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IFRS 16 - So far so good?

A post-implementation review of the new leasing standard of listed firms in Sweden

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Abstract

On January 1st 2019, the new leasing standard International Financial Reporting Standard (IFRS) 16 *Leases* became effective. The main distinction with the new standard is that nearly all leases have to be capitalized and put on the balance sheets, hence the option of off-balance sheet lease financing and its favorable consequences is no longer available. In this study, we investigate whether incentives previously relevant for off-balance sheet lease financing are still relevant in spite of the standard change. We also investigate whether there are any significant differences in the implementation of IFRS 16 between industries. We use a sample of 110 Swedish firms, listed on the OMX Nordic Exchange Stockholm. We develop our own dependent variable, which is a ratio between the total value of leases as of March 31st 2019 (post-implementation) and the total value of leases as of December 31st 2018 (pre-implementation). This ratio enables us to test if our identified incentives of interest are still relevant, and facilitates the detection of any potential industry differences concerning the implementation of IFRS 16. We identify three different incentives in previous literature that we hypothesize will have an impact on the total value of leases after implementation of IFRS 16. The three incentives are a profitability metric, debt covenants and debt capacity. In line with predictions in literature pre-implementation, we find that stricter debt covenants lower the total value of leases post-implementation. This indicates that firms avoid bringing all leases to the balance sheets in order to not violate debt covenants. However, we find weak or no evidence that the other incentives affect the total value of leases post-implementation. Neither do we find any evidence for differences between industries regarding how they have adapted to IFRS 16.

Keywords: IFRS 16, Leasing incentives, Off-balance sheet financing

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Table of Contents

1 Introduction 1

2 Literature Review & Hypothesis Development 4

2.1 IFRS 16 4

2.2 Leasing incentives 5

2.3 Industry differences 8

3 Method 10

3.1 Capitalization of operating leases 10

3.2 Research design 11

3.2.1 OLS regression 11

3.2.2 ANOVA model 14

3.3 Sample selection & Descriptive statistics 15

3.3.1 Sample selection 15

3.3.2 Descriptive statistics 16

3.4 Robustness checks 17

4 Empirical Findings & Discussion 19

4.1 Regression output & Analysis 19

4.2 ANOVA results & Analysis 21

4.3 Sensitivity analysis & Scenario analysis 23

5 Conclusion 25

5.1 Limitations & Future research 26

References 28

Appendix 32

List of Tables

Table 1: Variable descriptions 13

Table 2: Sample selection 15

Table 3: Summary of variables 16

Table 4: Pearson's Correlation matrix 17

Table 5: OLS regression 19

Table 6: ANOVA 21

Table 7: Sensitivity analysis 23

Table 8: Scenario analysis 24

1 Introduction

Leasing is, and has historically been, a common financing product for firms (Morales-Díaz & Zamora-Ramírez, 2018). One benefit of lease financing includes the lessor's possibility to regain the asset in case of bankruptcy, compared to conventional debt (Eisfeldt & Rampini, 2009). In 2014, reported leases were estimated to US$3.3 trillion, whereof 85% were not recognized on the balance sheets (IFRS, 2016). Previous accounting standards for leases allowed for firms to classify the leases as either finance or operating, which created clear advantages to use operating leases due to its off-balance sheet treatment (Giner & Pardo, 2018). By keeping leases off-balance sheet, firms could further expand their debt capacities but also improve financial metrics, such as return on assets (Beattie, Edwards & Goodacre, 1998). The binary treatment of leases caused incentives for managers to structure their contracts into operating leases (Krische, Sanders & Smith, 2012). In other words, managers had the possibility to use their discretion in order to maintain or achieve certain reporting outcomes (O'Brien, 2005; Nuryani, Heng & Juliesta, 2015). As a result, operating leases increased with 745% in relation to debt under the previous standards between 1980 and 2007 (Cornaggia, Franzen & Simin, 2013). The clear advantages of operating leases and the propensity for managers to use their discretion to structure firms' lease contracts into operating leases called for a change in the leasing standards (Dhaliwal, Lee & Neamtiu, 2011).

The new standard was jointly developed by the International Accounting Standard Board (IASB) and the Financial Accounting Standard Board (FASB). After a long process of developing the standard, with dispersed opinions from various interest groups (Morales-Díaz & Zamora-Ramírez, 2018; Giner & Pardo, 2018), the International Financial Reporting Standard (IFRS) 16 *Leases* became effective on January 1st 2019. With IFRS 16, the separation between finance and operating leases is eliminated and nearly all leasing contracts are to be recognized on the balance sheets, with only a few exemptions (IASB, 2016a). Under the previous standards, the propensity to structure leases into operating leases resulted in comparability issues between firms' financial reports, both within and between industries (Morales-Díaz & Zamora-Ramírez, 2018). Two firms that operated within the same industry and had similar operations could present financial reports that differed, depending on how each of these firms chose to finance their assets as well as how they chose to structure their leases (Magli, Nobolo & Ogliari, 2018). Accounting comparability is an important aspect for investors and other stakeholders of firms in order to have the ability to evaluate differences and similarities between firms (Ross, Shi & Xie, 2019). The standard change is expected to improve the comparability of firms and the transparency of firms' financial reports (IASB, 2016b). It is also expected to reduce the need for investors to manually capitalize operating leases

(IASB, 2016b). Moreover, with the implementation of IFRS 16, the IASB has the objective to improve the qualitative characteristics of relevance and faithful representation in order for the accounting information to be useful (IASB, 2018a; IASB 2018b). The discussion above can be summarized with the following quote by the chairman of the IASB at the issuance of IFRS 16:

"These new accounting requirements bring lease accounting into the 21st century, ending the guesswork involved when calculating a company's often-substantial lease obligations. The new Standard will provide much-needed transparency on companies' lease assets and liabilities, meaning that off balance sheet lease financing is no longer lurking in the shadows. It will also improve comparability between companies that lease and those that borrow to buy." - Hans Hoogervorst, Chairman of the IASB[1]

It is apparent that the expectations on IFRS 16 are that issues associated with operating leases and its off-balance sheet consequences are resolved. However, we argue that there could still be some problems 'lurking in the shadows'. The incentives for firms to use and structure their leases into operating leases do not disappear simply due to the standard change. Therefore, we examine whether some of these incentives affect the value of leases post-implementation of IFRS 16. The possibility to achieve off-balance sheet financing with operating leases is no longer available, but we find it valuable and interesting to evaluate whether there are other possibilities for firms to circumvent the implications of the standard. We also investigate if the total value of leases pre- and post-implementation of IFRS 16 differ between industries in order to determine whether the comparability issue between industries is reduced.

Previous research has, with a pre-implementation perspective, mainly focused on how financial performance metrics will be affected by the standard change, see for example Morales-Díaz and Zamora-Ramírez (2018) and Magli et al. (2018). In this study, we add to the literature with a post-implementation review (PIR) of IFRS 16. The new standard results in an explicit accounting effect since the separation between finance and operating leases is eliminated. Nonetheless, we aim to determine, with a lessee perspective, the implicit effects of the standard. In other words, whether firms deliberately avoid bringing operating leases to the balance sheets and whether there exist any industry differences.

[1] IFRS (2016)

To conduct our study, we use a ratio between total value of leases after the implementation and total value of leases before the implementation of IFRS 16 as our dependent variable. This ratio enables us to test if firms avoid capitalizing all operating leases after January 1st 2019. It also facilitates us to test whether specific incentives have affected the value of leases after the implementation and enables us to detect potential differences between industries. We identify a profitability metric, debt capacity and debt covenants as our incentives of interest. Our study establishes that with stricter debt covenants, the total value of leases is lower after the implementation. This suggests that firms avoid bringing all operating leases to the balance sheets, regardless of the implementation of IFRS 16, in order to not violate debt covenants. Furthermore, our study provides weak or no evidence that our profitability metric of interest, return on assets, and debt capacity lower the total value of leases after the implementation of IFRS 16. Lastly, we find no evidence that there exists a difference between industries concerning the implementation of IFRS 16.

Our study contributes to the accounting literature with an ex-post perspective on the implementation effects of IFRS 16. It will provide a greater understanding of how firms reacted to the standard change, how they comply to the standard and if there are factors that influence their decisions concerning their adoption of IFRS 16. Moreover, our report contributes to standard setters since it helps to determine whether IFRS 16 improves comparability and transparency of the financial reports. Further, under previous standards investors had to manually capitalize the operating leases upon analyzing firms. Hence, our findings are also useful for investors as they determine if it is sufficient for them to fully rely on recognized leases, or if there is new off-balance sheet financing for them to consider when evaluating firms.

The remainder of the report proceeds as follows. In section 2, we present a review of IFRS 16, previous literature regarding incentives for operating leasing as well as forecasted industry differences concerning the implementation of IFRS 16. In this section we also present our hypothesis development. We describe our methodology in section 3. More specifically, we provide our data collection process, research design, variable descriptions and robustness checks. Our empirical results and analysis are presented in section 4. Finally, our conclusion, limitations and suggestions for future research are presented in section 5.

2 Literature Review & Hypothesis Development

This section leads off with a short summary of the new leasing standard. Then we present existing literature in operating leasing together with our hypothesis development.

2.1 IFRS 16

The standard of IFRS 16 *Leases* replaces IAS 17, with the main distinction that there is no longer a separation between finance and operating leases (IASB, 2016b). All contracts that are to be classified as a leasing contract are now to be recognized on the firm's balance sheet as an asset and corresponding liability. Hence, leasing contracts that previously have been classified as operating, and disclosed in the notes with the yearly leasing fees taken as an expense, must now be capitalized and put on the balance sheet. In other words, treated like a corresponding finance lease (IASB, 2016b). Lessees will henceforward account for their "right-to-use" of an asset during the non-cancellable period of the lease contract. When determining the non-cancellable lease term, the lessee should incorporate and assess potential options to extend and terminate the lease contract. Hence, they have to evaluate the probability and economic incentives to exercise such options (IASB, 2016a). The new standard will not induce any substantial changes for the final result of the income statement, but rather change how to classify the expenditures. With IFRS 16, the former lease expense under operating leases will be divided into two parts: depreciation expense and interest expense. The balance sheet is however expected to change significantly, due to the historically large share of operating leases that now will be capitalized (IASB, 2016b). There are two exemptions in IFRS 16, which state that leasing contracts that are under 12 months and below US$5,000 are allowed to be accounted for in the same way as operating leases under IAS 17 (IASB, 2016a). These exemptions are expected to be below 1% of the total non-current assets and liabilities, based on a research made by the IASB. This research suggests that these exemptions are expected to have no effect on the total amount of reported leases (IASB, 2016b). These projections rely mainly on the fact that these low value exemptions do not represent transactions that are perceived as material[2] for larger firms (IASB, 2016b).

IFRS 16 also allows for lease and non-lease components to be separated (IASB, 2016a). This means for example that if a contract includes both a leasing agreement and a service agreement, the lessees are allowed to not capitalize the service part of the agreement on the balance sheet (IASB, 2016b).

[2] Accounting information is *material* if leaving out the corresponding information would affect the decision making by the users of financial information (IASB, 2018b)

The separated service agreement is accounted for in a similar way as operating leases (IASB, 2016b). In order for a contract to classify as a lease, the lessee needs to have the right to use an asset, without the possibility for the lessor to substitute the asset during the contract period (IASB, 2016a). In addition, the substitution needs to be economically beneficial for the lessor in order for the contract to not classify as a lease and hence possess substantial substitution rights (IASB, 2016a). The auditing firm PwC gives an example as a guideline in determining whether to classify the contract as a lease or as a service. In this example, the lessee has a contract to use a space in a stadium to sell its goods in a kiosk. Since the lessor both had the right to substitute the asset as well as benefit from the substitution economically, the contract was classified as a service and not a lease (PwC, 2016).

2.2 Leasing incentives

Incentives for leasing have been heavily discussed in research for several decades, whereas there is less of studies related to incentives for operating leasing. This section presents some existing literature in operating leasing and off-balance sheet financing since the incentives of these two could be argued to be similar, as operating leasing is a type of off-balance sheet financing (Giner & Pardo, 2018). After the adoption of IAS 17 and SFAS 13 (the U.S. equivalent of IAS 17)[3], numerous studies show that firms chose to restructure their lease contracts in order to avoid the economic consequences of capitalizing all finance leases (Imhoff & Thomas, 1988; Cornaggia et al., 2013). Imhoff and Thomas (1988) show that many firms underwent large restructuring costs in the U.S. after the implementation of SFAS 13 in order to change from capital leases (U.S. equivalent of finance leases) to operating leases. In a later study, Imhoff, Lipe and Wright (1991) propose a method to capitalize the operating leases, which according to the authors was necessary as many operating leases retained the attributes of long-term leases yet were only disclosed in the notes.

Financial metrics

After the publication of the studies suggesting methods to capitalize operating lease liabilities (Imhoff et al., 1991; Graham, Lemmon & Schallheim, 1998), researchers have performed numerous studies to prove whether capitalization of operating leases significantly alter financial ratios, such as return on assets (Beattie et al., 1998; Goodacre, 2003; Cornaggia et al., 2013). Beattie

[3] From this point on we will make the assumption that the treatment of finance and operating leases is the same irrespective of country when referring to literature.

et al. (1998) find capitalization to have a significant impact (at 1% significance level) on profit margin, return on assets, asset turnover and leverage of firms. They conclude that their study could be of great assistance to standard setters when evaluating the economic consequences of a potential leasing standard change (Beattie et al., 1998). When investigating the retail sector, Goodacre (2003) shows that nine key performance ratios would be affected by the capitalization of operating leases, including ROA, ROE and ROCE. These expected consequences are derived from the fact that firms' balance sheets are expected to be greater since firms are obligated to put all leases on the balance sheets in accordance with IFRS 16 (IASB, 2016b). Correspondingly, the results of Cornaggia et al. (2013) show that if leases were to be capitalized over their 27-year sample period, average debt-to-capital ratios would increase 15% to 29%. Further, if leases were to be capitalized over the same sample period the authors find that 12% of the firms would be reclassified into a riskier group (Cornaggia et al., 2013).

Literature suggests that profitability ratios are one type of financial metrics that are improved by operating leases. With the elimination of operating leases due to the implementation of IFRS 16, these profitability ratios are expected to alter. However, we argue that firms still have incentives to not put all leases on the balance sheets with the intention to keep their profitability ratios unaltered. Based on this argument, we state the following first part of our hypothesis:

> *Hypothesis 1a: Higher past profitability is associated with a lower total value of leases after the implementation of IFRS 16.*

Debt capacity

Following that leasing increased in popularity among firms, the literature in leasing boomed as well, where numerous studies investigate if there are incentives for firms to engage in operating leasing or not. Much research indicates that operating leasing could be a mean to expand the firm's debt capacity (Sharpe & Nguyen, 1995; Cornaggia et al., 2013). Firms that are financially distressed might have problems to raise additional debt or equity, in which leasing can be an alternative way of financing (Cornaggia et al., 2013). Similarly, Sharpe and Nguyen (1995) find that the share of leases is higher in firms that pay no dividend and have low liquidity as those firms are more likely to pay higher premiums for external financing. More specifically, their study show that these firms have 25% higher leasing share compared to firms that pay dividend (Sharpe & Nguyen, 1995). Moreover, they show that the existence of a policy of paying no dividend is an indicator of reliance on lease financing (Sharpe & Nguyen, 1995). Another study investigating the incentives behind

operating leasing is Caskey and Ozel (2019), who argue that operating leasing enables the availability of financing to risky firms, which may have been otherwise unavailable. They show that financial risk is positively correlated to the use of operating leases (Caskey & Ozel, 2019). Lin, Wang, Chou and Chueh (2013) examine whether more financially constrained firms rely more on operating lease financing than debt financing. By examining the top and bottom quartile of firms' internal funds, they find that the less constrained firms prefer debt over leasing, whereas constrained firms prefer leasing over debt (Lin et al., 2013). The findings of Beatty, Liao and Weber (2010) are in line with Lin et al. (2013) but also highlight the relation between financially constrained firms and low accounting quality of financial reports as a reason for financially constrained firms to choose leasing over debt. They also find that financially constrained firms are more subject to a higher degree of monitoring, due to the general absence of high accounting quality (Beatty et al., 2010). In their study evaluating different indices measuring financial constraint, Hadlock and Pierce (2010) acknowledge that there are numerous ways to examine firms' financial constraint. They evaluate two well-used indices[4] in their study as well as propose their own SA-index, where firm size and age are included in the index as they appear to be suitable predictors for constraint (Hadlock & Pierce, 2010). In the same study, Hadlock and Pierce (2010) highlight the use of dividend as a dummy to explain financial constraint. Repeatedly, they find that firms not paying dividend are positively correlated to financial constraint (Hadlock & Pierce, 2010).

With the use of operating leases, literature suggests that debt capacity is expanded. Whilst the operating lease alternative is more or less eliminated due to the implementation of IFRS 16, we argue that firms still have incentives to avoid capitalizing all leases. Based on this argument, we state the following second part of our hypothesis:

> *Hypothesis 1b: Lower debt capacity is associated with a lower total value of leases after the implementation of IFRS 16.*

Debt covenants

Cornaggia, Franzen and Simin (2012) add to the leasing literature by testing whether firms engage in operating leasing to strengthen their balance sheets. Classifying leases as operating may help firms to manage debt covenants (Cornaggia et al., 2012). The findings of Cornaggia et al. (2012) show that off-balance sheet lease financing help firms circumvent existing debt covenants. Similarly, Kusano, Sakuma and Tsunogaya (2016) investigate whether debt contracting have an

[4] The KZ-index by Kaplan & Zingales and WW-index by Whited & Wu (Hadlock & Pierce, 2010).

impact on Japanese firms' lease decisions since accounting-based covenants are common in Japanese debt contracts. They find that firms with debt contracting incentives are more likely to choose the accounting treatment of leases which does not require capitalizing of finance leases but instead allows for off-balance sheet treatment of leases (Kusano et al., 2016).

Another study investigating what impact capitalization of operating leases has on debt covenants is Lee, Gyung Paik and Yoon (2014). They mainly investigate how the capitalization will affect the likelihood of violating debt covenants. The results of their study are mixed as the authors investigate numerous ratios that are common as debt covenants, namely solvency-, liquidity- and interest coverage ratios (Lee et al., 2014). The authors separate their sample into two groups, one group that has previously violated debt covenants and one that has not (Lee et al., 2014). Their findings suggest that capitalization negatively affects solvency ratios, and this effect is more evident in the violation group than in the non-violation group (Lee et al., 2014). Furthermore, their findings also show that both liquidity- and interest coverage ratios are negatively affected by capitalization, and the violation group is affected to a lower degree than the non-violation group (Lee et al., 2014). Previous research has frequently used the debt-to-equity ratio as a proxy to measure the closeness to debt covenants restrictions, which Duke and Hunt (1990) validate through their empirical study. Their findings support prior literature, which suggests a positive relation between the debt-to-equity ratio and restrictive debt covenants (Duke & Hunt, 1990).

The literature suggests that debt covenants violations can be avoided by using operating leases. Whilst the operating lease alternative is more or less eliminated due to the implementation of IFRS 16, we argue that firms still have incentives to avoid capitalizing all leases. Based on this argument, we state the following third part of our hypothesis:

> *Hypothesis 1c: Stricter debt covenants are associated with a lower total value of leases after the implementation of IFRS 16.*

2.3 Industry differences

Although all industries are affected by the new leasing standard, IFRS 16, industries were forecasted to be impacted differently due to their varying operating lease usage. The auditing firm PwC carried out a global study estimating the impact of the new leasing standard, in which the retail- and airline industry emerged as the two most affected industries (PwC, 2016). The airline industry is part of the transport and logistics sector, which generally lease large assets, such as

aircrafts, trains and vessels. Therefore, bringing all leases to balance sheets are forecasted to have large effects on the balance sheets of this industry (PwC, 2016). Europe Economics, an independent economic consultancy firm, was asked to conduct an assessment of IFRS 16 by the European Financial Reporting Advisory Group in 2017, where they find that the transportation-, retail- and leisure sector would be most affected by IFRS 16 (Europe Economics, 2017). Moreover, these three sectors were found to have between 40% and 71% of operating lease obligations to total assets, whereas the health care sector came in fourth with 19% (Europe Economics, 2017).

A pervading argumentation in the operating lease literature, regarding the uneven effects of IFRS 16 in different industry sectors, is that some industry sectors have relative larger shares of operating leases prior to the implementation of IFRS 16 (Morales-Díaz & Zamora-Ramírez, 2018). Therefore, these industry sectors are likely to be increasingly affected by the new standard (Morales-Díaz & Zamora-Ramírez, 2018). In line with both Europe Economics and PwC, Morales-Díaz and Zamora-Ramírez (2018) find that the most affected sectors are retail, hotels and transportation. Both the retail- and hotel sector have operating lease commitments consisting of real estate, for example commercial buildings and hotel buildings, respectively, which explains why these two sectors are increasingly affected. Furthermore, the banking and insurance sector disclose operating lease commitments to a relatively large extent, however due to their high level of current leverage because of how they operate, they are not substantially affected by IFRS 16 (Morales-Díaz & Zamora-Ramírez, 2018). Conversely, sectors with relatively small balance sheets, and low levels of liabilities in particular, are shown to have high impacts of IFRS 16 as well (Morales-Díaz & Zamora-Ramírez, 2018).

In line with the reasoning above and our previous sections regarding operating lease incentives, we argue that industries that under previous standard had larger shares of operating leases will be affected to a larger extent by the implementation of IFRS 16. As a consequence, we expect that there will be differences between the industries in their adoption of IFRS 16 and their relative total value of leases after the implementation. Based on this expectation we state the following hypothesis:

> *Hypothesis 2: There is a significant difference in industry means of the total value of leases after the implementation of IFRS 16, relative to the total value of leases before the implementation.*

3 Method

The following section presents our research design and sample selection. More specifically, it explains how data was collected and analyzed in order to test our hypotheses. In the end of this section we also present our descriptive statistics followed by robustness checks.

3.1 Capitalization of operating leases

With the implementation of IFRS 16, nearly all leases should be capitalized on the balance sheet. Since firms are required to discount and capitalize all their previous operating leases, it is reasonable to expect a significant difference in recognized leases on the balance sheet pre- and post-implementation of IFRS 16. In order to control for the mechanical accounting effect due to the standard change, we have capitalized the operating lease commitments in 2018.

There are two common methods to use when capitalizing operating leases, namely the constructive method, which is occasionally referred to as the ILW method, and the factor method. The former was first introduced by Imhoff et al. (1991) and is considered the most frequently used method (Giner, Merello & Pardo, 2019). The method discounts the lease payments using an estimate of the firm's incremental borrowing rate (Imhoff et al., 1991). Literature have historically used a range of discount rates, including a flat rate for all firms (Graham et al., 1998) or the firm's average short-term borrowing rate (Sharpe & Nguyen, 1995; Eisfeldt & Rampini, 2009). The factor method, which is at times referred to as the heuristic approach, is frequently used by financial analysts. This method uses an industry specific multiple which later is multiplied with the leasing expense reported in the income statement (Morales-Díaz & Zamora-Ramírez, 2018).

Due to its established use in previous research on lease accounting (Giner et al., 2019), we use the constructive method when capitalizing the operating leases for the last quarter of 2018. With the constructive method, we discount the operating lease commitments disclosed in the notes of each respective firm's financial report. The constructive method requires us to make two assumptions, the discount rate and the remaining life on the lease agreements that are in 5 years or longer (Imhoff et al., 1991). We use a flat 2 percentage rate and a remaining life of 5 years. While manually collecting data in firms' financial reports we observe firms' borrowing rates fluctuating around 2%.

The remaining life of 5 years is calculated in accordance with Giner and Pardo (2017)[5] for each firm and then consolidated to an average value of remaining life, which was applied to all firms.

We also use the constructive method when capitalizing the finance leases as of December 31st 2018. Moreover, the same assumptions are made as when capitalizing the operating leases. When all leases as of December 31st 2018 are capitalized, the operating and finance leases are added together to represent the total value of leases at year end 2018.

3.2 Research design

3.2.1 OLS regression

To test our first hypothesis, we use an ordinary least square (OLS) model and estimate the following regression model:

$$ICF_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 DE_{it-1} + \beta_3 FC_{it-1} + \beta_4 Dividend_{it-1} + \beta_5 Serv_{it} + \beta_6 MTB_{it-1} + \beta_7 OpInt_{it-1} + \beta_8 CF_i + Industry\ Dummies + \varepsilon_{it}$$

Dependent variable

The dependent variable in the regression is a ratio between total leases in the first quarter of 2019 and total leases in the fourth quarter of 2018, further referred to as Implementation Change Factor (*ICF*). The *ICF* serves as a difference measurement between the two periods of time. A value equal to 1 indicates that there is no difference between the total value of leases, pre- and post-implementation of IFRS 16. A value less than 1 indicates that the value of total leases in 2019 is lower than in 2018, and the conversely is true for a value above 1. By using a ratio as a mean to describe the difference in leases, we control for the absolute differences in firm size and use of leasing contracts between the firms in the sample, and hence obtain a relative measurement.

$$Implementation\ Change\ Factor = \frac{Total\ Leases\ as\ of\ March\ 31st\ 2019}{Total\ Leases\ as\ of\ Decemeber\ 31st\ 2018}$$

[5] (Op) Leases due at year 6 and longer ÷ (Op) Leases due at year 5 = Remaining number of years if paying in the same rate as year 5. Our calculated average remaining life = 4.85.

Independent variables

ROA is the return on assets at the end of the year 2018 and *DE* is the debt-to-equity ratio at the end of year 2018. *FC* and *Dividend* are both measures of financial constraints, where the former is in line with the SA-index[6] by Hadlock and Pierce (2010) and the latter is a dummy variable where 1 indicates that the firm paid dividend in 2018 and 0 otherwise.

Return on assets decreases as a result of capitalization (Beattie et al., 1998), hence we expect the coefficient of *ROA* to be negative. Furthermore, firms could use operating leases to circumvent debt covenants (Cornaggia et al., 2012). Debt-to-equity ratio is found to have a positive relation with restrictive debt covenants (Duke and Hunt, 1990), hence we expect a negative relation between the *DE* and *ICF*. Financial constraint firms are shown to be more prone to use operating leases than less constrained firms (Lin et al., 2013). Hence, we predict there to be a negative relationship between our *ICF* and *FC*, as a higher value of the SA-index indicates more financial constraint. By the same reasoning, relating to financial constrained firms' use of leasing, we expect the coefficient of *Dividend* to be positive since a value of 1 indicates that the firm paid dividend in 2018.

Control variables

As a consequence of the separation between lease and non-lease components (IASB, 2016a), we argue that service contracts could be used as a tool for firms to avoid capitalizing all leases on the balance sheet and therefore could affect the total value of leases after the implementation. Hence, we control for the usage of service contracts after the implementation of IFRS 16 by including a dummy variable, *Serv*, which represents the existence of service contracts, where 1 indicates service contracts are mentioned, and 0 otherwise. If service contracts are mentioned[7] in combination or in connection to leases in firm's disclosed notes, we make the assumption that service contracts are used within the firm as a supplement or complement to leasing contracts. The service contract dummy variable *Serv* has been manually collected in the financial reports of 2019.

[6] (-0.737*Size) + (0.043*(Size)^2) - (0.040*Age)

[7] Service contracts or similar wording that corresponds to the same denotation to service contracts, such as "service agreements". If firms have specifically stated that they separate between lease and non-lease components, this will also be recognized as a service contract.

We control for firm growth opportunities by using the market-to-book value labelled *MTB* following Cornaggia et al., (2012). Cornaggia et al., (2012) find that off-balance sheet lease activity is used to a larger extent in firms with higher market-to-book ratios than in firms with lower market-to-book ratios.

We also include a measure of firm's operating lease-intensity as a control variable since we argue that a firm with a substantial share of operating leases ex-ante the new standard is more affected by IFRS 16 and also more proponent to attempt to use off-balance sheet financing. We control for the operating lease intensity by measuring the operating leases of the total debt (*OpInt*) as of December 31st 2018, which is calculated in accordance with Cornaggia et al. (2012). Furthermore, the use of operating leases differs between industries (PwC, 2016). Hence, we include, based on SIC codes (Sharpe & Nguyen, 1995; Eisfeldt & Rampini, 2008), eight different industry divisions[8] as control variables in order to control for variations in our dependent variable due to industry differences. The last control variable included in our regression is a change factor, *CF*, in Property, Plant and Equipment[9] for the first quarter of 2018 to assist in capturing abnormal growth if firms have acquired new assets during the first quarter of 2019.

Table 1: Variable descriptions
This table describes all variables used in our study. The first part presents the variables of interest and the second part presents our control variables.

Variable	Proxy	Expected sign	Description	Calculation
ICF			Implementation Change Factor	Total Leases 2019 ÷ Total leases 2018 (capitalized operating leases + finance leases)
ROA	Financial metrics	(−)	Return on Assets from S&P Capital IQ	Tax Adjusted EBIT ÷ ((Total $Assets_t$) + (Total $Assets_{t-1}$))/2
DE	Debt covenants	(−)	Debt to Equity from S&P Capital IQ	Total Debt ÷ Total Equity
FC	Debt capacity	(−)	SA-index by Hadlock and Pierce (2010)	(-0.737*Size) + (0.043*(Size)^2) - (0.040*Age), where size is the logarithmic book assets and age is the number of years the firm has been in S&P Capital IQ with non-missing stock price. Size and age are winsorized at 37 years and log($4.5 billion), respectively.
Dividend	Debt capacity	(+)	Dummy variable whether firms pay dividend	1 if firms pay dividend, 0 otherwise

[8] SIC codes sorted as industry division according to United States Department of labor, retrieved at https://www.osha.gov/pls/imis/sic_manual.html
[9] Calculated as PPE_t (year end 2017) ÷ PPE_{t-1} (first quarter of 2018)

Control Variable	Proxy	Description	Calculation
Serv		Dummy variable whether service contracts or similar wording that corresponds to the same denotation to service contracts, such as "service agreements" are mentioned in the financial report of Q1 2019 for each firm respectively. If firms have specifically stated that they separate between lease and non-lease components, this will also be recognized as a service contract	1 if mentioned, 0 otherwise
MTB	Growth opportunities	Market-to-book ratio	Market capitalization ÷ Total Equity
OpInt		Operating lease intensity	Operating leases at the year-end 2018 ÷ Total Debt at the year-end 2018
Industry		Dummy variable based on SIC-code: Agriculture, Construction, Manufacturing, Transport, Wholesale, Retail, Finance & Services	
CF		Change Factor. The growth in Property, Plant and Equipment between December 31st 2017 and March 31st 2018	$PPE_{2018} \div PPE_{2017}$

3.2.2 ANOVA model

In order to test our second hypothesis, we conduct an analysis of variances (ANOVA). The ANOVA is used to test if there are any significant differences between industries and their relative total value of leases, before and after the implementation of IFRS 16. As a proxy for the relative total value of leases, we continue to use *ICF* as the dependent variable in this model. As the independent variable we use the industries represented in our sample, categorized in the same way as the control variable *Industry* in our OLS regression. Hence, we test whether there is a significant difference of the means of our eight industry categories: *Agriculture*, *Construction*, *Manufacturing*, *Transport*, *Wholesale*, *Retail*, *Finance* and *Services*. For industries that previously relied heavily on operating leases, such as *Transport* and *Retail*, we predict the mean of *ICF* to be below 1.

The output of our ANOVA provides us with Bartlett's test for equal variances[10]. The Bartlett's test did indicate on some heterogeneity among the variances; however, the Bartlett's test is slightly constrained due to its high dependence of normally distributed variables. A Brown-Forsythe test for equal variances is argued to be more robust and is therefore conducted (Wang et al., 2017). The Brown-Forsythe test shows no indications of heterogeneity in our model and we are therefore confident to proceed with our ANOVA analysis. Finally, a post hoc analysis of the ANOVA result, namely the Tukey test, is conducted to detect whether there are any significant differences in means between specific industries.

3.3 Sample selection & Descriptive statistics

Table 2: Sample selection
This table presents the sample selection process. For more in-depth explanations, see section 3.3.1.

Listed firms on the OMX Nordic Exchange Stockholm	522
Excluded from the sample:	
Firms with no disclosed operating lease commitments and non-calendar fiscal year firms	(294)
Firms with missing or unclear data regarding finance leases	(89)
Firms with negative owner's equity	(1)
Firms with no debt	(28)
Final sample size	**110**

3.3.1 Sample selection

Our initial sample consists of 522 Swedish firms, listed on the OMX Nordic Exchange Stockholm. Data was retrieved through the database S&P Capital IQ and manually gathered from financial reports. Accounting data was gathered from reported accounting numbers in 2018, where it was required that the firms had reported operating lease commitments in S&P Capital IQ. Given that not all firms had information about operating lease commitments in S&P Capital IQ nor have calendar years as fiscal years, the initial sample was reduced to 228 firms. Since we specifically test the effect of IFRS 16 when first implemented on January 1st 2019, firms with non-calendar years have to be excluded as their implementation of IFRS 16 may be delayed due to the different fiscal years. Furthermore, most data on finance leases as of December 31st 2018 and total leases as of March 31st 2019 were manually gathered from annual reports of 2018 and the first quarterly report of 2019, respectively, since S&P Capital IQ was insufficient in providing all this data. An additional 89 firms were filtered out due to missing or unclear data about finance leases in the first quarter of 2019 and one firm was excluded from the data set due to negative owner's equity. More

[10] Equal variances among the groups of interest is an assumption of the ANOVA model (Wang et al., 2017).

specifically, a majority of the excluded firms reported all interest-bearing liabilities as a lump sum with no descriptive note, hence it was not feasible to determine the amount of lease liabilities. Lastly, we exclude firms with no debt, following Cornaggia et al. (2012), in order to control for firms' operating lease intensity in 2018. Otherwise described above, data was retrieved from S&P Capital IQ. Our final sample consists of 110 observations. To adjust for outliers and other influential data points we winsorize all variables at the upper and lower 5th percentile in accordance with Cornaggia et al. (2013).

3.3.2 Descriptive statistics

Table 3: Summary of variables

This table presents the descriptive statistics of our sample with 110 observations. All variables are winsorized at the top and bottom 5th percentile in order to adjust for potential outliers. ICF is our dependent variable and ROA, DE, FC and Dividend are our independent variables of interest. The remaining variables act as control variables in our regression model.

Variable	Obs	Mean	Std.Dev.	Min	Max
ICF	110	1.039	.297	.695	1.909
ROA	110	.053	.038	-.01	.149
DE	110	.682	.474	.04	1.76
FC	110	-3.609	.349	-4.128	-3.104
MTB	110	3.121	2.577	.921	11.356
		Dummy=1		Dummy=0	
		Freq.	**Percentage**	**Freq.**	**Percentage**
Dividend	110	81	73.6%	29	26.4%
Serv	110	17	15.5%	93	84.5%
Agriculture	110	1	1%	109	99.1%
Construction	110	4	3.6%	106	96.4%
Manufacturing	110	56	50.9%	54	49.1%
Transport	110	4	3.6%	106	96.4%
Wholesale	110	3	2.7%	107	97.3%
Retail	110	6	5.4%	104	94.6%
Finance	110	11	10%	99	90%
Services	110	25	22.7%	85	77.3%

Table 3 shows the descriptive statistics for our sample of 110 observations. The average firm in our study has an *ICF* of 1.039. This indicates that there is no substantial difference in the total value of leases between the last quarter of 2018 and the first quarter of 2019, since a value of 1 indicates no difference. The *ICF* is important because it is used to predict whether firms have structured their leases differently before and after the implementation of IFRS 16 and the mean value of 1.039 suggests that firms have on average moderately higher value of leases after the implementation. The minimum of 0.695 and maximum of 1.909 suggest that there is a considerable difference between the firm with the lowest *ICF* to the firm with the highest *ICF*. The standard deviation of *ICF* is 0.297. Furthermore, since *Dividend*, *Serv* and our industry variables are dummies, their frequencies are described as absolute values and percentages. Moreover, 73.6% of our observations pay out dividend to their shareholders and 15.5% mention they make use of service

contracts in terms of leasing. It is also observable that a majority of our observations are in the *Manufacturing* industry, specifically 50.9%. The second largest represented industry is *Services*, with 22.7%.

Table 4: Pearson's Correlation matrix

*This table presents the Pearson's correlations for all variables included in our regression model. * indicates statistical significance at the 5% level.*

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) ICF	1.000								
(2) ROA	-0.071	1.000							
(3) DE	-0.143	-0.298*	1.000						
(4) FC	0.079	-0.104	0.275*	1.000					
(5) Dividend	-0.013	0.269*	-0.040	-0.216*	1.000				
(6) Serv	0.116	0.068	-0.084	-0.023	0.028	1.000			
(7) MTB	-0.087	0.200*	-0.083	0.039	0.055	-0.097	1.000		
(8) OpInt	-0.178	0.282*	-0.411*	-0.009	-0.139	-0.019	0.263*	1.000	
(9) CF	-0.190*	0.025	0.114	0.070	0.103	-0.016	0.050	-0.060	1.000

* p<0.05

Pearson correlations for all variables are shown in Table 4. The correlation coefficients between *ICF* and the four independent variables range between 1.3% and 14.3%, where the coefficient of *DE* is the highest. *CF* is significant at the 5% level with 19.0%, thus it is a suitable control variable to include in our regression. We also observe that *OpInt* has one of the highest correlations with *ICF* of all our variables, with a value of 17.8% but not significant. Moreover, the correlation signs of *ROA* and *DE* to *ICF* were negative, as expected. The variables *ICF* and *FC* are positively correlated, which is inconsistent with our prediction.

3.4 Robustness checks

To detect and address potential multicollinearity issues we examine correlation tables and conduct VIF-tests. Initially, due to the fact that we use multiple dummies as control variables for industries, we adjust our data by dropping one industry variable, in our case *Agriculture*, to avoid perfect multicollinearity due to the "dummy variable trap"[11] (Stock & Watson, 2015). The following VIF-tests still indicate some multicollinearity among some of our industry dummies. However, since the multicollinearity is present in our control variables, and that this multicollinearity does not change the significance our variables of interest in our regression model[12], we keep all the industry dummies except *Agriculture* in our model. Further, we perform a White's test in order to control if our model suffer from heteroscedasticity, which is not the case.

[11] The dummy variable trap arises when there are multiple binary variables used in order to test for a categorical variable. If there is K binary and categorical variables, the multicollinearity issue is resolved by using K-1 categorical variables in your regression (Stock & Watson, 2015).

[12] New regressions were made, where one additional industry dummy was dropped (*Transportation*). The VIF-test did not show any signs of multicollinearity but the regression output for our variables of interests was the same.

When capitalizing operating leases, the lessee shall discount the lease payments into present value, using primarily the implicit interest rate in the lease contract. If an implicit interest rate is not available in the lease contract, the lessee should use its incremental borrowing rate (IASB, 2016a). Depending on how high or low the discount rate is, the final result of the capitalization of operating lease agreements can differ. The higher the rate is, the lower the capitalized leased asset and liability becomes (KPMG, 2017). Therefore, we conduct a sensitivity analysis in order to determine how different discount rates affect our dependent variable. In the analysis we control for discount rates between 1% and 3%, with increments of 0.5%. The low and unchanged interest rate environment at the time of the implementation of IFRS 16 in Sweden strengthens the chosen range of discount rates. In addition, a scenario analysis is conducted in order to estimate the expected outcome if assuming discount rates were to increase to 5% or 10%.

4 Empirical Findings & Discussion

In this fourth section we present the results of our regression model, our ANOVA as well as our sensitivity analysis. All results are presented in combination with discussions about their implications.

4.1 Regression output & Analysis

Table 5: OLS regression

This table presents the regressions where ICF is the dependent variable. The first column presents the full model, where all variables of interest are included. The remaining columns present regressions of each independent variable in combination with all control variables.

VARIABLES	ICF	ICF	ICF	ICF	ICF
ROA	-0.489	-0.110			
	(0.801)	(0.811)			
DE	-0.243***		-0.199***		
	(0.0711)		(0.0685)		
FC	0.171**			0.0972	
	(0.0824)			(0.0823)	
Dividend	0.0418				0.00735
	(0.0689)				(0.0697)
Serv	0.0728	0.0809	0.0713	0.0815	0.0807
	(0.0737)	(0.0774)	(0.0743)	(0.0769)	(0.0774)
MTB	0.00239	0.00275	0.00311	0.00200	0.00259
	(0.0109)	(0.0115)	(0.0110)	(0.0114)	(0.0115)
OpInt	-0.0655**	-0.0304	-0.0654**	-0.0307	-0.0309
	(0.0268)	(0.0252)	(0.0261)	(0.0241)	(0.0246)
CF	-0.940***	-0.890**	-0.888**	-0.918**	-0.897**
	(0.341)	(0.356)	(0.341)	(0.354)	(0.358)
Observations	110	110	110	110	110
F (15, 94)	2.46				
F (12, 97)		1.78	2.64	1.92	1.78
Prob > F	0.0043	0.0622	0.0043	0.041	0.0622
Adjusted R-squared	0.168	0.079	0.153	0.092	0.079

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

The first column in Table 5 represents the regression of our full model with all variables included. Columns 2 to 5 present regressions of each of the variables we test individually in combination with the control variables. The coefficients of *ROA*, both in the full model and in the individual model, are negative as predicted, but not significant. The negative sign indicates that firms with higher *ROA* may have a negative effect on the *ICF* variable. In other words, the total value of leases after the implementation of IFRS 16 are relatively lower than before the implementation compared to firms with low *ROA*, but this cannot be statistically validated in our model. While most prior work have investigated if *ROA* significantly alters because operating leases are capitalized per se, our work aims to explain if firms avoid bringing operating leases to the balance sheets due to *ROA*. This difference in aims of the use of *ROA* could be an explanation to why our analysis did not show significant results. Thus, due to the insignificant coefficient of *ROA*, we find no support for hypothesis 1a, that higher past profitability has an association to lower total value of leases after the implementation of IFRS 16.

The coefficients of *DE*, which we have used to measure the strictness of debt covenants, are negative and statistically significant on a 1% level in both the full model and in the individual model. These results are in line with what we predicted and indicates that firms with higher debt-to-equity ratios and correspondingly an increased risk of breaching debt covenants, are more likely to account for lower total leasing liabilities after the implementation of IFRS 16. Previous research has established that operating leases was used as a way to avoid violating debt covenants (Cornaggia et al., 2012) and that firms with debt covenants incentives were more prone to choose a lease accounting treatment that had an off-balance sheet effect (Kusano et al., 2016). In line with this research, our result further confirms that firms with incentives to avoid debt covenants also have incentives to capitalize less leases on the balance sheet. Thus, corresponding to hypothesis 1b, we find support that there is an association between debt covenant incentives and a lower total value of leases after the implementation of IFRS 16.

Examining the coefficients of *FC*, one of two measures of debt capacity incentives, gives two different results between the full model and the individual model. In the full model, *FC* has a positive and significant effect on a 5% level, however in the individual model, the sign is still positive but not significant. This might be due to some sources of endogeneity in the *FC* variable due to omitted variables. When we add the rest of the variables one by one in the full model, the inclusion of *DE* makes the coefficient of *FC* significant. A possible explanation for this is that a firm's debt capacity and financial constraint are also explained by the capital structure of the firm. Hence, *FC* is to some extent able to explain *ICF* in combination with *DE*, but not individually. The sign of the coefficient is positive, which is contradictory to our prediction. Thus, this result indicates that firms with higher financial constraints also have a higher *ICF*. One explanation for this could be that financially constrained firms may be subject to a higher degree of monitoring (Beatty et al., 2010), which could mean that these firms feel more obligated to comply to the new standard and be more transparent. As financially constrained firms are more likely to be unable to raise additional debt (Cornaggia et al., 2013), another explanation might be that firms that are not financially constrained have better abilities to restructure their lease financing into for example debt financing, and higher bargaining power towards their lessors. The second measure of debt capacity, *Dividend*, has positive coefficients in both the individual and full model, however not significant in neither model. The positive signs of the coefficients are as predicted, which implies that firms that pay dividends have on average 4.18% higher *ICF* compared to firms that do not pay dividend. This is in line with previous literature which suggests that firms that pay no dividend have higher incentives to use operating leases to expand debt capacity (Sharpe & Nguyen, 1995)

as well as in line with our hypothesis that non-dividend paying firms, as a measure of financial constraint and debt capacity, have relatively lower *ICF* than firms that pay dividend. The sign of the coefficient in our regression model indicates that this might be true, however the relationship between *ICF* and *Dividend* is not significant. We find no support for hypothesis 1c due to the fact that *FC*'s coefficient sign was not as we expected, and that the coefficient of *Dividend* was not significantly different from zero.

4.2 ANOVA results & Analysis

Table 6: ANOVA

This table presents the results of an analysis of variances between different industries and their mean ICF. The first part of the table shows a summary of the industries' respective means as well as their standard deviation and frequency in the sample. The second part shows the full ANOVA on the whole sample, as well as two tests on equal variances.

Summary of mean ICF divided by industry

Industry	**Mean**	**Std. Dev.**	**Freq.**
Agriculture	0.974	0.000	1
Construction	0.905	0.169	4
Finance	1.119	0.408	11
Manufacturing	1.047	0.287	56
Retail	0.925	0.141	6
Services	0.963	0.229	25
Transport	1.438	0.555	4
Wholesale	1.121	0.030	3
Total	1.039	0.297	110

Analysis of Variance

Source	**SS**	**df**	**MS**	**F**	**Prob > F**
Between groups	1.02927603	7	0.14703943	1.75	0.1058
Within groups	8.57207452	102	0.08403995		
Total	9.60135055	109	0.08808579		

Bartlett's test for equal variances:	chi2(6) = 19.5221	Prob>chi2 = 0.003
Brown-Forsythe's test for equal variances:	F (7, 102) = 1.5390	Prob>F=0.163

The results in Table 6 show a p-value of 10.58%, which indicates that there is no significant difference in *ICF* between the industries when running the analysis of variance. Since the one-way ANOVA establishes whether there is a potential overall difference between our industries, a post hoc test is conducted to further establish if some specific industries differ. This second test (see Table 1 in the Appendix) also show non-significant results on a 5% level, which indicates that there are no specific industry differences either. These findings suggest that there is no evident difference in the dependent variable *ICF* between industries on an overall level nor a specific level. Furthermore, as apparent in Table 6, five of the industries included in our ANOVA have less than ten observations. To further validate our results, we run a second ANOVA as well as a second Tukey's test where we cumulate all industries with less than ten observations, named *Others* (see Table 2 & 3 in the Appendix). Both tests show non-significant results at a 5% level.

When looking at the mean values of *ICF* divided by industry, *Transportation* has the highest mean with a value of 1.435 as well as the highest standard deviation with a value of 0.555. This indicates that firms within the transportation industry have on average a higher value of leases after the implementation of IFRS 16, and the variances within transportation are higher than the remaining industries. Prior literature (Morales-Díaz & Zamora-Ramírez, 2018) forecasted the transportation industry to be heavily impacted by the new leasing standard due to their substantial leasing commitments, such as aircrafts and vessels. The results for *Transportation* contradict our prediction. One potential explanation for this may be that firms within the transportation industry could have had a large share of service contracts prior to the implementation, which now have to be qualified as a lease (IASB, 2016a). Another explanation may be that they could have had many renewal options on their lease agreements, which have to be assessed and incorporated in the lease term according to IFRS 16 (IASB, 2016a). Thus, with longer lease terms comes higher lease liabilities. Another sector previous literature mention to be largely affected by the new standard is the retail sector due to its lease commitments in real estate, such as stores and commercial buildings (Morales-Díaz & Zamora-Ramírez, 2018). The mean value of 0.925 for *Retail*, shown in Table 6, suggests that the total value of leases post-implementation of IFRS 16 is lower than prior the implementation, which is in line with our prediction. As a final observation in Table 6, the mean value of 0.905 for *Construction* represents the lowest value in our variance analysis. To the best of our knowledge, no prior research has highlighted this sector as particularly affected by IFRS 16. Overall, the mentioned results and discussion regarding *Transportation*, *Retail* and *Construction* should be interpreted with caution due to each industry's small sample size.

Previous literature suggest that some sectors and industries should be increasingly affected by IFRS 16 due to their heavy operating lease usage (Europe Economics, 2017; Morales-Díaz & Zamora-Ramírez, 2018). However, our results indicate that, regardless if some sectors were increasingly affected by IFRS 16, there is no significant difference between industries in the treatment of leases pre- and post-implementation of the new leasing standard. This indicates that the implementation of IFRS 16 have not differed between industries. Based on these results, we find no support for our second hypothesis, that there is a significant difference in means of the total value of leases post-implementation of IFRS 16 between industries compared to pre-implementation.

4.3 Sensitivity analysis & Scenario analysis

Table 7: Sensitivity analysis

This table presents a sensitivity analysis of various discount rates. The column in bold is identical to the full model in Table 5, whereas the remaining columns represent the results of using various discount rates.

	(1%)	(1.5%)	**(2%)**	(2.5%)	(3%)
VARIABLES	ICF	ICF	**ICF**	ICF	ICF
ROA	-0.468	-0.478	**-0.489**	-0.500	-0.511
	(0.778)	(0.789)	**(0.801)**	(0.813)	(0.825)
DE	-0.242***	-0.243***	**-0.243*** **	-0.244***	-0.244***
	(0.0691)	(0.0700)	**(0.0711)**	(0.0721)	(0.0732)
FC	0.164**	0.167**	**0.171** **	0.175**	0.178**
	(0.0801)	(0.0812)	**(0.0824)**	(0.0836)	(0.0848)
Dividend	0.0380	0.0399	**0.0418**	0.0438	0.0459
	(0.0670)	(0.0679)	**(0.0689)**	(0.0699)	(0.0709)
Serv	0.0720	0.0724	**0.0728**	0.0731	0.0733
	(0.0716)	(0.0726)	**(0.0737)**	(0.0747)	(0.0758)
MTB	0.00331	0.00286	**0.00239**	0.00191	0.00142
	(0.0106)	(0.0108)	**(0.0109)**	(0.0111)	(0.0113)
OpInt	-0.0636**	-0.0645**	**-0.0655** **	-0.0665**	-0.0674**
	(0.0252)	(0.0260)	**(0.0268)**	(0.0276)	(0.0285)
CF	-0.908***	-0.924***	**-0.940*** **	-0.956***	-0.973***
	(0.332)	(0.336)	**(0.341)**	(0.346)	(0.351)
Observations	110	110	**110**	110	110
F (15, 94)	2.45	2.46	**2.46**	2.47	2.48
Prob > F	0.0045	0.0044	**0.0043**	0.0043	0.0042
Adjusted R-squared	0.167	0.167	**0.168**	0.168	0.169

Standard errors in parentheses

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

In this section we present a discount rate sensitivity analysis on our regression by capitalizing the lease commitment with four different rates, ranging from 1% to 3%, with increments of 0.5%. The chosen rates are based on, as mentioned in section 3.4, the prevailing interest rates in Sweden at the time of the standard implementation. The column in bold in Table 7 presents the regression results at a rate of 2%, which is the discount rate used in our main regression, and the remaining columns show the estimations based on the additional discount rates. The sensitivity analysis shows that the significance levels are unchanged at all five levels of discount rates and shows minor differences in the coefficients. Specifically, *DE* and *FC* are still significant at a 1% and 5% significance level, respectively. Therefore, the results are not considerably affected by the choice of discount rate within 1% and 3%. We also present a scenario analysis, see Table 8 below, where we model the variables' effects on *ICF*, when discount rates are at a 5% and a 10% level as an illustration if interest rates would increase to even higher levels. The results show that *DE* is still significant at a 1% level in both scenarios, whereas the significance in *FC* is reduced to a 10% level in both scenarios. The remaining variables are unchanged and insignificant. The small effects that changed discount rates have on our results may be somewhat surprising as one would assume that with increasing discount rates comes increased discount effects. However, one potential

explanation for the small effects on the coefficients may be that since the discounting effect increases over time[13], and a majority of firms' lease commitments are due within the first five years, our dependent variable *ICF* is not largely affected by changes in discount rates.

Table 8: Scenario analysis

This table presents a scenario analysis of our regression model where all variables of interest are included. The first column presents the regression output when using a discount rate of 5% and the second column shows the results of using a discount rate of 10%.

	(5%)	(10%)
VARIABLES	ICF	ICF
ROA	-0.585	-0.721
	(0.894)	(1.018)
DE	-0.253***	-0.255***
	(0.0793)	(0.0908)
FC	0.195**	0.236**
	(0.0919)	(0.105)
Dividend	0.0553	0.0936
	(0.0769)	(0.0875)
Serv	0.0779	0.0782
	(0.0822)	(0.0935)
MTB	-0.000873	-0.00623
	(0.0122)	(0.0139)
OpInt	-0.0724**	-0.0874*
	(0.0329)	(0.0470)
CF	-1.066***	-1.260***
	(0.381)	(0.433)
Observations	110	110
F (15, 94)	2.52	2.47
Prob > F	0.0035	0.0042
Adjusted R-squared	0.173	0.169

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

[13] As an example: The discounting effect in year 2 with 1% and 10% gives a denominator of 1.02 and 1.21, respectively, with a relative increase of 18%. Correspondingly, the discounting effect in year 10 with 1% and 10% gives a denominator of 1.10 and 2.59, respectively, with a relative increase of 135%.

5 Conclusion

In this last section we conclude our findings and discussions. We also present a few limitations with our research as well as some suggestions for future research.

IFRS 16 was implemented on January 1st 2019 and as a result of the new standard firms need to put nearly all leases on the balance sheets. Therefore, the option of off-balance sheet lease financing was eliminated, with a few exceptions. With a sample of 110 Swedish firms, we examined whether firms' total value of leases is different after the implementation of IFRS 16 than before. Furthermore, by reviewing previous literature concerning operating leasing and off-balance sheet financing we identified a profitability metric, debt capacity and debt covenants as incentives for operating leasing, which we used in our study to examine if these incentives are still relevant in spite of the new leasing standard. We also tested whether there is a difference in means between industries regarding the variance of the total value of leases pre- and post-implementation of IFRS 16.

In line with our predictions for hypothesis 1a, we find a negative relationship between the profitability metric *ROA* and *ICF*, however the association is not strong enough to be significant in our model. Therefore, we cannot establish that *ROA* in general lower the total value of leasing after the implementation. Furthermore, in line with hypothesis 1b, we find a significant negative relationship between debt covenants and the *ICF* variable. This implies that firms with stricter debt covenants, thus likely reluctant to increase liabilities, have in general a lower total value of leases after the implementation of IFRS 16 compared to before the implementation. Hence, firms with debt covenants incentives may have found ways to avoid bringing all leases on to the balance sheets. What also should be kept in mind is that although we used debt-to-equity as a proxy for debt covenants solely, the proxy could on a more general note incorporate other aspects that could affect the *ICF*, such as capital structure.

Our findings also show a significant positive relationship between one of our financial constraint measures, *FC*, and the dependent variable *ICF*. This relationship is contradictory to our prediction which stated that a higher degree of financial constraint would negatively affect the total value of leases after implementation. A possible explanation for this may be that there is a higher degree of regulatory monitoring of financially constrained firms, hence they might be more obliged to convey to new accounting standards. Our second financial constraint measure, *Dividend*, did however show a positive relationship as predicted, yet not significant. Thus, we can conclude that the relationships

for our two financial constraint measures are contradictory to each other. Since there is no significant relationship between *Dividend* and *ICF*, and the fact that *FC* has a reversed relationship compared to what we predicted, we find no support for hypothesis 1c, that there exists an association between debt capacity incentives and a lower total value of leases after implementation of IFRS 16.

We find no significant results when testing whether there is a difference between industries regarding the total value of lease pre- and post-implementation of IFRS 16. This result is contradictory to what we hypothesized. We expected that industries with higher operating lease usage, and hence likely to be increasingly affected by IFRS 16, would have a lower total value of leases after the implementation than before. One of these industries was *Retail*, which indeed had a lower total value of leases after the implementation as expected. On the contrary, *Transport*, which was also forecasted to be increasingly affected by the new leasing standard, had a higher total value of leases after the implementation. Our insignificant results could be an indicator of enhanced comparability between industries' reported lease commitments. Irrespective of the ex-ante literature suggesting industries' impacts to differ, our results indicate that the industries projected to be increasingly affected have not treated leases pre- and post-implementation of IFRS 16 differently than industries which were not projected to be largely affected.

Overall, we find weak evidence that our hypotheses are supported regarding incentives and differences between industries. However, one cannot stress enough that weak evidence for both of our hypotheses are good news since it suggests that firms comply with IFRS 16. Moreover, the results also suggest that the IASB's partial aim of IFRS 16, to improve comparability, is attained. Our findings also indicate that investors should be able to rely on the leases reported on the balance sheets. However, this is an early attempt to evaluate IFRS 16, hence one needs to consider that incentives outside of the scope of this study are yet unexamined. Nevertheless, based on our study we can conclude that so far so good.

5.1 Limitations & Future research

If a study of similar pattern is to be performed again in the future, there are some limitations to consider. Our study and sample selection were concentrated on Swedish listed firms, which makes it difficult for us to draw general conclusions of the implementation of IFRS 16 on an international level. Hence, it is important to acknowledge that our results are mainly applicable on firms that use IFRS 16 in Sweden. By expanding the scope of the geographical area of interest, hence

obtaining a larger sample as well as a larger share of firms using IFRS 16, the generalization as well as the power of the study could be strengthened.

We argue that the inclusion of a variable explaining the existence of service contracts in firms enhances the results of a study like this. However, due to some inconsistency when collecting the data for our control variable, *Serv*, the variable could be considered relatively noisy. It should also be mentioned that the relationship between *Serv* and *ICF* was shown to be positive, which indicates that service contracts have not been used as a tool to avoid capitalizing all leases. Moreover, since our observations take place precisely when the new standard was implemented, firms may have been in non-renegotiable leasing agreements, hence our dummy variable only captured the renegotiable agreements. Therefore, we suggest continuing monitoring the use of service contracts to obtain a less noisy variable, and hence increasingly justifiable results. A suggestion would be to collect additional information about the use of service contracts, and not solely rely on the information disclosed in the financial reports of firms.

As a final suggestion, our dependent variable *ICF* is versatile and can for example be useful in a time-series study. In such study, the variable may be appropriate to use for testing if the *ICF* incrementally changes over a longer period of time, as it is reasonable to believe that firms make no radical changes at the inception of implementing IFRS 16.

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Appendix

Table 1: Pairwise comparisons of means with equal variances

This table presents the Tukey's test which is performed to test for specific industry differences. All industries are tested against each other.

Tukey's test
Number of comparisons: 28

ICF	Contrast	Std.Err.	t	P>t	[95%_Conf	Interval]
Con. vs Arg.	-.069249	.3241141	-0.21	**1.000**	-1.072313	.9338151
Fin. vs Arg.	.1445667	.302787	0.48	**1.000**	-.7924945	1.081628
Man. vs Arg.	.0733414	.2924733	0.25	**1.000**	-.8318014	.9784841
Ret. vs Arg.	-.048993	.3131239	-0.16	**1.000**	-1.018045	.920059
Ser. vs Arg.	-.0108726	.2956375	-0.04	**1.000**	-.9258078	.9040626
Tra. vs Arg.	.4641688	.3241141	1.43	**0.840**	-.5388953	1.467233
Who. vs Arg.	.1470532	.3347436	0.44	**1.000**	-.8889069	1.183013
Fin. vs Con.	.2138157	.1692631	1.26	**0.910**	-.3100174	.7376489
Man. vs Con.	.1425904	.1500357	0.95	**0.980**	-.3217381	.6069188
Ret. vs Con.	.020256	.1871273	0.11	**1.000**	-.5588633	.5993753
Ser. vs Con.	.0583764	.156114	0.37	**1.000**	-.4247633	.541516
Tra. vs Con.	.5334178	.2049877	2.60	**0.167**	-.1009756	1.167811
Who. vs Con.	.2163022	.2214121	0.98	**0.977**	-.468921	.9015255
Man. vs Fin.	-.0712254	.0956071	-0.74	**0.995**	-.3671088	.2246581
Ret. vs Fin.	-.1935597	.147128	-1.32	**0.891**	-.6488896	.2617701
Ser. vs Fin.	-.1554394	.1048885	-1.48	**0.815**	-.4800469	.1691682
Tra. vs Fin.	.3196021	.1692631	1.89	**0.562**	-.2042311	.8434352
Who. vs Fin.	.0024865	.1888208	0.01	**1.000**	-.5818738	.5868468
Ret. vs Man.	-.1223344	.1245286	-0.98	**0.976**	-.5077239	.2630551
Ser. vs Man.	-.084214	.0697303	-1.21	**0.928**	-.3000144	.1315863
Tra. vs Man.	.3908274	.1500357	2.60	**0.166**	-.073501	.8551559
Who. vs Man.	.0737119	.1717965	0.43	**1.000**	-.4579617	.6053854
Ser. vs Ret.	.0381204	.1317887	0.29	**1.000**	-.3697375	.4459783
Tra. vs Ret.	.5131618	.1871273	2.74	**0.122**	-.0659575	1.092281
Who. vs Ret.	.1960463	.2049877	0.96	**0.979**	-.4383472	.8304397
Tra. vs Ser.	.4750414	.156114	3.04	**0.057**	-.0080982	.9581811
Who. vs Ser.	.1579259	.1771297	0.89	**0.986**	-.3902527	.7061045
Who. vs Tra.	-.3171156	.2214121	-1.43	**0.840**	-1.002339	.3681077

Table 2: ANOVA

This table presents the results of an analysis of variances between industries and their mean ICF. Industries with less than ten observations are cumulated as "Others". The first part of the table shows a summary of the industries respective means as well as their standard deviation and frequency in the sample. The second part shows the full ANOVA on the whole sample, as well as two tests on equal variances.

Summary of mean ICF divided by industry

Industry	Mean	Std. Dev.	Freq.
Finance	1.119	0.408	11
Manufacturing	1.047	0.287	56
Others	1.07	0.335	18
Services	0.963	0.229	25
Total	1.039	0.297	110

Analysis of Variance

Source	SS	df	MS	F	Prob > F
Between groups	0.234680958	3	0.078226986	0.89	0.4513
Within groups	9.36666959	106	0.088364807		
Total	9.60135055	109	0.088085785		

Bartlett's test for equal variances:	chi2(3) = 5.8132	Prob>chi2 = 0.121
Brown-Forsythe's test for equal variances:	F (3, 106) = 0.6958	Prob>F=0.5566

Table 3: Pairwise comparisons of means with equal variances

This table presents the Tukey's test which is performed to test for specific industry differences. Industries with less than ten observations are cumulated as "Others".

Tukey's test
Number of comparisons: 28

ICF	Contrast	Std.Err.	t	P>t	[95%_Conf	Interval]
Man. vs Fin.	-0.0712254	0.0980363	-0.73	0.886	-0.3271252	0.1846745
Oth. vs Fin.	-0.0486289	0.1137643	-0.43	0.974	-0.345583	0.2483252
Ser. vs Fin.	-0.1554394	0.1075535	-1.45	0.474	-0.4361816	0.1253029
Oth. vs Man.	0.0225964	0.0805425	0.28	0.992	-0.1876402	0.2328331
Ser. vs Man.	-0.084214	0.071502	-1.18	0.642	-0.2708526	0.1024246
Ser. vs Oth.	-0.1068105	0.0918899	-1.16	0.652	-0.3466666	0.1330457