturing	11
Total (N)	**871**

4. Results and Analysis

In this section, I will explain descriptive data analysis and the results of the regression analysis for both Hypothesis one and two.

4.1 Descriptive statistics

The descriptive statistics will be summarized below in Table 4.1. The final sample involves 971 firm-year observations for the period 2017 – 2020.

Variable	Obs	Mean	Std.Dev.	Min	Max
Pre.Assets	971	4.731	38.436	0	1055
Post.Assets	971	4.987	39.734	0	1036
Pre.Liability	971	3.372	35.027	0	1050
Post.Liability	971	3.811	35.826	0	1031
Pre.DE	971	0.381	5.234	-128.5	48.9
Post.DE	971	0.397	5.462	-135.38	143.83
Pre.DA	971	0.315	1.919	0	43.7
Post.DA	971	0.312	1.882	0	14.57
Pre.ROA	971	0.091	2.152	-61.3	6
Post.ROA	971	0.001	4.781	0	107.43
Pre.EPS	971	0.349	2.377	-6.81	63.47
Post.EPS	971	0.361	1.681	-33.66	15.41
Pre.IC	971	10.772	57.434	-100	978.52
Post.IC	971	16.174	71.487	-65	946
Pre.Current	971	1.957	9.269	.01	205.13
Post.Current	971	1.791	8.583	0	160.22

The mean asset value is higher for Post.Assets (after the adoption of IFRS 16) than Pre.Assets (before the implementation of IFRS 16). Similarly, the mean liability value is higher for Post.Liability (after the adoption of IFRS 16) than Pre.Liability (before the application of IFRS

16). The new standard requires companies to disclose all lease assets and the liabilities in their balance sheet with the exemption of short-term leases and assets which have a low value. Since the right-of-use asset is accounted as a non-current asset, and the lease liability is divided into both current and non-current liabilities, the asset and liability will increase. Therefore, for firms with substantial off-balance sheet leases, new lease standard is expected to lead to higher lease assets and lease liabilities.

The mean debt to equity value (measured as Debt/Equity) increases in the Post.DE period. This is mainly because with the effect of IFRS 16, liabilities increase with lease capitalization and equity is expected to decrease. When the new standard is applied to a single lease, the carrying amount of the lease asset gradually decreases faster than the carrying amount of the lease liability. That's because the lease asset is usually capitalized on a straight-line basis throughout the lease period, whereas the corresponding lease liability is increased by interest cost and is reduced by the lease payments, resulting in a lease liability that decreases over the lease's life. As a result, even though the lease asset and lease liability amounts are exactly the same at the initial recognition, towards the end of the lease period, the asset value is usually lesser than the liability. Accordingly, if all other factors that could affect equity remain constant, applying the new lease standard to firms with significant off-balance sheet leases will naturally reduce shareholder equity compared to the previous reporting standard IAS 17.

There is no significant change between the means of debt to asset values (DA). The mean value of Pre.DA is 0.315 and the mean value of Post.DA is 0.312. That's because when operating leases are capitalized, both assets and liabilities increase.

The impact of ROA (Return on assets), EPS (Earnings per share) and IC (Interest coverage) cannot be reliably measured as it is difficult to obtain consistent results since the characteristics of the lease portfolio will determine the change in the ratio.

The mean value of the current ratio has declined in the Post-implementation period in comparison to the period before the adoption of the new standard. This is because the current lease liabilities increase while current assets remain unchanged. The right-of-use asset is accounted as a non-current asset, whereas the corresponding liability is divided into a current and a non-current liability hence increasing the current liability portion.

4.2 Hypothesis 1

Table 4.2
Regression analysis

Variables	Debt to equity	Debt to assets	ROA	EPS	Interest coverage	Current ratio
Total assets	-0.017	-0.014	0.000	-0.001*	-0.001**	0.002**
	(0.005)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
IFRS	0.308**	0.463**	-0.932	0.216*	0.929*	0.436**
	(0.652)	(0.535)	(0.009)	(0.032)	(0.121)	(0.217)
Loss	-0.551***	-0.542*	0.389**	-0.189**	0.050*	-0.176***
	(0.004)	(0.045)	(0.025)	(0.011)	(0.007)	(0.002)
Research and development	0.723	-0.062	0.567	-0.276*	-0.144	0.085
	(1.018)	(0.125)	(0.090)	(0.023)	(0.023)	(0.019)
No. of Subsidiaries	0.119	0.572	0.146	-2.218**	0.342	0.26
	(0.023)	(0.011)	(0.126)	(0.126)	(0.066)	(0.739)
Sales Growth	-0.010*	-0.008**	0.003***	-0.003***	-0.001**	-0.001**
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total employees	-0.062	-0.000*	0.012	0.129	-0.001	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Industry fixed	0.582**	0.182**	0.3717**	-2.173***	-0.074	-0.168
	(0.452)	(0.452)	(0.176)	(0.010)	(0.042)	(0.119)
Constant	0.454	3.873	-18.171	2.997**	-0.174**	-2.379
	(0.217)	(0.002)	(0.535)	(0.135)	(0.008)	(0.768)
Observations	971	971	971	971	971	971
Adj R-squared	0.763	0.826	0.693	0.866	0.821	0.749

Standard errors are shown in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The first hypothesis examines whether there is an effect on key accounting ratios such as leverage, solvency, profitability and liquidity ratios due to the implementation of IFRS 16.

Results of the regression analysis

Adoption of IFRS 16, has a substantial effect on the debt-to-equity ratio as the results suggest. The result is significant at a 10% and 5% threshold. This is in line with my current expectation as the debt increases with the lease liability and equity is expected to decrease with the impact of IFRS 16. According to the findings, the adoption of the IFRS 16 standard has a positive influence on debt-to-equity ratio which is consistent with hypothesis 1.

Similarly, the adoption of the new financial reporting framework by IASB has a substantial effect on the debt to assets ratio as the evidence indicates. The result is significant at a 10% and 5% threshold. The expected effects of this ratio are somewhat subjective as there is a simultaneous impact on assets and liabilities due to capitalizing leases. Therefore, the characteristics of the lease portfolio will determine the change in the ratio. According to the findings, the adoption of the IFRS 16 standard has a positive influence on debt to asset ratio which is consistent with hypothesis 1.

Results of the regression on profitability ratios show mixed results. Return on assets is not significant as it does not show any correlation with the implementation of the new IFRS standard. However, earning per share is significant at a 10% threshold. Adoption of the accounting standard for leases will have a substantial influence on the earnings of a firm (measured by earnings/ no of shares), particularly in the early years. When using IFRS 16, the depreciation charge and the total interest expense are anticipated to be higher in the first half of the lease period than when using IAS 17. That's because the lease asset is usually capitalized on a straight-line basis throughout the lease tenure, whereas the interest expense typically decreases as the lease liability decreases over time.

The interest coverage ratio is positively affected by the new lease standard as it is statistically significant at a 10% threshold. With the effects of the new standard EBITDA will increase as the lease cost was earlier included in EBITDA. Therefore, EBITDA will not be deducted under IFRS 16 because lease cost is changed to amortization and interest costs. However, the interest cost will increase in the early years and will gradually decline with the unwinding. This impact is reflected in the results.

As expected, the current ratio is significantly affected by the new standard. The result is significant at a 10% and 5% threshold. This is mainly because with the capitalization of leases the current lease liabilities increase whereas the current assets remain unchanged as the ROU asset is recognized as a non-current asset. According to the findings, the adoption of the IFRS 16 has a positive influence on the current ratio. This is consistent with my first hypothesis.

4.3 Hypothesis 2

The second hypothesis examines whether the key accounting ratios of UK listed firms are affected due to the implementation of IFRS 16, based on the industry it operates.

Results of the regression analysis

With regards to leverage (represented by DE), the industries with the highest statistical significance are hotels and leisure and transport, retail and freight &storage. The industries with the lowest statistical significance are communications and business services.

The retail industry, which relies heavily on rented space for its stores, is likely to be one of the most affected by the IFRS 16. A study conducted by PwC on capitalization of leases showed that retailers would have a median debt increase of 96 per cent. The majority of these leases are medium-term (typically 4 to 10-year) leases, irrespective of whether they are located in prime locations (flagship stores), shopping malls, or regular outlets.

Table 4.3

Regression analysis

Industry	N	Debt to equity (DE)	Debt to assets (DA)	ROA	EPS	Interest coverage	Current ratio
Banking, Insurance & Financial Services	187	0.369	0.275	0.291	0.146	0.301	0.228
Business Services	115	-0.002	0.93	0.826	0.863	0.299	0.372
Chemicals, Petroleum, Rubber and Plastic	49	0.279	-0.358	0.161	-0.556	0.891	-0.716
Communication	28	-0.606	0.847	0.944	0.844	0.32	0.901
Construction	26	0.437	0.048	0.028	0.954	-0.929	0.977
Food and Tobacco Manufacturing	29	0.001	-0.024	0.528	0.646	-0.703	0.242
Industrial, Electronic and Machinery	71	0.139	0.518	0.447	0.432	-0.384	0.966
Mining & Extraction	90	0.071	0.198	0.234	0.219	0.69	-0.561
Printing & Publishing	15	0.331	0.279	0.944	0.384	0.28	0.837
Property Services	77	0.345	0.209	0.499	0.265	-0.096	0.901
Retail	37	0.189***	0.946**	0.578	0.905	0.000**	0.327***
Textiles & Clothing Manufacturing	11	0.491	0.092	0.635	0.74	-0.756	0.137
Transport, Freight & Storage	28	0.121**	0.974	0.261	0.397	0.64	0.582
Hotels & Leisure	53	0.253**	0.914*	0.878	0.924	0.26	0.140**
Utilities	19	0.522	0.129	0.486	0.909	0.203	0.007
Wholesale	36	0.082	0.135	0.695	0.565	0.004	-0.556

Standard errors are shown in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The D/E ratio is a crucial criterion for evaluating how much a company relies on debt to fund its operations versus shareholder equity. With the implementation of the new standard for lease accounting, liabilities are expected to increase, while equity is supposed to decrease. A higher ratio

indicates that the company is taking on more risk and is relying on debt to fund its expansion. Therefore, the default risk of being unable to settle debt will increase for industries operating in retail, hotels and leisure and transport, freight & storage with the implementation of IFRS 16.

As per the requirements of IAS 17, leases were regarded as an operating lease and thus have had no effect on the statement of financial position. Typically, the amount accounted in the income statement was on a straight-line basis and fully recognized in operating expenses. In addition to having an influence on the balance sheet, operating costs will also be affected by the new standard, with a split between operating and finance costs. However, it is unlikely that the exemption for short-term leases and insignificant leases will provide retailers with any significant relief.

Since both assets and liabilities will increase at simultaneously as the new standard is implemented, leverage measured will be less affected. The highest statistical significance can be observed in the retail industry and Hotels & Leisure. The lowest increase can be observed in the chemical and Food & Tobacco Manufacturing.

Similarly, in particular, retail firms who frequently lease numerous properties to be used for their retail business would be affected by this the new standard as these property leases were not included as liabilities in the retail firms financials. After the adoption of IFRS 16, the retail firms would therefore recognize a lease asset and a lease liability.

In terms of economic significance, debt to asset ratio determines the financial risk of a firm. If the ratio increases, it means that a large share of the firm's assets are financed with debt, and the company faces a higher risk of default. This will be unfavourable for companies as it will be difficult to get new loans for new projects. However, since both assets and liabilities increase after the implementation of the new standard, the impact to the ratio will be nullified.

Previous studies show differences in the usage of leasing in different sectors (Smith & Wakeman, 1985; Adams & Hardwick, 1998). Recent literature also shows that when it comes to operating leases, various sectors show largely different lease intensities. Due to the adoption of the new lease

standard, there could be larger effects from lease capitalization in some sectors than others; retail and hotels being the most commonly identified lease intensive industries (Mulford & Gram, 2007; Fülbier, 2008; Morales-Díaz & Zamora-Ramírez, 2018a, 2018b).

The effect of ROA is subject to a different evaluation because there are two factors to take into account: the increase in total assets and the increase in net results after interest expenses are deducted. The results vary from sector to sector and there is no statistical significance.

As majority leases are now reflected in the balance sheet, the lessees will seem to have increased their assets but will have an effect on the liabilities as the liabilities increase due to the present value of the lease payments being accounted as a liability. Income statement will also have a substantial impact due to this. Due to the "unwinding" of interest on the lease liability, rent expenditure will increase even if the cash payments remain unchanged over the lease period. Because of this, earnings per share (EPS) will be lower in the initial period of a lease term. Based on the results there is no statistical significance between different industries as the impact on the ratio depends on the impact on the income statement, which is dependent on the lease portfolio characteristics as well as the tax implications.

It is important to consider EBITDA and interest expense in order to analyze the effect on interest coverage ratios by sector. Previously, lease costs were recognized in EBITDA. Under the previous accounting standard, the lease expense was charged to EBITDA. In the new accounting standard lease expense will be recognized as interest expense and amortization and therefore will not be reduced from EBITDA. The Interest expense will also have an influence on the interest coverage ratio. There will be a negative influence on the interest coverage ratio when the increase in interest cost is higher.

The only industry with a statistical significance is the retail industry. The ratio is generally reduced as the increase in EBITDA is far less than the increase in interest expenditure.

In relation to the current ratio, the industries that have the highest statistical significance are retail and hotels and leisure and transport. The sector with the lowest statistical significance is the Wholesale industry. This is because going forward firms operating in Retail and Hotel industry are required to identify leases as a right-of-use asset and also recognize a lease liability in the balance sheet. The right of use asset is recognized as a non-current asset, while the liability is divided into two parts: current and non-current, hence increasing the current liability where the current asset portion stays the same. Therefore, as the results suggest the liquidity ratios of these industries will be significantly impacted by the implementation of IFRS 16.

In terms of economic significance, the current ratio assesses the capability of an entity to meet short-term obligations or those which are due within a year. As mentioned earlier, the ratio will decline as the current lease liabilities increase whereas the current assets stay the same since there is no impact. This will severely affect industries operating in retail, hotels and leisure and transport who require to generate cash in order to run their day-to-day operations thereby increasing their operational risk.

5. Conclusion and implications

In this section, I will discuss the summary of my findings and the limitation encountered in performing the research. I will also discuss the potential recommendations for future research in this area.

5.1 Conclusion

In January 2016, the IASB published IFRS 16, which is applicable for accounting periods starting subsequent to January 1, 2019. A new lease accounting standard ASU 842 was also released by the FASB in February 2016. Based on the implications of this new lease standard, a lessee's statement of financial position and the income statement would change significantly depending on the number of operating leases.

In this research, I examine the influence of the IFRS 16 on key accounting ratios of the listed firms in the UK in the first hypothesis. I also further examine whether the influence of new accounting standard on key accounting ratios depend on the industry in which the company functions, in publicly listed UK companies in the second hypotheses.

Based on the results of the first hypothesis it is evident that IFRS 16 has a significant influence on the key accounting ratios of the listed firms. I analyze key accounting ratios such as liquidity, profitability, earnings and solvency ratios and I perform a regression analysis. The outcome of this study indicates that the adoption of the new lease has a positive influence.

The findings of the second hypothesis suggest that the implementation of the new standard is going to have a substantial influence on balance sheet ratios of different industries. The extent of the influence depends on the industry in which the company functions. Based on the results the industries which are mostly affected by the new standard are Retail, Transport, Freight & Storage and Hotels & Leisure. This is mainly because, retail companies, transport and storage companies frequently lease many properties to be used for their commercial operations and it would be affected by this change because these property leases are not currently included as liabilities in the

financial statement. Following the application of IFRS 16, they would now recognize these leases as a right-of-use asset and a corresponding lease liability should be accounted in the balance sheet.

In conclusion, the findings show how the new standard has impacted the key accounting ratios of the companies and how different industries are affected due to this new implementation. A ratio analysis is essential for the company to evaluate its financial performance, financial stability, risk, operational effectiveness, liquidity, solvency, and perhaps even the appropriate utilization of financial resources. It also indicates the current trends of a company financial results and enables a company to compare its financial performance with its competitors, which can be beneficial for shareholders making investment decisions.

Accounting ratios will also have implications on debt covenants. Debt covenants are the terms and conditions imposed by a bank or a financial institution, requiring companies to comply when a loan is granted to prevent borrowers from making decisions that could have a significant negative effect or put the lender at risk. For instance, a debt covenant is a restriction where a borrower agrees to maintain a percentage for certain ratio's such as debt/equity, debt/assets, interest coverage ratio, total assets and dividend payout ratio. As a result, it is important for companies to have an understanding IFRS 16 implications in order to be better organized to address potential issues and reduce compliance risk and implementation expenditure.

The findings of the research add to the existing literature in areas where there has been little research due to the recency of IFRS 16. This will shed light on research into new areas and to address questions for companies as financial results are essential for all internal and external stakeholders.

5.2 Limitations and recommendations for future research

The main limitation of this study is the availability of the data. IFRS 16 is applicable for annual financial periods commencing subsequent to 1 January 2019. As such my data sample for the post-adoption period was limited to the year 2019 and 2020. Notwithstanding the fact that certain listed

companies have not disclosed their annual financials for 2020 which further limits my sample data. Future researchers therefore should extend the population beyond 2,3 years to improve the quality of the research.

Secondly, the research data cannot be generalizable to the rest of the world as I have only included listed companies in UK, and therefore these findings do not reflect how it will impact the accounting ratios of individual companies and in different industries on a global scale. To increase the generalizability of the findings, a study of IFRS 16 should be carried out, with a larger population. In many parts of the world, IFRS is required or permitted including European Union, South Africa, Brazil, Hongkong, Cayman Islands, India. As a result, there are enough companies from different parts of the world that a new study could include. This way the results can be more generalized and accepted everywhere in the world. Therefore, it will be advisable to extend the sample beyond a single geographic jurisdiction with varying economic, political and social factors which will provide an accurate reflection on the impact of IFRS 16.

6. References

Adams, M and Hardwick, P. 1998. Determinants of the leasing decision in United Kingdom listed companies. Applied Financial Economics, 8: 487–94

Ashton, R.K. (1985) 'Accounting for finance leases: a field test', Accounting and Business Research, 15, Summer: 233–8.

Bostwick, E. D., Fahnestock, R. T., & O'Keefe, W. T. (2013). Effects of lease capitalization techniques on key measures of financial performance. Journal of Finance & Accountancy, 12, 91-102.

Bowman, R. (1980), "The debt equivalence of leases: an empirical investigation", The Accounting Review, Vol. 55 No. 2, pp. 237-53.

Dennis W. Monson; The Conceptual Framework and Accounting for Leases. Accounting Horizons 1 September 2001; 15 (3): 275–287

Duke, J. C., Hsieh, S. J., & Su, Y. (2009). Operating and synthetic leases: Exploiting financial benefits in the post-Enron era. *Advances in Accounting*, *25*(1), 28-39.

Durocher, S. (2009) Canadian evidence on the constructive capitalisation of operating leases, Accounting Perspectives, 7(3), pp. 227–256.

El-Gazzar, S. (1993), "Stock market effects of closeness of debt covenant restrictions resulting from capitalization of leases", The Accounting Review, Vol. 68 No. 2, pp. 258-72.

Fitó, M. A., Moya, S., & Orgaz, N. (2013). Considering the effects of operating lease capitalization on key financial ratios. Spanish Journal of Finance and Accounting/Revista Española de Financiación Y Contabilidad, 42(159), 341–369.

Fülbier, R., Lirio, J. and Pferdehirt, M. (2008) Impact of lease capitalisation on financial ratios of listed German companies, Schmalenbach Business Review, 60, pp. 122–144

Imhoff, E. and Thomas, J. (1988), "Economic consequences of accounting standards: the lease disclosure rule change", Journal of Accounting and Economics, Vol. 10 No. 4, pp. 277-310.

Giner, B. and Pardo, F. (2018), The Value Relevance of Operating Lease Liabilities: Economic Effects of IFRS 16. Australian Accounting Review, 28: 496-511

Jesswein, K. R. (2009). Analyzing creditworthiness from financial statements in the presence of operating leases. Academy of Accounting and Financial Studies Journal, 13(1), 75-90

Kostolansky, J., & Stanko, B. (2011). The joint FASB/IASB lease projects: Discussion and industry implications. Journal of Business & Economics, 9 (9), 29-35.

Mulford, C., & Gram, M. (2007). The effects of lease capitalization on various financial measures: An analysis of the retail industry. Journal of Applied Research in Accounting and Finance, 2(2), 3–13

Morales-Díaz, J., & Zamora-Ramírez, C. (2018). The impact of IFRS 16 on key financial ratios: a new methodological approach. Accounting in Europe, 15(1), 105-133.

Penman, S. H. (2007). Financial statement analysis and security valuation. New York: McGraw-Hill.

Pong, C.M. and Whittington, G. (1994), "The determinants of audit fees: some empirical models", Journal of Business Finance & Accounting, Vol. 21 No. 8, pp. 1071-91.

Singh, A. (2012). Proposed lease accounting changes: Implications for the restaurant and retail industries. Journal of Hospitality & Tourism Research, 36(3), 335–365.

Subramanyam, K., & Wild, J. J. (2009). Financial statement analysis. New York: McGraw-Hill