

Value Relevance of Operating Leases Empirical Evidence from Listed Companies on Air Transportation Industry

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Abstract

RESEARCH OBJECTIVES

The objective of this study is to investigate the value relevance of constructively capitalized operating leases. Currently, leases are classified either operating leases or capital leases. Unlike capital leases, operating leases are reported as rental expense and omitted from balance sheet. Information of operating lease commitments is disclosed in footnotes. Operating leases represent one of the largest source of off-balance sheet financing. There has been a concern among standard setters for a long time, whether the current accounting practice offers reliable representation of leasing transactions that companies are engaged into for financial statement users. This study aims to examine, if the operating lease commitments are reflected in the share prices, i.e. if the market perceives the operating lease information correctly, even though reported off-balance sheet.

DATA AND METHODOLOGY

The data used in this study is obtained from Compustat. The data is from years 1993-2013 and comprises observations of listed companies on air transportation industry, totaling to 850 observations. The study is conducted using OLS regression analysis, by estimating three different models.

FINDINGS

The study fails to find incremental information content for constructively capitalized operating leases, beyond that contained in reported assets, liabilities and sales. Thus, study fails to find evidence for value relevance of operating leases.

Keywords Operating leases, Off-balance sheet financing, standard setting, value relevance, lease accounting, IFRS

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TUTKIELMAN TAVOITTEET

Tutkielman tavoitteena on tutkia käyttöleasingien arvorelevanttiutta. Nykyisen lainsäädännön mukaan leasingit jaotellaan käyttö- ja pääomaleasingeihin. Toisin kuin pääomaleasingit, käyttöleasingit raportoidaan vuokratuloina tuloslaskelmassa, taseen ulkopuolella. Tiedot käyttöleasingeista tulee esittää taseen liitetiedoissa. Käyttöleasingit edustavat yhtä suurimmista taseen ulkopuolisen rahoituksen lähteistä. Lainsäätäjät ovat keskustelleet jo pitkään, antaako nykyinen raportointikäytäntö tilinpäätösinformaation käyttäjille riittävän kuvan leasingtransaktioista joihin yritykset ovat sitoutuneet. Tämä tutkielma pyrkii selvittämään, heijastuvatko käyttöleasing vastuut osakkeiden markkinahintoihin, toisin sanoen, ottavatko markkinat käyttöleasingvastuut huomioon siitä huolimatta, että ne raportoidaan taseen ulkopuolella.

AINEISTO JA TUTKIMUSMENETELMÄ

Tutkimusaineisto on saatu Compustat –tietokannasta. Aineisto koostuu yhteensä 850 lentoliikennealalla toimivasta yrityksestä saadusta havainnosta vuosilta 1993–2013. Tutkimusmenetelmänä käytetään OLS regressioanalyysia. Tutkimus estimoit kolme erilaista mallia.

TUTKIMUSTULOKSET

Tutkimus epäonnistuu löytämään todisteita käyttöleasingien arvorelevanssille. Tulosten mukaan raportoidut varat, velat ja liikevaihto selittävät osakkeen markkinahintaa, mutta käyttöleasing estimaatti ei tuo lisää selittävyttä malleille.

Avainsanat Käyttöleasingit, taseen ulkopuolinen rahoitus, standardien asettaminen, arvorelevanssi, leasing-raportointi, IFRS

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ABBREVIATIONS

APB = Accounting Principles Board

CPA = Certified Public Accountant

CDS = Credit Default Swap

D/E = Debt to equity

D/A = Debt to assets

E/A = Equity to assets

ED = Exposure Draft

FAS = Financial Accounting Standard

FASB = Financial Accounting Standards Board

GAAP = Generally Accepted Accounting Principles

IAS = International Accounting Standard

IASB = International Accounting Standards Board

IASC = International Accounting Standards Committee

IFRS = International Financial Reporting Standards

MVE = Market Value of Equity

ROA = Return on Assets

ROCE = Return on Capital Employed

ROE = Return on Equity

ROIC = Return on Invested Capital

SFAS = Statement of Financial Accounting Standards

1 INTRODUCTION

1.1 Background and motivation

When valuing a company, basic components to assess are the earnings generated by the company, capital invested in the company and the *debt that the company has borrowed*. To do that, we need to examine earnings, value of the equity and value of debt. (Damodaran, 2009). However, assets and debt of a company that uses *leasing* as a source of financing are not so always simple to estimate. According to currently effective accountings rules, operating leases are *expensed* and *omitted from balance sheet*, while capital leases are reported as long term-debt on balance sheet. (Damodaran, 2009; Schneider *et al.* 2012). For many companies today, operating leases represent a significant source of financing and therefore it should be taken into consideration in the investors' and other financial statement users' decision making process. It seems that existing academic literature has reached a consensus that inclusion of operating leases on balance sheet has significant impact on the companies' key financial ratios and accounting variables, profitability, leverage and finally firm valuation. (Beattie *et al.* 1998; Durocher, 2008; Fülbier *et al.* 2008. Jesswein, 2008 & 2009; Damodaran, 2009; Grossman & Grossman, 2010; Fitó *et al.* 2013).

Lease accounting became an issue of concern in the United States in the end of 1950's and at the beginning of 1960's, due to increased use of leases as a form of financing in many companies. It was time for regulators to take position on how lease contracts should be treated in financial statements (Troberg, 2013). Accounting profession reached that leases should be recorded as an asset and liability on balance sheet, *if* they transfer the benefits and the risks of the ownership of leased asset. This led into an accounting practice according to which leases are classified either operating leases or capital leases, depending on whether lessee or lessor has right to the benefits arising from the leased asset and bears risks deriving from the ownership of the leased item. If benefits and risks are transferred to the lessee, the lease is a capital lease and

lessee recognizes the asset and liability on its balance sheet. All other leases are classified as operating leases. For operating leases, lessee records lease payments as rental expense in its income statement, but asset and liability of the leased item are omitted from balance sheet. Information of operating lease obligations is disclosed in the footnotes (IAS 17. SFAS 13). Classification has a crucial impact on both firm's balance sheet and income statement. Classifying lease as operating lease will result in lower operating income, lower financial leverage and book capital, than if the lease had been recorded on balance sheet (Damodaran, 2009).

Topic is important already due to material and pervasive use of operating leases. For many companies operating leases represent largest type of off-balance sheet items and one of the largest sources of company financing (Ge, 2006; Dhaliwal *et al.* 2011). Goodacre (2003b) found that for retail industry, operating leases are 3.3 times larger than long-term debt reported on balance sheet. The use of operating leases is significantly more extensive compared to the use of capital leases. Beattie *et al.* (2000) finds operating leases to represent approximately 13 times the size of capital leases. Revsine *et al.* (2005) shows following average ratios for operating leases to capital leases; 4:1 for variety stores, 5:1 for supermarkets, 9:1 for railroads and 8:1 for airline industry. Industries that most widely use operating leases include retail sector, transportation, restaurants, services, hospitals and health systems (Imhoff *et al.* 1997; Goodacre, 2003a & 2003b; Damordaran, 2009; Bryan *et al.* 2010; Novalija, 2011). When FAS 13 was issued in 1973, creating a distinction between operating leases and capital leases, there was an upward trend in the use of operating leases and corresponding decline in use of capital leases. Prior to that capital leases were expensed and reported in footnotes as operating leases afterwards, but the standard renewal brought capital leases onto balance sheet (Goodacre, 2003a; Imhoff & Thomas, 1988). It can be seen that the reaction was due to companies' tendency to favor off balance sheet financing (Goodacre, 2003a; Imhoff & Thomas, 1988).

Lease accounting topic is also timely, as European accounting regulation authority International Accounting Standards Board (IASB) recently issued a new leases standard, IFRS 16, which has been developed as a joint operation since 2006 with

American regulatory authority, Financial Accounting Standards Board (FASB). The new standard is required to be implemented by companies latest at 1st of January 2019. As the academic literature, accounting authorities draw a conclusion that current accounting model for leases fails to offer a faithful representation of leasing transactions creating asymmetry and inaccuracy to the market information (IASB, 2015). Main objective of the standard renewal is to harmonize the accounting practice between Europe and United States and enhance the comparability and quality of the financial statement information (FASB, 2013).

1.2 Main objective and contribution

The main objective of this study is to examine the value relevance of operating leases for companies operating in air transportation sector. In other words, the study aims to find out whether operating lease information provided in footnotes contains incremental information content beyond that provided in reported assets and liabilities. Information of operating leases provided in footnotes is often not seen sufficient for making reliable and relevance estimates of company performance, riskiness and financial position, in the presence of operating leases (Imhoff *et al.* 1993; Ge, 2006; Damodaran, 2009; IASB 2015). There is mixed evidence whether the market perceives operating lease obligations correctly, but majority of the studies seem to provide that at least professional financial statement users, such as creditors, credit rating agencies and analysts take the off-balance sheet debt of operating leases into consideration in their decision making processes (Ro, 1978; Bowman, 1980; El-Gazzar, 1993; Ely, 1995; Lim *et al.* 2003; Sakai, 2010; Sengupta & Wang, 2011; Bratten *et al.* 2013; Cotten *et al.* 2013; Altamuro *et al.* 2014).

The secondary objective of this study is to investigate if the use of operating leases has increased during years 1993-2013 among the companies operating in the air transportation industry.

Following research questions can be assigned for this study:

- i. Are operating leases value relevant, reported according to current accounting standards?
- ii. Has the use of operating leases increased?

This study is contributing to the existing research by fulfilling the gap of value relevance research examining the incremental explanatory power of asset and liability component derived from footnote information of operating leases, for companies operating on air transportation sector, by using the constructive capitalization method of Imhoff *et al.* 1991 & 1993. There is a wide range of studies examining the effects of capitalization of operating leases and providing evidence that the financial statements reported according current lease standards are not giving the faithful representation of lease arrangements and assets and liabilities used in the companies' operations. However, studies examining how market considers the assets and liabilities derived from operating lease arrangements are scarce (Boatsman and Dong, 2011). This study aims to fulfil the gap.

1.3 Methodology and limitations

Empirical section of this study represents a field of value relevance research. Value relevance research attempts to measure the relation between accounting amounts and security market values and is often motivated by standard setting or a broad question raised by a non-academic constituent, providing insights but not specific answers to these questions (Barth *et al.* 2000. Holthausen & Watts, 2001). Findings of value relevance research are in addition to academic audience, interest to non-academic constituents, such as financial statement preparers, standard setters, firm managers, securities' analysts and can provide an insight, whether accounting rules offer reliable and relevant accounting amounts (Barth *et al.* 2000). Empirical part of this study is examining the value relevance of operating leases i.e. the incremental explanatory power of estimated off-balance sheet assets and liabilities from operating leases. An accounting amount is value relevant, if it has a relation with share prices and the amount reflects information relevant to the investors valuing the firm and is reliable enough to be reflected in share prices (Barth *et al.* 2000). If the study finds no

significant relation between operating leases and share prices, no value relevance for operating leases is found.

The method used to examine the research questions is OLS regression analysis. Equity market values of the sample companies are regressed by the total assets, total liabilities, estimated leased assets and estimated leased liabilities in order to find out if a relation between leased asset and obligation and the equity market value can be found. If the operating lease obligations, based on footnote information, have incremental explanatory power beyond reported assets, liabilities and sales, operating leases have value relevance, i.e. operating lease disclosures in the footnotes contain information that the investors consider in their company valuation. For the new leases standard proposal, one of the main objectives is to bring the operating leases into better knowledge of investors and other financial statement users (IASB, 2015). If significant incremental explanatory power for operating leases is found, the results might provide that market participants already apply the operating leases into their company valuation and therefore the matter is not urgent with new accounting rules.

The sample, obtained from Compustat database, comprises 850 observations from years between 1993 and 2013. The observations are from companies operating in air transportation industry (SIC codes 4512-4581). Air transportation sector was chosen as it is capital intensive by nature and extensive use of operating leases within the industry is common.

The limitations of the study must be taken into consideration when reviewing the results. As in statistical studies in general, there are numerous unidentified factors in the market that may distort the outcome. They cannot be isolated and the study is not convinced whether other variables have influenced the relation between the equity market value (the test variable) and total assets, total debt, sales and estimated lease asset and liability components (explanatory variables). Also, it must be taken into consideration that the estimated leased asset and liability components contain presumptions. According to the current regulation companies are not required to provide all the information needed to be able to calculate theoretically accurate

amount of operating lease asset and liability (Imhoff *et al.* 1997). Therefore, my calculations, as calculations used in several prior studies, are only estimates. Presumptions are made for example of the companies borrowing rate and average life of the leased assets. As well, it should be taken into consideration that it is not possible to verify if the data gathered from Compustat is accurate and does not contain any errors. As well, it must be kept in mind that the method for estimating the operating lease components is not necessarily the same that the investors use in their valuation. It has been argued that even if Imhoff's *et al.* (1991 &1993) constructive capitalization method may produce more accurate information than more simple methods, it is fairly complex and time consuming for regular investor to apply (Barone *et al.* 2014). Due to these limitations, the results of the study are not able to offer absolute proof of the explanatory power of leases to the market value equity of sample companies. Still, results can be seen as indicative evidence and possibly an inspiration for future research.

1.4 Structure

The remainder of the study is organized as follows. Chapter 2 provides the institutional settings of lease reporting, including the review of the history of lease accounting regulation, current accounting standards for leases as well as the main content of new leases standard IFRS 16. Chapter 3 discusses prior studies and literature related to lease accounting, first introducing the constructive capitalization method and focusing on studies examining effects of constructive capitalization of operating leases on financial statements of companies. After that, studies examining the market perceptions of operating leases are discussed. After theoretical part, chapter 4 describes the hypotheses for the empirical study and chapter 5 continues with reviewing the data, methodology and sample selection. Chapter 6 presents the results and discusses the findings of the study. Final chapter 7 concludes and suggests possible future research topics.

2 INSTITUTIONAL SETTINGS

2.1 Definition a lease

In the FASB Concept Statement No.6. (Elements of Financial Statements), asset is defined as “a probable future economic benefit obtained or controlled by a particular entity, as a result of transaction or event” and liability as “a probable future sacrifice of economic benefits arising from present obligation of particular entity to transfer assets or provided services to other entities in the future as a result of a past transaction or event”. Lease is a contractual agreement between lessor and lessee that transfers the right to use the asset to lessee from lessor, but the ownership remains to lessor, for a certain period of time. In return, lessee submits lease payments to lessor. Lease accounting is very complex, because there are numerous different types of assets that can be leased. (Frecka, 2008.) In lease accounting, recognition of asset and liability in the lessee’s balance sheet depends on the transfer of the ownership. According to current regulation, lease is a capital lease, if it transfers substantially the ownership and risks of the leased asset to the lessee from the lessor. In this extent, lessee should record an asset and a liability consisting of future lease payments. Thus, accounting treatment is similar to if the asset was acquired. If the substantial benefits and risks of the ownership of the leased asset are not transferred to the lessee from lessor, lessee should record lease payments as rental expense. Thus, there would be no asset or liability recognized on the lessee’s balance sheet. (Frecka, 2008; Durocher, 2008). These are called operating leases.

2.2 Evolution of leasing regulation

This section provides a review of the history of lease accounting regulation. In particular, history of IAS 17 and FAS 13 and the models and conclusions are behind the standard releases are reviewed. Lease accounting will be reviewed on lessee’s viewpoint because this study has its main focus on the lessee’s accounting.

Table 1. *Evolution of Lease Accounting.* Adopted from memo History of lease accounting (Agenda paper 12C). IASB (2007).

Year	Author	Doc	Title
1949	AICPA	ARB 38	<i>Disclosure of long-term Leases in Financial Statements of Lessees</i>
1962	AICPA	ARS 4	<i>Reporting of Leases in Financial Statements</i>
1964	APB	ABP Opinion 5	<i>Reporting Leases in Financial Statements of lessees</i>
1966	APB	ABP Opinion 7	<i>Accounting for Leases in Financial Statements of Lessors</i>
1972	APB	APB Opinion 27	<i>Accounting for Lease Transactions by Manufacturer or Dealer Lessors</i>
1973	SEC	ASR 132	<i>Reporting of Leases in Financial Statements of Lessees</i>
1973	SEC	ASR 141	<i>Interpretations and Minor Amendments Applicable to Certain Revisions of Regulation S-X</i>
1973	APB	APB Opinion 31	<i>Disclosure of Lease Commitments by Lessees</i>
1973	SEC	ASR 147	<i>Notice of Adoption of Amendments to Regulation S-X Requiring Improved Disclosure</i>
1974	FASB	DM	<i>An Analysis of Issues Related to Accounting for Leases</i>
1975	FASB	ED	<i>Accounting for Leases</i>
1976	FASB	ED (Revised)	<i>Accounting for Leases</i>
1976	FASB	FAS 13	<i>Accounting for Leases</i>
1980	IASC	ED (E19)	<i>Accounting for Leases</i>
1982	IASC	IAS 17	<i>Accounting for Leases</i>
1997	IASC	ED (E56)	<i>Leases</i>
1997	IASC	IAS 17 (Revised)	<i>Leases</i>
2003	IASB	IAS 17 (Revised)	<i>Leases</i>
1996	G4+1	Special Report	<i>Accounting for Leases: A New Approach</i>
1999	G4+1	Special Report	<i>Leases: Implementation of a New Approach</i>

First standards regulating lease accounting were issued in 1976 when FASB released FAS 13 and in 1982 when IASC issued IAS 17. However, the history of guidance of lease accounting goes way back, to the year 1949 when the Committee on Accounting Procedure of the American Institute of Accountants issued guidance, ARB 38, considering the disclosures of long-term leases. Already back that time there was a concern that leasing arrangements allow companies to hide the part of the assets and liabilities used in the company operations. (IASB, 2007).

During 60's and 70's, several papers were issued to give guidelines on lease accounting (see Table 1). ARB 38 issued in 1949 required disclosures for long-term leases. It did not contain any exact definitions of leases, but emphasized the

ownership obligations and benefits obtained from the lease contracts when considering whether to treat arrangement according to guidance and give the required disclosures. (IASB, 2007).

ARS 4 were published because it seemed that previous guidelines by ARB 38 were not sufficient to bring all the essential lease assets and liabilities to the investors' and analysts' awareness. ARS 4 took the definition of lease into more careful consideration. It brought out the concept that all arrangements delivering rights to use the leased item should be defined as leases and recommended them be recognized on the balance sheet at the value of discounted payment obligations. (IASB, 2007).

Opinion 5 was released in 1964 by APB, after noticing that there was still no consensus among the lessee reporting when leased asset and liability were recognized. Relatively few companies were reporting leases as ARS 4 guided earlier and comparability and transparency were not in a satisfactory level. Opinion 5 abandoned the right-of-use approach recommended by ARS 4 and addressed the approach where lease asset and liability were required to be recognized if the early lease payments create equity to the lessee, i.e. the viewpoint went back to the transfer of ownership approach. Opinion 5 concluded that non-equity creating leases should be revealed in the footnotes, while equity creating leases should be recognized on balance sheet. Equity creating leases were not specifically defined in the paper, but it could be interpreted as a situation where lessee makes early excess payments above asset's fair rental value and then has bargain purchase option or option to renew the lease contact under the fair market value or rent. (IASB, 2007).

Next release that provided significant new guidance for lessee accounting was Opinion 31 issued by APB in 1973. It did not introduce any new definitions or accounting models for basis of the new requirements, but introduced in detail more extensive disclosures required for non-capitalized leases. Specifically, opinion 31 required lessee to give disclosures on minimum rental commitments, basis for the calculating rental payments, terms of renewal or purchase options and nature and amounts of guarantees and obligations. Unlike SEC's recommendations, Opinion 31

did not require disclosing present values of non-capitalized leases. SEC soon responded to Opinion 31 by issuing ARS 147, where even more extensive disclosures, including present-values of non-capitalized leases were required. ARS 147 did not offer any new concepts to lease accounting, but it first introduced the criteria that defined finance lease to be a lease, if during the non-cancelable period covers at least 75% of the useful life of leased asset. (IASB, 2007).

Discussion Memorandum, the first lease accounting document published by FASB discussed several models that could be used as basis for recognition of lease arrangements on balance sheet. Models included *Property Rights Model*, *Purchase Model*, *Legal Debt Model*, *Liability Model* and *Executory Contract Model*. DM also introduced a list of criteria that could be useful in some or all of the models to determine, whether the lease should be capitalized. (IASB, 2007).

In 1975, FASB issued the first Exposure Draft on lease accounting, which was the first publication directly related to the first leasing standard. In the ED, FASB introduced two models as a basis for its conclusions. The first model was a combination of liability model and property rights model discussed earlier in DM. According to the model, lessee should capitalize the lease if lessee has acquired a potential service obtained from the use of property and lessee has agreed to pay periodic payments for the resource. In other words, resources used in the business operations and obligations arising from the agreements to pay for the use of the asset should be recognized in the financial statements. The second approach was purchase model and according to it lessee should record the lease on balance sheet if the lease substantially transfers all the benefits and risks of incident to ownership, to lessee. All other leases should be considered as executor contracts and treated in accordance to them. ED introduced also the criteria for assessing whether the lease should be capitalized.

If any of the conditions was fulfilled, lease was required to be capitalized:

- a. It transfers title to the property to the lessee by the end of the lease term
- b. The contract contains bargain purchase option to the leased asset

- c. The lease term is equals or exceeds 75% of the useful life of the property
- d. The residual value of the leased asset is less than 25% of the asset's total fair value at the inception of the lease
- e. The leased property as a whole is special purpose to the lessee.

To conclude, the ED did not contain any dramatic differences to SECs latest publications. (IASB, 2007).

In 1976 FASB published revised ED suggesting few changes to the first version. Revised version continued discussing of purchase model and property rights model and underscored that lease classification should be similar to both lessor and lessee. Board decided to remove condition d. from the list, because ignoring the time value of the residual value of the leased asset distinguish between leases with different terms. Criteria d. was replaced with new criteria

- d. The present value of the minimum lease payments is at least 90 % of the excess of the fair value of the leased asset to the lessor over any related investment tax credit retained by the lessor.

Also criteria e. was removed, due to the difficulty of defining objectively “the special purpose” to the lessee. Board also noted that even if the asset was special to the lessee, it would not necessarily transfer all the benefits and risks of the ownership to the lessee. In addition to changes in the list, board decided that lessee should use the lower of the lessor's implicit rate or lessee's incremental borrowing rate when discounting the lease payments. (IASB, 2007).

In 1980 IASC issued an Exposure Draft that was very similar to FASB earlier published documents and based on the transfer of the risks and benefits of the ownership of the leased asset. As well, the criteria for lease capitalization was fairly similar. In few years ED led to issuance of IAS 17, with only few minor changes.

Between years 1996 and 2000 a group of G4+1 countries (Australia, Canada, New Zealand, the UK, the United States and IASC) representatives consisting of accounting standard setters prepared a study on lease accounting. The special reports came into a conclusion that the distinction between operating leases and finance leases was arbitrary and did not offer satisfactory reporting, because there were remarkable amounts of operating lease assets and liabilities omitted from balance sheets. This had material effect on debt-to equity ratios, return on asset ratios and interest coverage figures. Report suggested that better comparability and reliability would be reached if all the leases would be treated similarly. (Nailor & Lennard 2000; IASB, 2007).

The special reports of G4+1 countries led into a joint operation of FASB and IASB that started in 2006. The process has been slow since the private company lobbying against the proposals (Fitó *et al.* 2013), but the new leases standard IFRS 16 was finally issued on 13th of January 2016. The new standard will be effective at latest on 19th January 2019 (IASB, 2016). The content of IFRS 16 will be reviewed later in this chapter – after reviewing first the current lease accounting.

2.3 Accounting for leases under IFRS - IAS 17

IAS 17 *Leases* was first issued by IASC in 1982 and adopted by IASB in 2001. The standard was last revised in 2003. Objective of IAS 17 is to prescribe the accurate accounting policies for lease accounting for both lessor and lessee and requirements for disclosures to apply for operating leases. This section reviews main features of IAS 17, which currently regulates lease accounting of companies preparing their financial statements according to IFRS. Required disclosures for operating leases are introduced in detail due to their important role in leases accounting, as operating leases remain off-balance sheet. This study focuses on lessee accounting and thus lessor accounting is not reviewed.

2.3.1 Classification of leases under IAS 17

Leases are classified either capital leases or operating leases at their inception. If the lease transfers substantially the risks and rewards incident to ownership to the lessee, it is classified as a capital lease. All other leases are classified as operating leases. (IAS 17.4). Substance of the transaction is taken into account over the form of the lease contract. If transaction has following characteristics, it would be classified as a capital lease:

- Lease transfers the ownership of the leased asset to the lessee from lessor by the end of the lease term
- The lessee has a bargain purchase option. This means that the lessee has a right to buy the leased asset at a price expected to be significantly lower than fair value at the date the option becomes exercisable. Thus it is reasonably certain that the option will be exercised
- The lease term is for the major part of economic life of the leased asset
- At the inception of the lease, present value of the minimum lease payments amounts at least substantially to the fair value of the leased asset
- The leased asset has customized features, thus exclusively lessee can use it and it cannot be used by another entity without modifications being made. (IAS 17.11).

In addition, there are few other situations that may lead to the classification of capital lease:

- If lessee has option to cancel the lease, lessor's loss from the cancelation is paid by the lessee
- Gains or losses from the fair value changes of the leased asset fall for the lessee
- The lessee has ability to continue to lease to the secondary period at the rent that is substantially lower than market rent would be. (IAS 17.11).

2.3.2 Accounting by lessee under IAS 17

At the inception of the lease, capital lease should be recognized as an asset and liability at lower value of these two: fair value of the leased asset or present value of minimum lease payments (IAS 17.20). For capital lease payments, lessee should make a distinction between the finance charge (interest paid for the debt) and the reduction of outstanding liability (IAS 17.25). Depreciation policy for capital lease assets should be consistent with other similar owned asset's depreciation policy. If there is no certainty that the ownership of the asset will be transferred to the lessee at the end of lease term, the asset should be depreciated over the shortest of lease term or useful life of the asset (IAS 17.27). Thus, assets and liabilities arising from capital leases are fully visible in financial statements.

Operating leases are treated differently from capital leases and the different accounting treatment is essential for this study. Asset and liability related to operating lease arrangement are not recognized on balance sheet of lessee. Instead, lessee recognizes lease payments its income statement as *rental expense*. Expenses are recognized over the lease term at straight-line basis, unless there is another systematic basis that is more relevant for the time pattern of the user's benefit (IAS 17.33).

Because operating leases are omitted from balance sheet, footnote disclosures have significant role in operating lease reporting. Information provided in footnote disclosures is supposed to offer information in sufficient extent for investors and other users of financial statements to assess the unrecorded asset and debt related to the operating lease arrangement, and this way to give a true and fair view of lessee's financial position, performance and risks. For a long time standard setters and academic constituents have debated whether current practice meets this target. The ongoing standard change proposal is based on the concern that the current reporting practice does not offer an accurate and transparent view in sufficient extent of the leasing arrangements. Recognition on balance sheet would offer more accurate, reliable and comparable financial statements (IASB, 2015).

For *operating leases*, lessee should disclose the following information in the footnotes:

- 1) carrying amount of the asset under the lease contract, reconciliation between total minimum lease payments and their present value,
- 2) amounts of minimum lease payments at the balance sheet date and the present value for there of next year, years 2 through 5 combined and beyond 5 years,
- 3) contingent rent recognized as an expense
- 4) total future minimum sublease income under non-cancellable subleases and,
- 5) general description of significant leasing arrangements, including rent provisions, renewal of purchase options, restrictions imposed on dividends, borrowings or further leasing. (IAS 17.35).

2.4 Accounting for leases under US GAAP - FAS 13

This section reviews accounting for leases under American accounting standard, FAS 13. FAS 13 and IAS 17 have similar features, but also differences. This section shortly introduces the main differences between these two settings.

2.4.1 Classification of leases under FAS 13

Also according to FAS 13, leases are classified as operating leases and capital leases from the standpoint of the lessee. The criteria for capital lease differ from corresponding criteria by IAS 17 for some parts. All other leases that do not fulfill the criteria are classified as operating leases. If at its inception, lease meets *one or more* of the following criteria, it is classified as a capital lease:

- 1) The lease transfers the ownership of the property to the lessee by the end of the lease term
- 2) The lease contains a bargain purchase option. Bargain purchase option means that the lessee has an option to purchase the leased property for a significantly lower price than the expected fair value of the property is, at the date that the option becomes exercisable
- 3) The lease term covers 75% or more of leased asset's economic life (FAS 13 7c)
- 4) At the beginning of the lease term, present value of non-cancelable minimum lease payments equals to at least 90% of the fair value of the leased property. (FAS 13 7d).

Criterion 3) and 4) include one material difference between IAS 17 and FAS 13. FAS 13 has specific "bright line" tests for economic life (75%) and present value of leased property (90%), while IASB's approach prefers more to contemplate facts and circumstances and leaves more space for judgment. FAS 13 criteria is very clear in dividing the line between capital leases and operating leases. It has been argued that it offers opportunity for lease contract parties to avoid recognition on balance sheet by structuring contracts artificially to remain under the required percentages, and the substance of the lease contact is not necessarily taken into consideration (Troberg, 2013). According to IAS 17, "facts and circumstances" approach is used for the judgment and therefore it is more difficult to artificially transform capital leases into operating leases. In general, FAS 13 differs from IAS 17, by having more specific implementation guidance. FAS 13 offers more detailed and defined guidance for interpreting the criteria and applying the classification than IAS 17 (Breeze & Brzoska, 2004).

2.4.2 Accounting by lessee under FAS 13

Lessee accounting according to FAS 13 is fairly similar to IAS 17. There is no balance sheet recognition for operating leases, unlike capital leases. Instead, lessee reports operating lease payments as a *rental expense* over the lease term, as they become payable. If there is another systematic and rational basis that is more representative of the time pattern in which use benefit is derived from leased property, it should be applied for recording the lease payments. (FAS 13.15).

The footnote disclosures required for operating leases according to FAS 13 are, for operating leases having longer than one year non-cancelable lease term:

- 1) Minimum future rental payments as at the date of the latest balance sheet presented, as a sum and for each of the five succeeding fiscal years (FAS 13.16 b. i.)
- 2) Total of minimum rentals to be received in the future from non-cancelable subleases as at the date of the latest balance sheet presented (FAS 13.16 b. ii.)

For all operating leases following disclosures are required:

- 1) Rental expense for each period for which financial statement is presented, with separate amounts of minimum rentals, contingent rentals and sublease rentals. Leases with lease term of one month or less, not renewed, are not required to disclose (FAS 13.16 c.)
- 2) General description of the lessee's leasing arrangements including at least the basis on which contingent rental payments are determined (FAS 13.16.d.i), the existence and term of renewal or purchase options and escalation clauses (FAS 13.16.d.ii) and, restrictions imposed by lease agreements (FAS 13.16.d.iii).

2.5 Exposure Draft and new standard IFRS 16 - Leases

2.5.1 Reasons behind the need for change

In the latest revised ED (2013), IASB and FASB state that they had received expressions of concern from numerous constituents that the current accounting model for leases fails to fulfill the financial statement users' needs (FASB, 2013). Operating lease commitments, unlike capital lease commitments, are omitted from balance sheet, which does not result in giving faithful representation of leasing transactions. (FASB, 2013 & 2016).

Schneider *et al.* (2012) identifies two main reasons behind the need for leases standard change. First, it would be beneficial to eliminate differences between European and American accounting practice. Proposed change in lease accounting is part of larger convergence project to harmonize reporting within Europe and United States, which would enhance the comparability of the financial statements internationally. Second reason derives from inadequacy of the current reporting practice. Information of operating lease commitments required to report by firms is limited to footnote disclosures, which is argued to be insufficient for assessment of the financial effects of operating leases. One material shortcoming is also that only a slump sum of lease payments is required in footnote disclosures for beyond initial five years and not annual cash outflows. The present value of lease payments has to be calculated based on assumptions. (Schneider *et al.* 2012).

According to Troberg (2013) there are two types of problems with current lease accounting. First, there are issues related to how enterprises actually apply current lease accounting in practice. Many firms tend to split their lease contracts into parts instead of one contract that would cover the most of the leased asset's useful life. This way lease can be classified as an operating lease and the company can avoid the recognition of the leased asset and the related liability on balance sheet. This may create a situation violating the *substance over form* principle of accounting that is supposed to be followed in lease reporting.

Troberg (2013) also finds that there are problems related to the standards themselves. So called on/off problem is related to the “bright line tests”, criteria of FAS 13, according to which lease is classified as a capital lease if it covers 75% of the asset’s economic life. Companies are able to choose to avoid the recognition on balance sheet by entering into agreement covering only 74% of leased asset’s economic life. Obviously there are many situations where there is no significant difference in the substance of the contract. This artificial distinction between operating leases and capital leases is in controversy with the *substance over form* principle of accounting. (Troberg, 2013).

Biondi *et al.* (2011) sums that the main criticism for current lease accounting is that majority of leases remain off-balance sheet, due to inappropriate classification into operating leases and capital leases. Weaknesses such as knife-edged accounting, where by small changes in lease contracts managers can choose how to classify lease and lack of symmetry in lessor and lessee accounting, are common. Managers are able to structure leases for example by using renewal terms, options and contingent payments to avoid the classification as capital lease, as well as structuring the leases as services contracts, to avoid the recognition of debt on balance sheet. Also findings of Ong (2011) support the claim that the current standard is abused in order to avoid balance sheet recognition.

The current accounting practice has been criticized for failing to present faithful representation of lease arrangements as the lease contracts are often more and more structured and complicated due to companies’ attempts to keep the leased assets off balance sheet. This creates complexity and makes it difficult for current reporting practice to offer reliable statement of assets and liabilities in presence of operating leases and for financial statement users to reach understanding of the financial position of the company. Also, current accounting rules allow financial statement preparers to record similar transactions in many very different ways, which decreases the comparability and lowers the possibility to utilize financial statements for users. (Shough, 2010).

2.5.2 IFRS 16 - Leases

After a slow process of over ten years, in January 13th 2016 the new standard for leases was issued: IFRS 16 – *Leases*. IFRS 16 will be effective on 1st of January 2019. Companies can choose to implement the new practice earlier, but at the same time implementation of IFRS 15 *Revenue from Contracts with Customers* has to be applied. IAS 17 is fully replaced with IFRS 16. (IASB, 2016b). This section introduces the main features of the leases standard.

The aim of the new leases standard is to improve the quality and comparability of financial reporting and to provide better transparency for the level of leverage, the assets used in the companies' operations and the risks deriving from entering into leasing transactions. The core principle is to bring all long-term assets and liabilities related to lease arrangements, on companies' balance sheets (FASB, 2013). IFRS 16 eliminates the classification of leases into operating leases and capital leases and instead refers to *single lessee accounting model*. According to the model, lessee should recognize assets and liabilities for all leases with term exceeding 12 months, unless the asset is low of value, and record the depreciation of leased asset separately from interest of lease liabilities in the income statement (IASB, 2016: IFRS 16-IN10).

IFRS 16 treats all leases as IAS 17 treats capital leases, by recognizing the present value of lease payments. Lessee can show the assets as lease assets (right-of-use assets) or together with property, plant and equipment where the similar assets are recognized (IASB, 2016b). As suggested in the ED, IFRS 16 refers to '*right-of-use model*'. According to the proposal, lessee would have to recognize a-right-of-use asset and related liability from leases that are *for 12 months or longer* term. Both, the asset and the liability related to the lease contract are valued at the present value of the lease payments (irrespective of the nature of the underlying asset) at the inception of the lease. (FASB, 2013; IASB, 2016.)

According to IFRS 16 lessee no longer records similar rental payments as according to IAS 17. Lessee is required to record expenses as depreciation of leased asset and separately the interest expense related to lease contract. (IASB, 2016b). As the interest expense reduces over the life of lease when lease matures, significant difference in expense profile between IAS 17 and IFRS 16 is expected for companies holding large amounts of leases. (IASB, 2016).

3 PRIOR LEASE ACCOUNTING RESEARCH

Various studies examine effects of operating lease accounting from different aspects, such as assessment of company riskiness, impact on financial ratios and effect on company taxation. (Jesswein, 2008 & 2009; Damodaran, 2009). Morais (2011) identifies several lines of studies related to lease accounting: the change in accounting standards and consequences, the determinants of leases, the value relevance of lease information, valuation of leases and the impact of leases on financial ratios. As the prior value relevance study is scarce, literature review of this study first introduces commonly used methods for capitalization of operating leases after which it focuses on studies examining effects of operating lease capitalization on reported financial information, especially on financial ratios. After that, existing research for value relevance of leases and research examining the market perception of off-balance sheet debt related to leases are discussed.

Frecka (2008) critically discusses the ethicality of operating lease accounting from aspect that companies intentionally create synthetic leases by structuring complex lease contracts, in order to avoid disclosing leased asset and liability that company uses in generating revenue. This is enabled by current rule-based accounting, which allows companies to modify the terms of the lease contracts in a way they are artificially classified as operating leases and omitted from balance sheet. There is evidence, that operating lease accounting is included in the most common earnings management situations recognized by auditors (Nelson *et al.* 2002). Motivation for avoiding balance sheet recognition may derive from management's incentives to avoid violations of debt covenant restrictions, affect the amount of management compensation (if the remuneration plan is tied to company earnings, for example such measures as ROA or ROE) and to maintain financial ratios on a certain level. All of these incentives derive from desire to give stronger appearance on company performance and lower appearance on capital risk of the company. (Imhoff *et al.* 1991. Frecka 2008; Jesswein, 2008 & 2009).

3.1 Capitalization of operating leases

Existing research discussed later in this literature review introduces studies showing that omitting operating leases from balance sheet has material impacts on company risk, liquidity and proficiency estimates, such as D/E ratio, ROA, current ratio and interest coverage among others and may create a possibility for companies to show higher performance and better financial position according to financial statements. Constructive capitalization method (Imhoff *et al.* 1991) is widely used in academic literature to adjust assets and liabilities in order to view the lease asset and liability as if they would have been reported on balance sheet. Several sources suggest that the constructive capitalization method offers accurate estimate for the off balance sheet operating lease asset and liability, but it is also argued to be rather complicated and time consuming for regular investor to apply (Imhoff *et al.* 1991 & 1997; Barone *et al.* 2014).

There are alternative methods for estimating leased asset and liability discussed in the literature. Factor method is usually applied by non-academic audience, such as analysts and credit rating agencies (Barone *et al.* 2014). Factor method is more simple method, but is not often referred to in the academic literature due to it is argued not to give reliable estimate enough. There are different versions of factor method. Maybe the most commonly used method suggests that current year's rental expense related to operating lease is multiplied by eight (Imhoff *et al.* 1993). Also multiplying next year's lease payment by six (Ely, 1995) and multiplying all lease obligations by two-thirds (Gibson, 2007) are used in the literature.

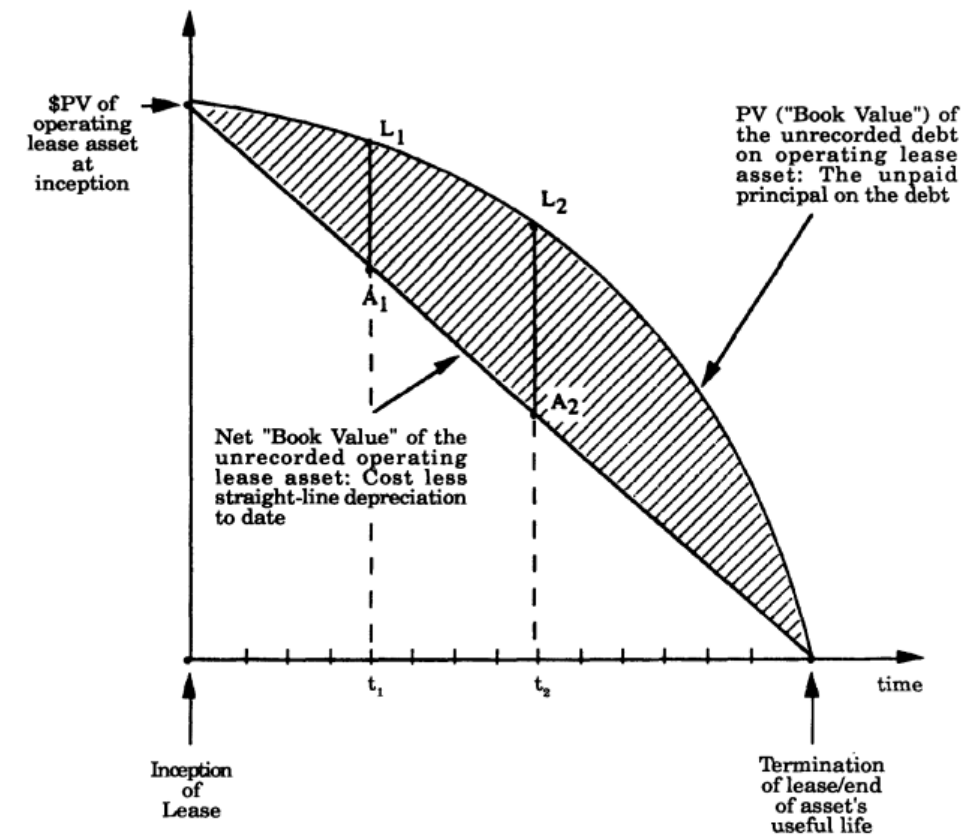
Constructive capitalization method

Constructive capitalization method is introduced in this section more in detail. Due to its wide use in academic literature and other studies it can be seen as a cornerstone of a lease accounting research. It has also importance for this study, because it is used for constructing the leased asset and liability variables used in the model in the empirical part of this study. Constructive capitalization model was developed and introduced by Imhoff, Lipe and Wright (1991), when they had noticed the problematic accounting for large, non-cancelable operating lease commitments for numerous companies creating the situation, where companies were using significantly larger amount of assets to generate revenue and were significantly more levered than according to their debt to equity ratio. Later in 1997 they extended their model to take also income statement effects into account.

Constructive capitalization method provides the amount of debt and asset that would have been reported if the operating leases were treated similar to capital leases from their inception. To estimate the debt, model requires future minimum cash out flow, which consists of payments from remaining non-cancelable operating leases. The payments are discounted by using an estimate of the firms borrowing rate and the estimate of the remaining life of the leased asset. The result is estimated off-balance sheet debt deriving from operating lease arrangement. (Imhoff *et al.* 1991).

The related unamortized off-balance sheet asset is estimated by examining the relation between asset and liability, assuming that the leased asset is financed completely with debt. Estimate of the off-balance sheet asset requires information of scheduled cash flows, incremental borrowing rate, remaining life of the leased asset, weighted average total life of leased assets and assumed depreciation method. Because information of the mentioned components is usually not fully visible in financial statements, the method requires presumptions. Authors take this into consideration by using various interest rates in their calculations and conducting sensitivity analyses for the estimates of off-balance sheet debt and asset. (Imhoff *et al.* 1991.)

FIGURE 1. *Constructive Capitalization Model. The relation between unrecorded operating lease asset and unrecorded operating lease liability. Adopted from Imhoff (1991).*



The model gives an estimate of off-balance sheet operating lease debt and asset, which are not equal during the lease life cycle. Figure 1 presents the relation between leased asset and liability. Unrecorded leased asset and related leased liability both equal to 100% of the present value of the future lease payments at the inception of the lease. Because the model assumes straight-line depreciation method, leased asset declines straightforwardly after the inception. In addition to lease payments that lessee pays to reduce the debt, it pays interest payments. The model calculates the leased liability by using the effective interest method. This causes the difference between leased asset and leased liability, which is at its greatest in somewhere in the middle of the leased assets life. At the termination moment of the lease term, unrecorded leased asset and related leased liability are equal again and are both zero after the last lease payment is done to reduce the debt and the leased asset is completely depreciated. Figure 1 shows

the difference between the estimated asset and liability in different stages of the life cycle of lease. Authors find that in most cases the estimated unrecorded asset is 60-80% of the estimated unrecorded debt. Thus, they draw a thumb rule to use 70% of debt when estimating the asset. In the empirical part of this study, I calculate individually the estimated leased asset for the observations, applying certain assumptions on the interest rate and the life of the leased asset. (Imhoff *et al.* 1991).

3.2 Effects of operating lease capitalization on financial analysis

Prior literature suggests that companies may have several incentives to use off-balance sheet financing that use of operating leases enables (Imhoff *et al.* 1991. Frecka 2008; Jesswein, 2008 & 2009). As this chapter shows, using off balance sheet financing has favorable effect on several financial ratios measuring company's performance and riskiness. Assessing financial ratios is important and very common part of investors and creditors decision making process (Goodacre, 2003b). Enhancing the outcome of financial ratios may facilitate the access to financing. For example debt covenants restrictions may have conditions related to leverage ratios (Goodacre, 2003b). As well, management remuneration schemes may be tied to ratios such as ROE and ROA, and thus there might lay personal motives behind favoring off balance sheet financing (Goodacre, 2003b). In the investor decision making process, relative performance, i.e. company rankings, has often importance. Distorted financial ratios affect as well to relative performance. (Goodacre; 2003b).

The main motivation for Imhoff *et al.* (1991) to develop the constructive capitalization method was to measure the effects that the hidden assets and liabilities related to operating leases had on financial ratios of the companies engaged into material long-term lease commitments. Imhoff *et al.* (1991 & 1997) finds evidence that operating leases have material effects on risk and performance measures for companies using large amounts of operating lease financing.

Numerous studies have examined the effects of capitalization of operating leases after Imhoff on ratios measuring financial performance, leverage and risk. This section reviews these studies. As the proposed standard change for lease accounting requires all long-term leases to be recognized on balance sheet, there are also numerous studies examining capitalization of operating leases, in order to find out the consequences of becoming change in lease accounting practice. Capitalization of operating leases has significant impacts on companies' financial statements, both income statement and balance sheet. Capitalization of operating leases would bring the present value of all long-term non-cancelable operating lease commitments on balance sheet, which would increase liabilities and assets and have material effects on debt to equity and debt to asset ratios. Excluding operating leases understates firms' leverage ratios. Also ratios measuring company performance would be affected.

Beattie *et al.* (1998) examines the effects of constructive capitalization on key accounting ratios for 323 UK listed companies, by using Imhoff's (1991) model. The study finds that use of operating leases underestimates long-term debt materially. Hidden long-term debt was on average 39% of reported long-term debt while hidden asset was 6% of total assets. Capitalization had material effects on financial ratios: higher profit margin, lower return on assets, lower asset turnover and significantly lower gearing.

Goodacre (2003b) shows the importance of lease financing and investigates the balance sheet effects of capitalization of operating leases in UK retail industry. The sample comprises 102 companies. The study shows that operating leases are on average 3.3 times larger than long-term debt reported on balance sheet and 37 times the size of capital leases. The study investigates the capitalization effects on key financial ratios. Effects, measured as means of the change, are most dramatic for ratios measuring leverage. D/E ratio increased 96.2% and two other leverage measures are drastically affected as well. Profit margin increased 32.5% and ROE increased slightly 3.1% while ROA decreased 26.9% and ROCE decreased 15%. Asset turnover decreased 28.1% and interest coverage decreased 69.1%. Goodacre (2003b) emphasizes that these significant changes may have crucial importance in context

where decisions are made based on absolute benchmark, for example debt covenant restrictions or management bonuses. The study also examines effects on relative performance (company rankings in investor decision making) by analyzing the correlations between pre- and post-capitalized ratios. Results indicate that the capitalization affects all the key ratios but most significantly gearing.

Bennett & Bradbury (2003) examine the impacts of lease capitalization with sample of companies listed in New Zealand stock exchange. The study shows significant increase in total liabilities (mean 22.9%) and total assets (mean 8.8%). Financial statement ratios are materially affected; D/A increased, current ratio decreased and ROA decreased. These results indicate that bringing operating leases on balance sheet would show increased leverage and decreased liquidity and profitability ratios for companies than reported in their financial statements.

Mulford & Gram (2007) offer evidence on operating lease capitalization from retail industry by investigating 19 US companies. The study examines balance sheet effects as well as income statement effects and presents results for numerous ratios. Median increase in EBITDA is 22.5%, while median decrease in income from operations is 5.3%, which is due to lease payments are no longer treated as rental payments, but instead interest expense is recorded. Also balance sheet effects were material. Hidden assets median amounted to 14.6% of total assets while corresponding liability number was 26.4%. Median increase for D/E ratio was 26.4%. Profitability measures were damaged as well. Median reduction for ROA was 1.7% and 0.6% for ROE. The study shows also cash flow effects, as the median increase in operating cash flow is 22.9% and in free cash flow 51.1%. The interest coverage ratios are dramatically affected, as EBITDA/interest ratio decreased 46.3% (median) and OCF/interest ratio decreases 38.4% (median). Authors conclude that omitting operating leases from balance sheet causes significant distortion to financial statements and financial positions of companies.

Fülbier *et al.* (2008) provides evidence from sample of 90 listed German companies. The study examines the effects of operating lease capitalization on key financial ratios

by using constructive capitalization method and factor method. The study finds material effects especially on companies from fashion and retail sector with both methods. Balance sheet based ratios are affected most, and only minor effects for profitability measurements were found. According to Fülbier *et al.* (2008) the results likely indicate higher operating risk and financial risk for companies with operating leases.

Durocher (2008) examines 100 largest Canadian listed companies and provides evidence that constructive capitalization of operating leases has significant impact on various financial ratios. D/E ratio increased while current ratio decreased, ROA increased slightly while ROE decreased. In another study, Durocher *et al.* (2009) examines the effects of operating lease capitalization and presents views of private bankers how the lease capitalization effect is taken into account in credit decision. The study presents consistent findings with other studies for affected key ratios.

Jesswein (2009) examines the effects of operating lease capitalization on companies' financial ratios for 595 US non-financial sector companies. The results indicate that total assets were undervalued on average 10%, due to off-balance sheet lease items. Reported interest expenses were doubled on average, when the lease payments were not recorded as rental expense. These changes had material effects on key financial ratios. On average, current ratio decreased c. 10%, as well as quick ratio decreased 12.1%, return on invested capital decreased 28.6% and interest coverage decreased dramatically, 78.47%. As well change in debt ratio was dramatic, increase of 72.7%. The study concludes that the results indicate that the proposed change in lease accounting would have significant impact on financial analysis and credit rating processes.

Duke *et al.* (2009) conducted a study examining effects of constructive capitalization of operating leases with sample comprising 366 listed companies from various industries. Duke examines the effects of capitalization for two sub-groups: companies with positive income and companies with negative income. The results show increase in ratios measuring leverage for both sub-groups: significant increase in D/E ratio

and slight increase in D/A ratio. Results are similar for both sub-groups also for current ratio, which decreases. Results for ROA and interest coverage differ between positive income companies and negative income companies. It seems that for negative income sub-group, ROA decreases as well as interest coverage, while for positive income sub-group, both ratios increase. The study concludes that lease capitalization would significantly damage key measures of financial health used by investors, analysts and creditors, and would likely increase the borrowing costs of companies. Duke *et al.* (2012) also conducted a case study with FedEx and UPS, examining the effects of proposed new lease accounting for existing operating lease commitments. The study shows similar results: large hidden operating lease assets and liabilities as well as significant impacts on key ratios, such as D/E ratio, ROA and interest coverage.

Singh (2010) examines the effects of proposed lease accounting practice, i.e. constructive capitalization of operating leases, for companies operating in restaurant and retail sector. The sample comprises 234 restaurants and retail companies. The study finds that both sectors are materially affected but retail firms are affected more. Several financial ratios measuring leverage and profitability were affected: D/E increased dramatically as well as ROIC and ROA decreased. The study also finds that smaller companies would be more dramatically affected, due to large amount of leased assets in relation to other assets.

Grossman & Grossman (2010) investigated the effects of operating lease capitalization with a sample of 91 non-financial companies. Industries having largest hidden lease liabilities included drugstores, grocery stores, airline companies, restaurants, retailers and railroad companies. The results indicate decrease for current ratio and increase for D/A ratio. The authors conclude that the capitalization has material effect on financial statements but also highlight that the proposed operating lease capitalization would likely have drawbacks, such as more difficult access to financing, possible debt covenant violations caused, because debt ratios are often used in debt covenant rules.

Bryan *et al.* (2010) conducts a case study with Walgreens, to examine the effects of capitalization of operating leases. For Walgreens, effects are enormous. Total assets grow by 78.7% while total liabilities grow 1424.5%, i.e. almost all the debt of the company is hidden in a form of operating leases. Interest coverage decreased 98.9%, debt to capital increased 503% and ROA decreased 43.5%. This shows that the lease capitalization would have extreme implications for some companies. The study emphasizes that certain industries would be affected harshly by the proposed lease accounting practice: communications, financial services, manufacturing, petroleum, retail, services, transportation and utility.

Kostolansky & Stanki (2011) aim to quantify the impact of proposed lease accounting by constructive capitalization, examining S&P 100 companies, by using multiple discount rates (3%, 6% and 9%). The results indicate material effects on financial statements and financial ratios. With 6% discount rate, average increase in total assets was 5.10% and in total liabilities 10.39%. D/A ratio increased on average 4.12%, while ROA decreased 4.14%. Retail sector was most heavily affected, for which average increase in total liabilities amounted to 43.16%. Also transportation, communication and utilities sectors were heavily impacted, as well as mineral and service industries. The findings are consistent with those of other similar studies, and the authors conclude that the lease capitalization would give more representative balance sheet and give their support to the new leases standard proposal.

Branswijck *et al.* (2011) examines effects of constructively capitalized operating leases on financial statements and financial ratios for 244 Belgian and Dutch listed companies from several industry sectors. The study finds material effects on key financial ratios: significantly higher D/E ratio, lower ROA and lower current ratio. The results indicate that the impacts vary within industries; for example manufacturing will be more affected than telecom industry.

Fitó *et al.* (2013) offers evidence from Spain, by study with sample of 156 Spanish listed companies. According to Fitó, Spanish companies have been lobbying strongly against the proposed lease accounting renewal. As other studies, the study finds

material effects for financial ratios when capitalizing operating leases. Effects on financial ratios are tested with both, constructive capitalization method and factor method. The results show the hidden operating lease liabilities to amount to c. 18.3% of total liabilities and the related hidden assets to amount to c. 19% of total non-current assets. Ratios measuring leverage increase, current ratio decreases and asset turnover decreases slightly. ROA and ROE decrease, though there is only a slight decrease in ROA. The study finds that industries most affected are retail and energy sector and concludes that the effects vary within the industries, which explains some companies lobbying more strongly against the proposal.

Wong & Joshi (2015) offer recent evidence from Australia, examining the impacts of the exposure draft by FASB and IASB. According to authors, the use of operating leases is material and pervasive as well in Australia. The study examines lease capitalization effects for 107 large, Australian listed companies from various sectors. Results provide that reported under proposed new leases standard, total assets increased 3.47% and total liabilities increase 4.34%, while equity decreases -0.27%. Results for financial ratios show material changes. D/E ratio increases 31.69% and D/A ratio increases 10.11% while ROA decreases 15.35% and ROE slightly decreases 1.23%. The authors conclude that proposed standard change will have material impact on financial statements and financial ratios of companies with operating leases.

Table 2. *Studies examining the effects of capitalization of operating leases: summary of effects on financial ratios.*

Ratio/figure	Studies finding evidence	Impact
Profit margin	Beattie (1998), Goodacre (2003b), Fülbier (2008).	+
Interest coverage	Goodacre (2003b), Mulford (2007), Jesswein (2009), Duke (2009), Bryan (2010).	-
ROE	Beattie (1998), Goodacre (2003b), Mulford (2007), Fülbier (2008), Durocher (2008), Fitó (2013), Wong (2015).	+/-
ROA	Beattie (1998), Bennett (2003), Goodacre (2003b), Mulford (2007), Fülbier (2008), Durocher (2008), Duke (2009), Singh, (2010), Bryan (2010), Branswijck (2011), Kostolansky (2011), Fitó (2013), Wong (2015).	+/-
ROIC	Jesswein (2009), Singh (2010).	-
Asset turnover	Beattie (1998), Goodacre (2003b), Fitó (2013).	-
Gearing, D/E, D/A	Beattie (1998), Bennett (2003), Goodacre (2003b), Mulford (2007), Fülbier (2008), Durocher (2008), Jesswein (2009), Duke (2009), Singh (2010), Grossman (2010), Kostolansky (2011), Branswijck (2011), Fitó (2013) Wong (2015).	+
Current ratio	Bennett (2003), Durocher (2008), Jesswein (2009), Duke (2009), Grossman (2010), Branswijck (2011), Fitó (2013).	-
E/A	Fülbier (2008), Duke (2009), Fitó (2013).	-
Cash flow	Mulford (2007).	+

Table 2 summarizes the studies examining the impact of constructive capitalization on companies' financial ratios and concludes the similar findings of numerous studies. As it can be seen, extensive use of operating leases enhances the company's financial performance and risk profile by showing larger return assets, lower gearing and in general smaller amount of capital employed. In general, the effects seemed to be most dramatic for ratios measuring gearing. D/E and D/A, measuring leverage, were examined in majority of studies. D/E and D/A are widely used by analysts and credit rating agencies, to measure financial risk and companies' ability to pay back their debt (Duke, 2009). All the studies found similar results, indicating increased gearing and it seems that the effect was also most dramatic for these ratios.

Also for income statement, effects were found, even though they are not as dramatic. Majority of the studies found effects on ROE and ROA. ROA is seen as a common performance measurement for companies (Duke *et al.* 2009). The results are mixed, some studies found decrease and some studies found increase. There is evidence that companies making profit experience increase in ROA when capitalizing operating leases, while loss-making companies experience decrease in ROA (Duke, 2009. Wong *et al.* 2015.) This may be the reason for mixed results found for changes in ROE and ROA. However, various studies introduced above find evidence that lease capitalization causes material changes in ROE and ROA.

Table 3. *Effects of operating leases and capital leases. Adopted from Damodaran (2009).*

Ratio	Effect of Operating Lease	Effect of Capital Lease
Return on Capital or ROIC = $\frac{EBIT(1-t)}{BV \text{ of Capital}}$	<ul style="list-style-type: none"> Decreases operating income through lease expense Capital does not reflect leases ROC is generally higher. 	<ul style="list-style-type: none"> Decreases operating income only through depreciation Capital increases through present value of operating lease ROC is generally lower.
ROE = $\frac{Net \text{ Income}}{BV \text{ of Equity}}$	<ul style="list-style-type: none"> Net income lowered by after-tax lease expense BV of equity unaffected ROE effect depends on whether lease expense > (imputed interest + depreciation) 	<ul style="list-style-type: none"> Net income lowered by after-tax interest expense & depreciation of leased asset BV of equity unaffected ROE effect depends on whether lease expense > (imputed interest + depreciation)
Interest Coverage = $\frac{EBIT}{Interest \text{ Expense}}$	<ul style="list-style-type: none"> Operating income generally decreases Interest expense does not include leases Coverage ratio is generally higher 	<ul style="list-style-type: none"> Operating income decreases Interest expense increases to reflect imputed interest on leases Coverage ratio is generally lower
Debt ratio = $\frac{Debt}{(Debt + Equity)}$	<ul style="list-style-type: none"> Debt includes only conventional debt (no leases) Debt ratio is lower, both in book and market terms 	<ul style="list-style-type: none"> Debt increases (to account for capitalized leases) Debt ratio is higher

Damodaran (2009) compares the effects of different accounting treatment, capital leases vs. operating leases according the current standards, to financial ratios. Results are shown in table 3. Damodaran's comparison illustrates the mechanisms through which the effects come when capitalizing leases and also shows the importance of classification "decision" of leases for companies and how significant impact it has. As stated earlier, one major problem with current lease accounting is artificial structuration of lease contracts, in order to classify the lease as operating leases and keep the related asset and liability off balance sheet (Jesswein, 2009; Troberg, 2013).

As it can be seen from the table, capitalizing leases in general show lower performance and higher leverage. Return on invested capital is lower, and in certain circumstances also return on equity. Interest coverage, which measures the ability to pay interest deriving from outstanding debt, is generally lower, as well as debt ratio. This analysis show that firm's riskiness, financial position and performance are affected by the management's choice between capital leases and operating leases.

3.3 Value relevance research

As previous chapter indicated, operating leases have significant effects on financial statements of companies. Another question is, how do the market participants, investors and creditors, perceive the off-balance sheet debt deriving from operating leases? Does the market include operating leases into their valuation in the same accuracy and extent as on-balance sheet debt? Prior value relevance research on leases is relatively scarce, compared to the field of research examining the effects of operating lease capitalization (Boatsman and Dong, 2011). According to Morais (2011) value relevance research mostly investigates the value relevance of footnote information, as this study aims to do as well. There are as well studies comparing the perception of on-balance sheet capital leases and off-balance sheet operating leases. Barone *et al.* (2014) concludes that the results for the studies examining the capital market perception of on-balance sheet debt and off-balance sheet debt are mixed, but the majority of studies seems to provide that the market incorporates operating leases

into their decision making process for investment purposes, reported according to current lease accounting standards.

Ro (1978) examined empirically the stock market price effects of new lease disclosure requirements for companies with leases, specifically the consequences SEC's extended lease disclosure decision in 1973. The study found that the new disclosure requirements changed the distribution of security returns and affected adversely to the security prices. The effect was found to be greater for high-risk than low-risk companies. These findings support the claim that the disclosures have value relevance, i.e. market participants recognize the information offered in the footnotes.

Bowman (1980) examined empirically the relationship between capital leases (reported under ARS 147 i.e. disclosed, not recognized on balance sheet) and market risk of lessees. The results of the study support that the footnote information is evaluated by market participants, by finding an association between lease variable and market risk variable. The results indicate that leasing information reported under ARS 147 is reflected in share prices.

Imhoff *et al.* (1993) provided evidence that constructive capitalization model is used by market participants in decision making and more specifically in risk assessment. Thus, the results support that footnote disclosures have value relevance.

El-Gazzar (1993) investigated the association between the market returns of lessee and the changed debt covenant restrictions as a result of complying with SFAS 13. The study examined several regulatory event dates concerning lease accounting and the market reactions to them. The study found that there were negative market reaction towards few specific dates that had significant negative abnormal returns. El-Gazzar found the magnitude of market return reduction to correlate with to changes in debt covenant restrictions impacts that were result of compliance with SFAS13.

Ely (1995) investigated the market's risk assessment in the presence of off-balance sheet debt related to operating leases. The results indicate that market employs the

constructive capitalization model in risk assessment, and thus the evidence supports that operating lease footnote information has value relevance in decision making.

Lim *et al.* (2003) examines market evaluation of operating leases by comparing the impact of operating leases on debt ratings and the yield of new debt issues to that of on balance sheet debt. The study finds that the on balance sheet debt is materially more important for debt ratings than off balance sheet debt from operating leases. On the yields of new bond issues, operating leases and on balance sheet debt have the same impact. The authors conclude that these findings together offer that by keeping debt off balance sheet, it is possible to maintain better debt ratings but as the bond yields reflect the off-balance sheet debt similarly to on balance sheet debt, it is not possible to “fool” the market with operating leases.

A study conducted by Lindsey (2006) investigates if there is difference in the perception of equity investors for off-balance sheet operating leases and capital leases that are recorded on balance sheet or are the investors valuing them similarly. The results indicate that the investors consider both capital leases and operating leases as economic liabilities of the company. However, the study found that capital markets price them differently. The differences seem to be dependent on bright line tests, so the author suggest that if not required to be recorded on balance sheet, information on bright line tests should be disclosed on footnotes. (Morais, 2011; Barone *et al.* 2014).

Sakai (2010) investigates the market reaction with Japanese sample in the situation where finance leases were required to be moved onto balance sheet, compared to prior requirement only to be reported in footnote disclosures. In theory if the footnote information of leases were value relevant, there should not be a market reaction towards the accounting rule change because market participants already incorporate footnote information of leases into their perceptions. The results found no market reaction for shifting from disclosure to balance sheet recognition. Sakai concludes that it is not necessary to require balance sheet recognition for these type of assets, as

the footnote disclosing seems to be as sufficient for investors' decision making as balance sheet recognition.

Sengupta & Wang (2011) examined whether the public debt market prices the off balance sheet debt deriving from operating leases based on footnote disclosures. The study also investigates whether on balance sheet debt from capital leases is priced differently from off-balance sheet debt from operating leases. The study finds that the bond rating agencies do price operating lease debt. Furthermore, the pricing does not differ from capital lease debt. Thus, corporate bond ratings and yields are associated with off-balance sheet debt of operating leases. The results offer evidence of value relevance of operating leases and the authors do not particularly support the inclusion of operating leases on balance sheet.

Boatsman & Dong (2011) examine if the errors caused by lease accounting, such as financial ratio impacts discussed in the previous section, have implications to the equity value. The study is conducted by setting an example of naive reliance on financial statements, with no adjustments for operating lease off-balance sheet debt, and commonly used equity valuation models, in order to show that lease accounting has no effect on equity valuation. The authors conclude that it is unlikely that leases have direct effect to the equity value, unless the effect derives from misperception of equity risk. As well, the indirect implications such as those caused by management compensations and decision making are possible and can ultimately effect equity value.

Bratten *et al.* (2013) offers evidence that financial information users do process and use the footnote information disclosed on operating leases, and value off-balance sheet debt of operating leases similarly to capital lease debt recorded on balance sheet. The study proves that "as if" capitalized operating lease obligations (as if the operating leases would have been treated as capital leases from the inception) are reliable. Then, study shows evidence that the "as if" operating lease debt and capital lease debt are both in a similar magnitude of significance linked to proxies for the costs of equity and debt. Study also examines a subsample with inadequate footnote

information with less reliable “as if” operating lease debt estimate, and finds that the association is not equally strong between disclosed and recognized lease information and proxies for the cost of equity and debt. This indicates that market participants do recognize and process the footnote information of operating leases, when the quality of information is sufficient.

Cotten *et al.* (2013) studies if the bond ratings reflect the off-balance sheet debt derived from operating leases reported according to current accounting rules, when assessing the credit ratings. The examination is conducted by comparing the companies’ actual credit ratings with two synthetic credit ratings. First is based on reported financial information and the second is based on operating lease debt adjusted financial information. Debt adjusted information produces significantly lower synthetic credit ratings than the reported information. As well, study finds that the actual credit ratings are on average close to lease debt adjusted synthetic ratings. These results provide that the credit rating agencies incorporate the off-balance sheet operating lease obligations into their analysis.

Altamuro *et al.* (2014) paper examines if the credit assessment of creditors and credit rating agencies is affected by the presence of off-balance sheet operating leases. The study examines whether bank loan spreads are associated with capitalized operating leases. This is investigated through assessing whether lessees end up with different interest rate for loans. The results indicate that the creditors consider operating leases in their decision-making, as they use credit ratings with their valuation. The study finds evidence that credit rating agencies incorporate operating lease obligations into their assessment. The authors emphasize that the current lease accounting offers sufficient information on operating leases.

Ge (2011) examined the of the constructively capitalized off-balance sheet debt implications for future earnings and stock returns. The study finds that when controlling current earnings, operating lease activities lead to lower earnings in the future. However, additional tests show that the investors are estimating the implications of operating lease debt to future earnings incorrectly. The study finds

that constructively capitalized operating lease debt has incremental explanatory power beyond that reported on balance sheet, on the prediction of future earnings and stock returns. It seems that investors perceive operating leases as they would have positive impact on future performance. This is not consistent with the results that high operating lease activities have lower future profit margins and low asset turnover ratios. As showed by Bradshaw *et al.* (2006), external financing activities have negative relation with future stock returns. The author concludes that the market mispricing the operating lease obligations is likely a part of larger phenomena of mispricing the off-balance sheet disclosures.

Dhaliwal *et al.* (2011) investigates the operating lease impact on firm's financial and operating risk, by using *ex ante* cost-of-equity capital measures based on accounting valuation models in order to estimate to the risk relevance of operating lease obligations. The study compares whether operating leases have similar risk relevance for explaining the *ex ante* measures of risk, as the capital leases that are reported on balance sheet. The study provides that there is a positive association between *ex ante* cost-of-equity capital and operating lease adjusted financial leverage measuring financial risk and adjusted operating leverage measuring operating risk. The study finds that the positive association between *ex ante* cost-of-equity capital and adjustments is weaker for operating leases than capital leases. The findings indicate that the market participants do not evaluate the financial risk and operating risk relevance related to operating leases and capital leases equivalently. The authors offer some support for proposed lease accounting to capitalize all lease and eliminate the classification into capital leases and operating leases.

Andrade *et al.* (2011) investigates the association between companies' credit spreads in Credit Default Swap (CDS) market. The results indicate that credit spreads are positively related to non-cancellable operating leases, i.e. operating leases increase credit spreads. Their results show that the price impact of per unit of leverage from operating leases is equivalent with on balance sheet debt.

This chapter reviewed the prior studies related to lease accounting, first those investigating financial statement effects of operating lease capitalization after which those concentrating on value relevance and market perception of leases. To conclude, the literature seems to reach the consensus that the current lease accounting practice does not offer faithful representation of the lease arrangements that the companies are engaged into. As the use of leasing arrangements seems to be material and pervasive, the effects of off-balance sheet debt deriving from operating leases cannot be ignored (Imhoff *et al.* 1993; Beattie, 1998; Goodacre, 2003a; Mulford & Gram, 2007; Fülbier, 2008; Durocher, 2008; Jesswein, 2009; Duke, 2009; Bryan *et al.* 2010; Singh, 2010; Branswijck, 2011; Kostolansky, 2011; Wong, 2015). As shown by the numerous studies reviewed, omitting leases from balance sheet affects materially financial ratios, which may distort investors and creditors decision-making process. Also standard setters share the concern, and have taken action, as the new leases standard requires bringing operating leases on balance sheet.

On the other hand, majority of studies investigating the market perception of leases find that sophisticated financial statement users, analysts, creditors and investors already take adverse balance sheet effects of operating lease commitments into consideration (Ro, 1978; Bowman, 1980; El-Gazzar, 1993; Ely, 1995; Lim, 2003; Sakai, 2010; Sengupta & Wang, 2011; Bratten *et al.* 2013; Cotten *et al.* 2013; Altamuro *et al.* 2014).

However, also mixed results are found and some studies support the proposed standard by offering evidence that operating lease liabilities are mispriced (Dhaliwal *et al.* 2011; Andrade *et al.* 2011; Ge, 2011). As well, many studies that find the market to perceive operating leases are investigating professional users' perception, such as bond and credit rating agencies (Sengupta & Wang, 2011; Ge, 2011; Cotten *et al.* 2013; Altamuro *et al.* 2014). It is possible that average financial statement user does not have the same cognitive processing power for footnote information and at least possibly misprices the off balance sheet debt from operating leases (Ge, 2011; Hirshleifer *et al.* 2003). Still, there are concerns mostly among financial statement preparers for problems relating to issues regarding complex and costly application of

new lease accounting rules and more difficult access to financing and increased debt ratios causing possible debt covenant violations (Grossman & Grossman, 2010; Wiley Insight, 2013; Barone *et al.* 2014.)

4 HYPOTHESES

This chapter describes the hypotheses building process and presents the hypotheses that are tested in the study. Hypotheses are built based on the findings of prior research and on assumptions subjectively derived from the existing literature. The first research question examined in this study is

- i. Are operating leases value relevant, reported according to current accounting standards?

As prior literature indicates, operating leases create significant off-balance sheet assets and liabilities reported only in companies footnotes that affect materially on companies' financial statements and ratios measuring performance, leverage and risk. (Imhoff *et al.* 1993; Beattie *et al.* 1998; Goodacre, 2003a; Mulford & Gram, 2007; Fülbier *et al.* 2008; Durocher, 2008; Jesswein, 2009; Duke *et al.* 2009; Bryan *et al.* 2010; Singh, 2010; Grossman & Grossman, 2010; Branswijck, 2011; Kostolansky, 2011; Wong, 2015).

Some constituents argue that methods often used by for instance analysts, such as factor method, are not precise enough to provide accurate information of operating leases (Barone *et al.* 2014). More complex models, such as constructive capitalization model (Imhoff *et al.* 1991) is more likely provide theoretically accurate information but is often too complex and time consuming to be adopted by regular investors' analyses on a daily basis (Barone *et al.* 2014).

Furthermore, behind the claim that investors incorporate operating leases into their valuation may lay other motives. New lease accounting practice is argued to be costly for many companies and take remarkable effort to be adopted. It would bring all long-term off-balance sheet leasing activities on balance sheet and would have an unfavorable effect on numerous financial ratios and performance indicators, which would show weaker financial position and performance for the companies as the prior

research discussed in the previous chapter indicates. (Imhoff *et al.* 1991. Frecka 2008; Jesswein, 2008 & 2009).

However, even though studies investigating market perceptions of operating leases offer mixed results, majority of the studies seems to reach the conclusion that financial statement users incorporate operating leases based on footnote disclosures into their decision making process (Ro, 1978; Bowman, 1980; El-Gazzar, 1993; Ely, 1995; Lim, 2003; Sakai, 2010; Sengupta & Wang, 2011; Bratten *et al.* 2013; Cotten *et al.* 2013; Altamuro *et al.* 2014). Furthermore, it seems that many of them incorporate constructively capitalized operating leases. These findings support that operating leases have incremental value relevance beyond recognized assets and liabilities.

Hirshleifer *et al.* (2003) shows that limited attention and cognitive processing power of shareholders can affect the share prices and it is likely that the information requiring more complicated processing may not reflect to the share prices correctly. Given, that the footnote disclosures offer only limited information of operating leases and the constructive capitalization method (Imhoff *et al.* 1991) that is theoretically agreed to give the most accurate estimate of operating lease assets and liabilities is fairly complex and time consuming (Barone *et al.* 2014), the estimates may be distorted. Ge (2006) investigates the relation between operating lease off-balance sheet activities, earnings persistence and share prices. Ge (2006) finds that the operating leases have incremental explanatory power to future earnings and stock returns, but market is mispricing the operating lease off-balance sheet activities, which he sees to be a part of larger phenomenon that the off-balance sheet activities are not reflected correctly in the stock prices.

Based on the prior literature and the arguments presented above, I expect that constructively capitalized operating leases have incremental explanatory power to the share prices, i.e. equity market participants incorporate the footnote information of operating leases into their decision making process. Thus, first hypothesis is as follows:

H1: Constructively capitalized operating leases have incremental information content beyond that contained in assets, liabilities and sales.

Second research question assigned for this study is:

ii. Has the use of operating leases increased?

The existing literature has constantly emphasized the growth in the use of operating leases (Revisine, 2005; Dhaliwal *et al.* 2011). Pervasive and material use of operating leases is one of the main motivations for the study. In the early phase of lease accounting regulation, capitalization of capital leases was not required and they were expensed as operating leases today. After regulators issued rules that required classification into capital leases that were required to be recognized on balance sheet and operating leases that were only required to be disclosed in the notes and recorded in income statement, there was a decline in the use of capital leases and corresponding increase in the use of operating leases (Goodacre, 2003a; Imhoff & Thomas 1988). Based on the existing literature, it can be expected that the use of operating leases has grown in the air transportation industry during sample period.

H2: The use of operating leases has increased during past decades in the air transportation industry.

5 METHODOLOGY, DATA AND SAMPLE SELECTION

Value relevance studies quantitatively investigate the relation between market share prices and specific accounting amount (book values). Value relevance studies differ from fundamental firm value analysis studies and do not use valuation models to estimate firm values. In fundamental valuation, researchers seek to include all possible variables that might be relevant to current value or estimated predicted value of the company. In value relevance studies, variables are selectively included, to learn about the characteristics of certain accounting numbers. (Barth, 2001). In this study the value relevance of operating leases is examined by conducting an ordinary least square regression to estimate the explanatory power of off-balance sheet assets and liabilities related to operating lease commitments to the market value of the company.

5.1 Variable construction

The empirical analysis of this study includes only balance sheet based variables, because balance sheet effects of constructive capitalization are more material and easier to measure (Imhoff, 1991; Jennings & Marques, 2013). As typical for value relevance studies, dependent variable in models tested in this study is the market value of the equity, $\ln(MVE_{it})$, of the sample company. MVE is calculated from the data by multiplying the stock prices by the amount of outstanding shares. Equity market values are transformed into their natural logarithm, $\ln(1+\text{variable})$, as all well as all the other variables, due to detected strong positive skewed distributions of residuals and extreme observations in the sample data.

Test variables, i.e. explanatory variables used in the models comprise natural logarithm of the book value of total assets $\ln(BVA_{it})$, natural logarithm of the book value of net debt $\ln(BVL_{it})$ and the estimated value of off-balance sheet liability $\ln(ll_{it})$ and asset $\ln(la_{it})$ derived from lease arrangements. The amounts for $\ln(BVA_{it})$ and $\ln(BVL_{it})$ are obtained directly from Compustat. Amounts for leased assets $\ln(la_{it})$ and leased

liabilities $ln(ll_{it})$ are calculated by using the method introduced earlier in this study, adopted from Imhoff (1991 & 1997) and later used by Jennings & Marques (2013) among the others.

First step is to calculate the estimated leased liability. Future expected lease payments for the following five years and the lump sum for the lease payments for all years beyond the fifth year were obtained from Compustat. The lease payments should be discounted with the company's borrowing rate. As the information is not available for the observations, I choose to use 7% interest rate, which is used for example by Jennings & Marques (2013). The lump sum is discounted with fifth year's discount factor. The sum of the discounted lease payments represents the off balance sheet liability deriving from operating leases. The variable used in the model is natural logarithm of the calculated amount, $ln(la_{it})$.

Because of the interest effect, leased liability is larger than leased asset, when estimated according to the model. As explained earlier in chapter 3, the ratio between asset and liability changes in the different phases of the asset life cycle. Because the model assumes straight-line depreciation method, leased asset declines straightforwardly after the inception. In addition to lease payments that lessee pays to reduce the debt, it pays interest payments. The model calculates the leased liability by using the effective interest method. When the lease payments decline, the interest starts to decline as well, somewhere in the middle of the leased assets life. This causes the difference between leased asset and leased liability, which is at its greatest in somewhere in the middle of the leased assets life. (Imhoff, 1991 & 1997).

To calculate the corresponding leased asset variable for the regression model, I calculate ARL, the ratio between leased asset and leased liability (Imhoff *et al.* 1997. Jennings & Marques, 2013). It is calculated individually for each observation by using the formula below:

$$ARL = \frac{\frac{1-(1+r)^{-N}}{r} \left(\frac{Rem}{N} \right)}{\frac{1-(1+r)^{-Rem}}{r}} \quad (4)$$

Where

- ARL = ratio for calculating the leased asset
r = the company's average borrowing rate, here 7%
N = the number of the years the future lease payments are expected
Rem = N/2

As I have no information of the actual borrowing rate, I use 7%. I neither have information of the actual number of the years for the future lease payments are expected, as the companies must only report payments for five years + lump sum for the following years. Thus, following Jennings & Marques (2013) I calculate the leased asset life as follows:

$$N = 5 + \frac{Pmt_T}{Pmt_{t+5}} \quad (5)$$

Where

- Pmt_T = the lump sum of the lease payments for the years beyond the fifth year
 Pmt_{t+5} = the fifth year's lease payment

The amount of the leased asset is calculated by multiplying the estimated leased liability with ARL. The variable used in the regression in natural logarithm of the amount, $\ln(la_{it})$. However, due to multicollinearity issues $\ln(la_{it})$ is not included in model (1) but still used in model (2) to adjust the book value of assets, $\ln(BVA_{la_{it}})$.

In model (2) I simply add the constructively capitalized leased liability to the book value of net debt and accordingly estimated leased asset to the book value of assets. Then variables are transformed into their natural logarithm. Variables used are $\ln(BVL_{ll_{it}})$ and $\ln(BVA_{la_{it}})$.

There is one control variable included in all models, net sales. Net sales amount is obtained directly from Compustat. I assume that the size of net sales is reflected in the market value of equity. As other variables, also sales is transformed into its natural logarithm, $\ln(Sales_{it})$. Variable $\ln(Sales_{it})$ is expected to have positive explanatory power on the equity market value, i.e. larger the revenue, larger the equity market value. The table below summarizes the variables used in the models of the study and also presents the expected signs for the coefficients of the variables. Table 4 summarizes the variables included in the study.

Table 4. *Summary of the variables.*

Variable	Description	Expected Sign
$\ln(MVE_{it})$	Natural logarithm of the market value of equity	Dependent variable
$\ln(BVA_{it})$	Natural logarithm of the book value of assets	+
$\ln(BVL_{it})$	Natural logarithm of the book value of liabilities	-
$\ln(ll_{it})$	Natural logarithm of estimated leased liability	-
$\ln(BVA_{la_{it}})$	Natural logarithm of the total assets, adjusted with estimated leased asset	+
$\ln(BVL_{ll_{it}})$	Natural logarithm of the net debt, adjusted with the estimated leased liability	-
$\ln(Sales_{it})$	Natural logarithm of net sales. Control variable	+
$Year_t$	Vector of the year dummies (1994-2013)	

5.2 Research design

I conduct an OLS regression to examine value relevance of operating leases. The model is modified log-log regression model. In the log-log model, all variables are transformed into their natural logarithm. This enhances the results of the analysis when the residuals have strong positively skewed distributions, data has numerous extreme observations or non-linearity has been detected within. Interpretation of coefficients for log-log model differs from normal linear-linear model. In linear-linear model, positive coefficient of

0.5 for independent variable means that if independent variable decreases by 1, increase of 0.5 for the dependent variable occurs, when all other variables remain stable. For log-log model instead, the positive coefficient of 0.5 for independent variable means that when independent variable increases by 1%, dependent variables increases by 0.5%, when all the other variables remain stable. (Kephart, 2013).

Value relevance studies are classified into several categories in prior literature. *Incremental association studies* examine if the specific accounting number is helpful in explaining the value or the returns of the company given other specified variables. These studies consider the value relevance existing, if the parameter coefficients significantly differ from zero. (Holthausen & Watts, 2001). In my study, model (1) directly tests the incremental information content of operating leases and I focus on analyzing p-values and the parameter estimate coefficients in order to find out whether operating leases explain equity market values, beyond reported assets, net debt and sales. *Relative association studies* investigate the relation between share prices and different bottom-line measures, and generally use adjusted R square as a measure of value relevance. Accounting amounts with higher adjusted r square are interpreted to better explain the market values and have more value relevance (Holthausen & Watts, 2001). I focus on analyzing adjusted r square as well in my study, especially when testing hypotheses with models (2) and (3).

I choose to include only balance sheet components related to operating leases in my research model, because balance sheet effects are more material and also easier to measure (Jennings & Marques, 2013). Naturally, inclusion of operating leases into balance sheet also has material effects on earnings (Imhoff, 1991 & 1997), but including income statement based variables to the research model makes the model significantly more complex and may not offer as reliable results. Income statement based variables are less material and more difficult to estimate (Jennings & Marques, 2013).

The first model (1) tests explanatory power of four independent variables to the equity market value, $\ln(MVE_{it})$. The first two variables represent the book value of total assets, $\ln(BVA_t)$, and book value of net debt, $\ln(BVL_t)$. The third variable is sales, $\ln(Sales_{it})$,

which was chosen as a control variable to the study as it is expected to have a positive explanatory power to the equity market value. The fourth variable, $\ln(ll_{it})$ is the estimated off-balance sheet leasing liability, which is calculated according to constructive capitalization method (Imhoff, 1991 & 1997), using the information obtained from the footnote disclosures of the companies. $Year_t$ Represents the vector of the year dummies that were added to the model the control year differences within the data. Due to multicollinearity issues, model does not include both the leased asset and leased liability variables, though I have calculated an estimate for both. Multicollinearity issues are discussed later more in detail in the results chapter.

Model (1) is as follows:

$$\ln(MVE_{it}) = \alpha_0 + \alpha_1 \ln(BVA_t) + \alpha_2 \ln(BVL_t) + \alpha_3 \ln(Sales_t) + \alpha_4 \ln(ll_t) + Year_t + \varepsilon_{it} \quad (1)$$

Where

$\ln(MVE_{it})$	= Natural logarithm of the market value of equity in the fiscal year end
$\ln(BVA_{it})$	= Natural logarithm of the book value of total assets in fiscal year end
$\ln(BVL_{it})$	= Natural logarithm of the book value of net debt in fiscal year end
$\ln(Sales_{it})$	= Natural logarithm of the revenue in fiscal year end
$\ln(ll_{it})$	= Natural logarithm of the estimated leased liability in fiscal year end
$Year_t$	= Vector of the year dummies (1994-2013)

For model (1) I expect that the book values of assets and net debt are statistically significant and have strong explanatory power to the equity market value. I expect positive coefficient for assets and negative coefficient for liabilities. As well I expect the net revenue to have positive coefficient and explanatory power to the equity market value. Results of leased liability component have relevance for the finding of this study. As hypothesized, I expect that the leasing variable has explanatory power to MVE and improves the model. I expect coefficient different from zero, but negative. Please see the variables section for detailed explanation of the variable construction.

Jarva & Lantto (2012) examined the value relevance of IFRS versus FAS in their paper Information Content of IFRS versus Domestic Accounting, using the approach, which inspired my second approach to examine the value relevance of operating leases. Jarva's model examined the explanatory power of the book value of assets and book value of liabilities with FAS versus IFRS accounting amounts, by conducting two separate regressions and comparing the results, which one explains better the equity market value. The expected signs for the assets was +1 and for the liabilities -1.

I will estimate the two following models inspired by Jarva's model to examine whether the model (2) with leasing-adjusted total assets $\ln(BVA_{la_{it}})$ and leasing adjusted net debt $\ln(BVL_{ll_{it}})$ will explain the equity market values better than the model (3) with original book values as variables, total assets $\ln(BVA_{it})$ and net debt $\ln(BVL_{it})$. Naturally, coefficients for total assets are expected to have positive sign and coefficient for net debt negative sign. According to my hypothesis H1, I expect the model (2) with lease adjusted assets and debt variables to explain better the equity market value, indicated mainly by higher adjusted r squared. Thus, I expect that model (2) has stronger explanatory power to equity market value and constructive capitalized lease variables have incremental information content beyond that contained in book value of assets, net debt and sales. The variable construction for model (2) and (3) are explained more in detail in the next section.

The models (2) and (3) are as follows:

$$\ln(MVE_{it}) = \alpha_0 + \alpha_1 \ln(BVA_{la_{it}}) + \alpha_2 \ln(BVL_{ll_{it}}) + \alpha_3 \ln(Sales_{it}) + Year_t + \varepsilon_{it} \quad (2)$$

$$\ln(MVE_{it}) = \alpha_0 + \alpha_1 \ln(BVA_{it}) + \alpha_2 \ln(BVL_{it}) + \alpha_3 \ln(Sales_{it}) + Year_t + \varepsilon_{it} \quad (3)$$

Where

$\ln(MVE_{it})$ = Natural logarithm of the market value of equity in the fiscal year end

$\ln(BVA_{it})$ = Natural logarithm of the book value of total assets in fiscal year end

$\ln(BVL_{it})$ = Natural logarithm of the book value of net debt in fiscal year end

$\ln(BVA_{la_{it}})$ = Natural logarithm of the book value of total assets adjusted with estimated leased liability in fiscal year end

$\ln(BVL_{ll_{it}})$ = Natural logarithm of the book value on net debt adjusted with estimated leased asset in fiscal year end

$\ln(Sales_{it})$ = Natural logarithm of the revenue in fiscal year end

$Year_t$ = Vector of the year dummies (1994-2013)

5.3 Data and sample selection

The sample for empirical analysis is obtained from Compustat and consists of 909 observations. It includes listed companies operating in air transportation industry with SIC codes 4500-4599. Air transportation industry was chosen due to wide use of leases within the industry. The sample comprises observations collected of 90 different companies between years 1993 and 2013. All observations in the initial sample provide information for the variables used in the analysis: total assets in the fiscal year end, total net debt in the fiscal year end, number of common shares outstanding in the fiscal year end, price close –annual fiscal, rental commitments for the following 5 years (presented separately for each year) and thereafter portion of leases as a lump sum. I also decided to include net sales to see whether including sales a control variable would improve my model.

From the initial sample were omitted companies with total assets amounting to less than USD 10 million from the final sample, in order to enhance the reliability of the results. The number of observations for the final sample amounts to 850. The sample included 54 observations with zero leases.

Chart 1. *Number of the observations each year.*

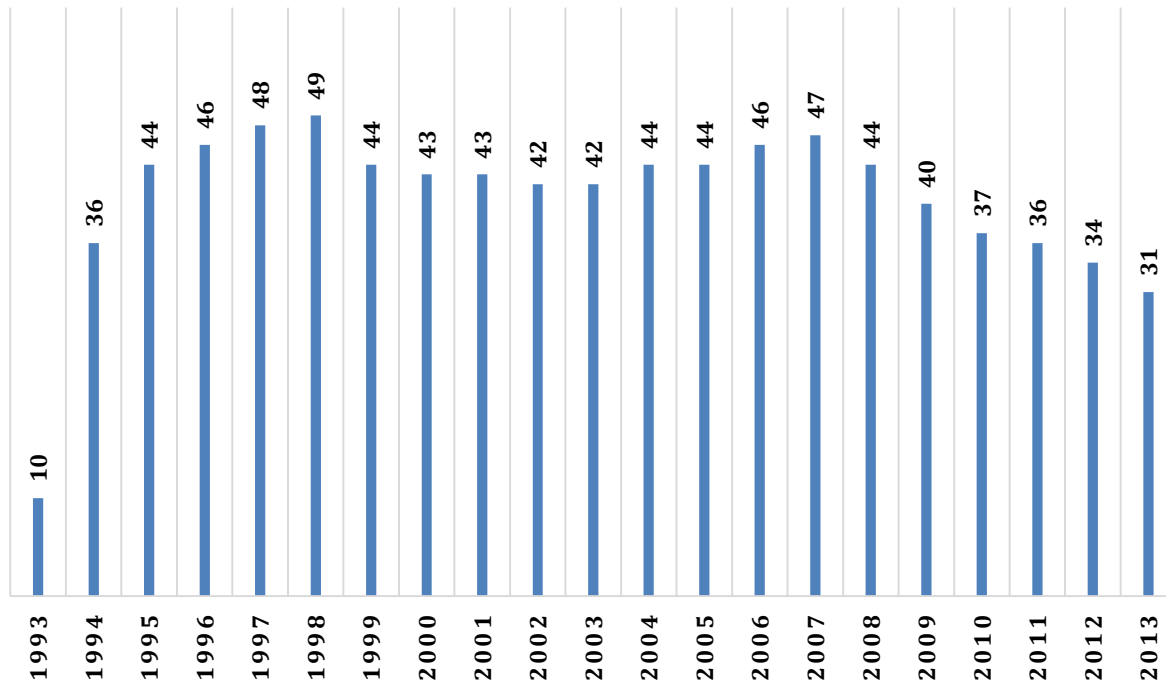


Chart 1 shows the number of observations in each year. The number of observations was almost at its highest in 2007 after which it has decreased towards the end of the sample period.

Table 5. *Descriptions for SIC codes included in the sample, N=850*

Industry	SIC Code	%
Air transportation, scheduled	4512	70,4
Air courier services	4513	8,8
Air transportation, nonscheduled	4522	11,6
Airports, flying fields and airport terminal services	4581	9,2

6 RESULTS AND FINDINGS

This chapter presents the results of the empirical analysis conducted in this study and discusses hypotheses testing and findings of the study. Descriptive statistics for all variables are introduced first. After that, correlation analysis is presented and multicollinearity issues are discussed. Finally, the actual results of the regression analysis are presented and discussed.

6.1 Descriptive statistics

Table 6 presents the descriptive statistics for all variables used in the study, excluding the year dummy variables that were added to control the differences between the years, because the annual variation is not relevant for the study.

Table 6. *Descriptive statistics for the variables used in the study. N=850.*

	<i>Mean</i>	<i>Std. Deviation</i>	<i>Min</i>	<i>25p</i>	<i>Median</i>	<i>75p</i>	<i>Max</i>
$\ln(MVE_{it})$	6.197	2.080	.242	4.764	6.462	7.775	10.445
$\ln(BVA_{it})$	7.145	2.129	2.387	5.430	7.198	9.020	10.864
$\ln(BVL_{it})$	6.719	2.292	1.336	4.970	6.757	8.806	10.751
$\ln(la_{it})$	5.249	2.772	.000	3.385	5.725	7.328	9.614
$\ln(ll_{it})$	5.372	2.808	.000	3.551	5.857	7.472	9.899
$\ln(BVA_la_{it})$	7.470	2.090	2.428	6.010	7.658	9.285	10.993
$\ln(BVL_ll_{it})$	7.178	2.259	1.441	5.486	7.435	9.117	10.950
$\ln(Sales_{it})$	7.077	1.988	.000	5.628	7.038	8.780	10.699
<i>Life</i>	8.634	4.559	.000	5.00	7.671	11.778	44.793

Table 6 presents mean, standard deviation, minimum, 25 percentile, median, 75 percentile and maximum for all variables. When reviewing the descriptive statistics, must be kept in mind that the variables are transformed into their natural logarithm and the amounts are not original values (USD). Variable $\ln(la_{it})$, estimated leased asset, is

included in the descriptives, even though it is not included in models alone, as it is interesting to see how it is compared to the leased liability. Variable *Life* is not actually a variable used in the regression, but a component used when estimating the leased liability and leased asset (N), as explained in the variable construction section. It represents the expected life of the lease, in other words, the number of years that the future leases payments are expected to occur.

The size of the companies in the sample varies a lot as it can be seen from the high standard deviations and high variation between minimum and maximum for $\ln(MVE_{it})$, $\ln(BVA_{it})$, $\ln(BVL_{it})$ and $\ln(Sales_{it})$. Minimum of 0.00 for $\ln(la_{it})$ and $\ln(ll_{it})$ indicates that the sample contains observations with no leases, while the maximum amounts to 9.614 for lease assets and 9.899 for lease liabilities. The difference between $\ln(ll_{it})$ and $\ln(la_{it})$ was expected, because the lease asset is calculated by using ARL ratio from leased liability.

High standard deviation for $\ln(la_{it})$ and $\ln(ll_{it})$ indicates that the sample includes a great variety of companies in terms of amounts and average life cycles of leases. Also variance is highest for the leasing variables, 7.683 and 7.883. Minimum of 0.00 for $\ln(Sales_{it})$ indicates that sample includes companies with zero revenue. Still, mean and maximum for $\ln(Sales_{it})$ are closer each other which indicates that minority of the sample has close to zero revenue.

Life represents the estimated average life of the leased assets and liabilities for the company. Median for *Life* is 7.671 and 75 percentile 11.778 while maximum is 44.793, which indicates that the leases with extremely long life cycles are rare. In practice this indicates that the companies reporting exceptionally large amounts of remaining lease payments beyond fifth year are rare.

6.2 Correlations and multicollinearity

Multicollinearity is unfavorable phenomena in statistics and basically it occurs when some dependent variables correlate with each other too much. Too high level of multicollinearity can affect to the reliability of regression results and cause biased coefficients. For detecting multicollinearity I conduct a correlation analysis as well as examine the VIF and tolerance values.

Table 7 presents the Pearson and Spearman correlations for all variables. Pearson correlation measures linear dependency between two continuous variables while Spearman rank order correlation measures monotonic relationship between two continuous or ordinal variables. Monotonic relationship means that the variables change together, but possibly not at a constant rate. Coefficients of Pearson and Spearman vary between -1 and 1, 1 indicating the perfect positive correlation and -1 perfect negative correlation, while value 0 indicates the perfect non-correlation. Correlation analysis is helpful in detecting possible multicollinearity issues. It can also offer evidence supporting the actual results of the study. Pearson correlations are presented in table 7 right top corner and below left down corner are Spearman correlations.

As we can see, $\ln(ll_{it})$ and $\ln(la_{it})$ are strongly positively correlated with each other, appearing with 0.999 correlation for both Pearson and Spearman correlations. This is not surprising, as the $\ln(la_{it})$ is calculated as a percentage of $\ln(ll_{it})$, using ARL ratio. Inclusion of both variables in a model would likely arise multicollinearity issues and affect to the reliability of the results. As well, $\ln(BVA_{it})$ is highly correlated with $\ln(BVL_{it})$, with Pearson correlation 0.972 and Spearman correlation of 0.975. As we find that majority of the independent variables are significantly correlated with each other, it is reasonable to conduct further analysis of VIF and tolerance values, measuring multicollinearity, presented later in this section.

Correlation analysis indicates that the dependent variable $\ln(MVE_{it})$ has strong correlation with $\ln(BVA_{it})$ and $\ln(BVL_{it})$. This is expected. However, $\ln(BVA_{it})$ has

stronger positive correlation with $\ln(MVE_{it})$ than $\ln(BVA_{la_{it}})$ as well as $\ln(MVE_{it})$ correlates stronger negatively with $\ln(BVL_{it})$ than with $\ln(BVL_{ll_{it}})$. This may indicate that the study fails to find evidence for H1. It seems that the constructively capitalized operating leases have no incremental explanatory power on equity market values, beyond that contained in reported assets, debt and sales, as the lease-adjusted variables do not correlate with the equity market value as strongly as the original book value based variables. However, the correlations measure only correlation between two variables, and thus the correlation results might not be as significant as in the actual regression analysis.

Table 7. *Pearson and Spearman correlations.*

Pearson correlations

		$\ln(MVE_{it})$	$\ln(BVA_{it})$	$\ln(BVL_{it})$	$\ln(la_{it})$	$\ln(ll_{it})$	$\ln(BVA_{la_{it}})$	$\ln(BVL_{ll_{it}})$	$\ln(Sales_{it})$
Spearman's rho	$\ln(MVE_{it})$	1	0.857	0.776	0.488	0.486	0.840	0.762	0.792
	$\ln(BVA_{it})$	0.859	1	0.972	0.641	0.637	0.985	0.946	0.943
	$\ln(BVL_{it})$	0.785	0.975	1	0.690	0.686	0.970	0.978	0.951
	$\ln(la_{it})$	0.499	0.679	0.717	1	0.999	0.725	0.786	0.718
	$\ln(ll_{it})$	0.496	0.674	0.713	0.999	1	0.721	0.783	0.713
	$\ln(BVA_{la_{it}})$	0.833	0.986	0.973	0.765	0.761	1	0.977	0.954
	$\ln(BVL_{ll_{it}})$	0.762	0.951	0.978	0.813	0.810	0.981	1	0.952
	$\ln(Sales_{it})$	0.801	0.956	0.968	0.761	0.755	0.970	0.973	1

Correlation is significant at the 0.01 level (2-tailed) for all coefficients.

Multicollinearity is measured by variance inflator factor (VIF) value and tolerance value, shown in table 8. VIF indicates the times that the standard error is larger, than it would be in case if there were no intra-correlations between the variable and the remaining variables included in the regression analysis. It depends on the case, but in general 10 is considered as a value that should not exceeded in order to have reliable results from the regression analysis. Tolerance is calculated as $(1 - \text{variable's } r^2)$. In general, minimum value for tolerance is recommended to be 0.1. To conclude, smaller the VIF value and larger the tolerance value, less multicollinearity there is present in the model.

Panel B in the table 8 shows the VIF and Tolerance values for the variables used in model (1), if also leased asset component was included in the model. As it can be seen, several variables exceed the recommended maximum VIF value of 10 and not reach the minimum 0.1 of tolerance. As we can see, the multicollinearity is extremely strong for variables $\ln(ll_{it})$ and $\ln(la_{it})$, if the model would include leased asset variable, $\ln(la_{it})$. We can see from the panel A that when omitting $\ln(la_{it})$ from the model, VIF value is 2.235 and tolerance of 0.447 for $\ln(ll_{it})$, which can be seen as perfectly acceptable values. As the leasing variable is our interest in this study, omitting $\ln(la_{it})$ solves multicollinearity issues in sufficient extent for that variable. However in this study, some multicollinearity is inevitable for some variables when considering the nature of the variables used. The size of assets and liabilities are expected to correlate with each other. Collinearity statistics look relatively similar for models (2) and (3), thus presenting statistics for model (1) is sufficient.

Table 8. *Collinearity statistics.*

Panel A: Model (1)	Tolerance	VIF
$\ln(BVA_{it})$	0.046	21.957
$\ln(BVL_{it})$	0.041	24.577
$\ln(ll_{it})$	0.447	2.235
$\ln(Sales_{it})$	0.078	12.873
Panel B: Model (1) with leased asset included		
$\ln(BVA_{it})$	0.046	21.957
$\ln(BVL_{it})$	0.041	24.583
$\ln(ll_{it})$	0.002	651.977
$\ln(la_{it})$	0.002	643.989
$\ln(Sales_{it})$	0.077	13.002

6.3 Results measuring value relevance

This section presents and discusses the actual results of the regression analysis. The results for model (1) are presented first and after that results for comparison of models (2) and (3).

Table 9. *The results of model (1), N=850.*

	Expected sign	Coeff.	t-stat	sig.
<i>intercept</i>		-0.631	-2.015	0.044
$\ln(BVA_{it})$	+	1.753	25.786	0.000
$\ln(BVL_{it})$	-	-1.045	-15.647	0.000
$\ln(ll_{it})$	-	-0.009	-0.0545	0.586
$\ln(Sales_{it})$	+	0.240	4.065	0.000
R^2	0.818			
Adjusted R^2	0.813			

As it can be seen from table 9, model (1) has r square of 0.818 and adjusted r square of 0,813, which suggests good explanatory power for the model. F-value for the model is 154.732 and p-value is close to zero, indicating good statistical significance to the model.

Table 9 presents unstandardized coefficients (coeff.) for the parameters tested with model (1), t statistics (t stat) and p values (sig.) measuring statistical significance of each variable. The intercept for the model is -0,631. The coefficients turn out to be as expected, for $\ln(BVA_{it})$ positive +1.753 and $\ln(BVL_{it})$ negative -1.045. Because the regression is log-log regression, interpretation of coefficients differs from interpretation of normal linear-linear regression. For model one, when $\ln(BVA_{it})$ increases by 1%, $\ln(MVE_{it})$ increases by 1.753%. Correspondingly, 1% increase of $\ln(BVL_{it})$ means 1.045 decrease in $\ln(MVE_{it})$. Large enough t statistics and close to zero p values suggests variables to be statistically significant. As well, $\ln(Sales_{it})$ coefficient is positive as expected, +0.227, which is reasonable and statistically significant.

Leasing liability variable $\ln(ll_{it})$ has negative coefficient, as expected, of -0.009. Coefficients is however very small and p-value seems to be larger than accepted for a statistically significant variable. The results indicate that the equity market value is explained by the book values and sales, while the leasing variable $\ln(ll_{it})$ is insignificant and not bringing explanatory power to the model. However, the detected multicollinearity must be taken into consideration when interpreting the results.

The results indicate that the model (1) fails to find evidence that constructively capitalized operating leases have incremental information content beyond book values of assets, net debt and sales. In other words, adding leasing variable to the model does not improve the ability of the model to explain equity market value. High r adjusted square of 0.813 for the model (1) can be interpreted as a result of book value and sales variables, rather than leasing variable.

Table 10. Results of models (2) and (3), $N=850$.**Panel A:**

Model (2)

	<i>Expected sign</i>	<i>Coeff.</i>	<i>t-stat</i>	<i>sig.</i>
<i>intercept</i>		-0.668	-2.087	0.037
$\ln(BVA_{it})$	+	1.990	24.951	0.000
$\ln(BVL_{it})$	-	-1.235	-16.966	0.000
$\ln(Sales_{it})$	+	0.179	3.124	0.002
R^2	0.805			
Adjusted R^2	0.799			

Panel B:

Model (3)

		<i>Coeff.</i>	<i>t-stat</i>	<i>sig.</i>
<i>intercept</i>		-0.610	-1.965	0.050
$\ln(BVA_{it})$	+	1.762	26.745	0.000
$\ln(BVL_{it})$	-	-1.053	-16.109	0.000
$\ln(Sales_{it})$	+	0.216	4.118	0.000
R^2	0.818			
Adjusted R^2	0.813			

Table 10 presents the results for models (2) and (3). The idea for the second approach is to test whether model (2) comprising the book values adjusted with leasing assets and liabilities variables explains better the market values of equity than model (3) with the original book values as variables. Model (2) has r squared of 0.805 and adjusted r square of 0.799 while model (3) has r squared of 0.818 and adjusted r square of 0.813, which is actually same than for model (1). Both models end up with relatively high r square values. Still, model (3) with original book values seems to reflect share prices better than the model (2) with leasing-adjusted variables, if we compare the adjusted r squares.

For model (2), parameter estimate coefficients turned out with expected signs, positive coefficient of 1.990 for lease-adjusted assets, negative coefficient of -1.235 for lease-adjusted liabilities and positive coefficient of 0.179 for sales. P-values for all variables

were close to zero, indicating high statistical significance for all variables. The results suggest relatively good explanatory power and statistical significance for the model.

Model (3) was similar to model (2) but the variables were original book values without leasing adjustments. Model has adjusted r square of 0.813, which equals to the r square of model (1). But as stated earlier, apparently leasing component is not bringing any explanatory power to the model (1), but the book values and sales are explaining the majority of equity market value, as in the model (3).

In general, the results seem to find that the book value of assets and net debt explain the majority as equity market value, and as expected, the book value of asset and sales have positive coefficient and debt has negative coefficient. Constructively capitalized operating leases seem not to have statistical significance or explanatory power to the equity market value. The adjusted r square is lower for the model where the variables were leasing adjusted-values. These results together indicate that the study fails to find support for H1. No incremental value relevance for operating leases is found.

However, when looking at the results, it must be taken into consideration that there are several limitations in the study. Unlike the findings suggest, the investors might take operating leases into account but not necessarily in exactly the same amounts that the method used in this study gives. Constructive capitalization method is fairly complicated and in practice it is possible that it is too complex and time consuming for regular investor to apply on a daily basis.

Also, the estimated leasing components are partly based on assumptions, for example of the companies' borrowing rates and leased assets' life times. Thus, the leasing components as variables in this study might differ from those used by the investors in real life. This may be one reason for why the study fails to find value relevance for operating leases. According to Beatty *et al.* (2010) companies with lower accounting quality are more likely to use leasing as a form of financing, as their access to other financing such as interest bearing loans or equity financing is limited. In other words, firms with low accounting quality lease more than firms with high accounting quality.

This may have effect on the sample used in this study as well, if the majority of companies have low accounting quality, and this way distort the results, ending up that no value relevance for operating leases is found.

In addition to examining the value relevance of operating leases, the aim of the study was to take a look at the trend in the use of operating leases during the past decades. The secondary hypothesis was that the use of operating leases has increased in air transportation industry during the past few decades (1993-2013).

Chart 2. Average leased liability and asset per company during 1993-2013.

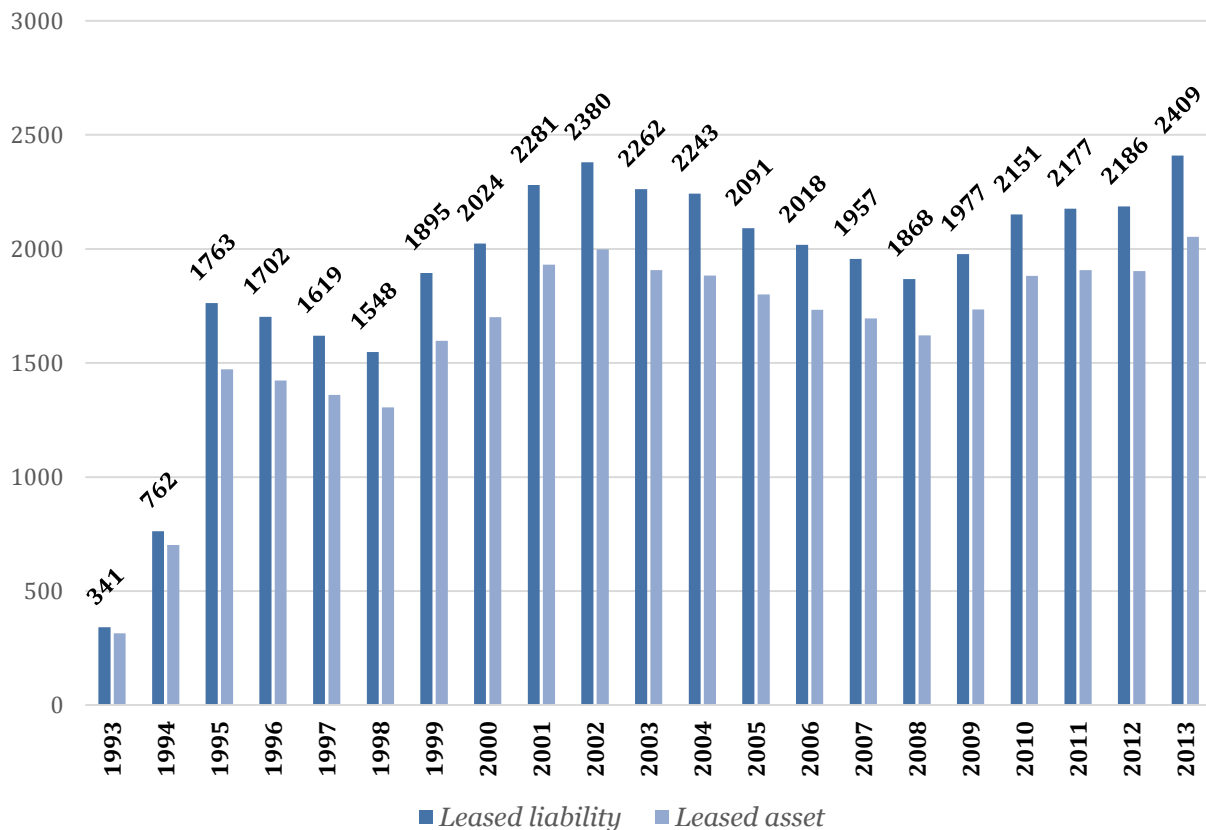


Chart 2 illustrates the average amount of operating lease liability per company in each year, which amounted to USD 2,409 billion in 2013, which is the maximum amount in the whole sample period. In 1993 the corresponding amount was USD 0,341 billion. Shortly the amount increased to be around USD 1,5 billion. From chart 2 can be

recognized a peak in the trend of operating leases use in year 2002. After that, the use of operating leases starts to decrease and reached the bottom in 2008. The downturn could be related to the global financial crisis. The trend in the use of operating leases seems to be increasing, which offers support for H2; the amount of operating leases has increased during the review period.

Chart 3. *Percent of sample companies having operating leases.*



Chart 3 illustrates the percentage of sample companies that had operating leases in each observation year. The sample period is not very long in the context of history of operating leases but, upward trend can be recognized from chart 3, more and more companies are engaged into operating lease commitments.

Chart 4. *Operating leases as % of on balance sheet debt, on average.*

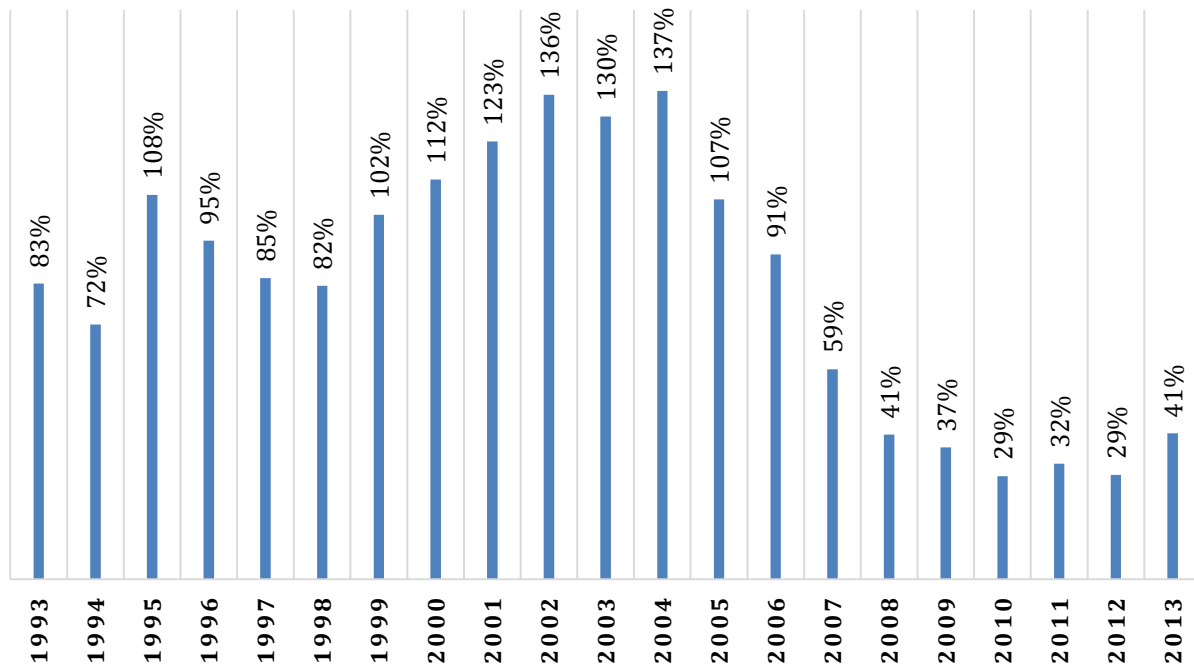


Chart 4 shows an interesting observation that the operating leases in relation to on balance sheet debt have decreased. It must be caused by relatively more increased on balance sheet debt, as Chart 2 indicates increase in average leasing liability per company. I have no further information the reasons behind this trend, but I assume that it relates to economic crisis.

To conclude, the trend in use of operating leases seems to be increasing, which is supported as well by the prior literature on lease accounting.

7 CONCLUSIONS

7.1 Conclusions

Prior literature on lease accounting reaches the consensus that the current lease accounting practice does not offer faithful representation of the lease arrangements that the companies are engaged into. As the use of leasing arrangements seems to be material and pervasive, the effects of off-balance sheet financing derived from operating leases has material effect on companies' financial statements. However majority of studies find evidence that market incorporates operating leases into their valuation by using the footnote information.

This study examined empirically the value relevance of operating leases by conducting a multiple regression analysis testing the explanatory power of constructively capitalized operating leases to equity market value. The study fails to find evidence supporting H1, that the constructively capitalized incremental operating leases have incremental information content beyond reported assets, net debt and sales. However, the limitations of the study must be taken into consideration when reviewing the results. Constructively capitalized operating leases are calculated based on presumptions, which may differ from those incorporated by the market participants. Also, there is evidence that firms with larger accounting quality tend to use leasing as a source of financing more than companies with high accounting quality (Beatty *et al.* 2010). This might have an effect to the sample used in the study and distort the results.

Second hypothesis was that the use of operating leases has increased during past decades in the air transportation industry. My sample data indicates that average amount of leases per company have been increasing, excluding the downturn in 2008, which I assume to be related to the financial crisis. All in all, after 2008 the trend has been increasing and for the last observation year 2013 the average amount of operating leases is at the highest during the whole sample period.

7.2 Further research topics

The new standard for lease accounting, IFRS 16 – *Leases* was issued on 13th of January 2016. New standard should be implemented at latest at January 1st 2019. According to new standard, all long-term leases are recorded on balance sheet and the distinction between capital leases and operating leases will be eliminated. Possible future research topic could be the trend in the use of leases – popularity of leases could probably decrease because the standard change disables the possibility of off-balance sheet financing through operating leases. Also it would be interesting to investigate whether there is a stock market reaction towards the standard issue. If operating leases information reported in footnotes is value relevant, there should not be market reaction towards the change in reporting practice.

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