

Accounting quality of Leases

A comparison in value
relevance of the lease
accounting models

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Preface

At this moment you are reading my thesis that I wrote for the Master Accounting, Auditing and Control which I attended at the Erasmus University Rotterdam. I thought of the idea for my research topic during a thesis seminar organized by PwC. During this seminar all upcoming changes in the auditing field and in accounting regulations were discussed. I wanted to do something with the proposed changes for lease accounting because I think the proposed changes will have a big impact which made it an interesting research topic.

I would like to thank some people who helped me with completing this thesis. First, I would like to thank my parents and my sister for their support. Special thanks go to my sister and my dad for checking my thesis for spelling and grammar errors. I would also like to thank my thesis counselor, David Veenman, for his input in creating my research proposal and for his help in solving the problems I came across during the writing of my thesis. He was always easy to contact and he replied quickly every time I contacted him with a question. I also need to thank my PwC thesis internship coach, Arjan van der Nol, for his feedback on my thesis. Finally I need to mention the contribution of my 'jaarclub', their amazement about how long I was taking always motivated me to keep going.

Sebastian Demper

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Executive summary

This study compares the value relevance of the financial and operating lease accounting models to determine if there is a difference in accounting quality. The research question answered in this study is:

Does the Financial lease accounting method lead to higher accounting quality compared to the operating lease accounting method?

In August 2010 the FASB and IASB published the exposure draft *Leases* (IASB, 2010), which contained a proposal for a new lease accounting standard. If the proposed standard is adopted lessees will have to use one right-of-use accounting model to report all their leases. Under the current standards one of two accounting models is used depending on if the lease is classified as a financial or operating lease. Under the financial lease accounting model a lease is recognized on the balance sheet, whereas under the operating lease accounting model a rent charge is recognized in the profit and loss statement and discloses information about future lease payments. Under the proposed standard no distinction shall be made between financial or operating leases, the right-of-use model will recognize every lease on the balance sheet. The objective of this study is to examine whether the proposed standard will improve the accounting quality of the financial statements by comparing the accounting quality of the two current lease accounting models.

A value relevance measure is used to determine the accounting quality of the lease accounting models. The value relevance of the lease accounting models was examined with a regression model based on the Olhson (1995) model. The regression model represents the market value of a firm as a linear function of equity book value, total liabilities and net income. The independent variables of the regression model are affected by the lease model used to report leases. Differences in value relevance between the lease accounting models were measured by comparing the coefficients and explanatory powers obtained by performing the regression on a sample of financial lease firms and a sample of operating lease firms. To verify if the observed differences in the value relevance metrics are significant the regression model was adjusted and performed on a combined sample of financial and operating lease firms. The regressions are performed on firm-year observations uncorrected and corrected for scale effects. All samples consisted out of US firms.

The obtained results provide modest evidence that accounting information from the financial lease accounting model is more value relevant compared to accounting information from the operating lease accounting model. Results from the regressions that were performed on the firm-year observations corrected for scale effects suggest that the financial lease accounting model is more value relevant.

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List of abbreviations

AP	Asset proportion
ASR	Accounting Series Release
BVEPS	Book Value of Equity Per Share
CF	Cash flow
CV	Coefficient of variation
D/E	Debt to Equity
D/TA	Debt to Total Assets
EPS	Earnings Per Share
FASB	Financial Accounting Standards Board
GAAP	General Accepted Accounting Principles
IAS	International Accounting Standard
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
PRB	postretirement benefits other than pensions
PVA	Present Value Asset
PVOL	Present Value Operating Lease
RL	Remaining life
ROA	Return on Assets
SAB	Staff Accounting Bulletin
SEC	Security and Exchange Commission
SFAS	Statement of Financial Accounting Standard
TL	Total life
US	United States

Chapter 1 Introduction

1.1 Exposure draft leases

As part of the convergence project of IFRS and US GAAP the IASB and the FASB decided to start a project to develop and implement a new shared accounting standard concerning lease accounting. The project commission appointed by the two Boards published an exposure draft of the new standard in August 2010 (IASB, 2010). The changes proposed in the exposure draft, if these result in a new standard, will significantly change the way lessees and lessors report lease transactions in their financial statements.

The objective of the proposed standard can be derived from the background information given in a discussion paper (IASB, 2009) and the exposure draft itself (IASB, 2010). The main objective of the new standard is to improve the accounting quality of financial reports. According to the background information the standard setters want to achieve this higher accounting quality by providing statement users with a complete and understandable picture of a firm's leasing activities. Furthermore, accounting quality will be higher because the new standard will improve comparability of the financial statements.

Penman (2003) and Callen, Khan and Lu (2010) state that accounting quality is a vague concept. Although the objective of the IASB is to develop a single set of high quality accounting standards, that require transparent and comparable information, they do not present a definition of accounting quality (Curto and Morais, 2008).

Penman (2003) considers accounting quality in the terms of shareholders interests and the fair valuation of those interests. As will be clarified in section 1.4 this study examines the relevance of lease accounting information from a shareholders perspective, therefore the considerations given by Penman (2003) will be followed to define accounting quality for this study.

Using the considerations of Penman (2003) accounting quality could be defined as how well financial statements convey information to shareholders about the future earnings of a firm, which shareholders use for the valuation of their interest. A similar definition is given by Callen et al. (2010). They define accounting quality as the precision in which financial reporting conveys information to shareholders about the firm's expected cash flows.

1.2 Research question

This study examines whether the standard as it is set out in the exposure draft improves the accounting quality of financial reports. Because the new leasing standard is still in development it is challenging to empirically research what effect the new standard is going to have on the quality of

financial reports. By comparing the principles of the new standards and the current standards of IFRS and US GAAP one can conclude that an indication of the effect can be examined by comparing the two accounting models of the current standards; the financial lease accounting method and the operating accounting method.

De Martino (2011) summarizes the current lease counting standards, IAS 17 and SFAS 13 in his article on the considerations of lease accounting. According to him these standards establish criteria for recognizing, recording, and quantifying different type of leases depending on the category to which these leases belong. Depending on certain criteria a lease is qualified either as a financial- or operating lease. A lessee records a financial lease on the balance sheet by recognizing an asset amongst its assets and a corresponding financial liability amongst its liabilities. For an operating lease the lessee does not record the lease on the balance sheet but only records the periodic rental costs owned to the lessor.

The main proposal for the new standard is that all leases will be accounted for using a right-of-use model. (IASB, 2010). Accounting for leases with this model would mean that a lessee would recognize an asset representing its right to use the leased asset for the lease term and a liability representing the lease payments that have to be made to the lessor. This proposed accounting method is very similar to the current financial lease accounting method. Both methods capitalize leases on the balance sheet. The IASB acknowledges this similarity in their exposure draft by stating that the proposed changes will be less fundamental for leases currently classified as financial leases (IASB, 2010).

Based on the similarity between the right-of-use accounting model that is proposed, and the current financial lease accounting model an indication can be obtained whether the new standard improves accounting quality. This indication is obtained by conducting a comparative study between the current accounting methods for operating and financial leases. The main question of this comparative study is formulated in the following way.

Does the financial lease accounting method lead to higher accounting quality compared to the operating lease accounting method?

1.3 Motivation

By answering the formulated research question this study can be useful in the discussion between the standard setting Boards, statement users and companies. In a reaction to the publication of *Leases: implementation of a New Approach* by the G4+1¹ Lipe (2001) noted that evidence from

¹The Group of Four Plus One: a cooperative effort by national accounting setters from Australia, Canada, New Zealand, the United Kingdom, and the United States plus the International Accounting Standards Committee (predecessor of the IASB)

empirical research on lease accounting may be useful to regulators and their constituents as they deliberate about the new standard for lease accounting. There are also limited studies available about the value relevance of lease information to statement users. This study will add to this limited amount of literature.

There are several other ways how this study can contribute in the discussion about the proposed standard. The IASB and the FASB have received some negative responses to their different publications regarding their lease proposal. According to a paper that summarizes the comment letters received by the two Boards as a reaction on their discussion paper, *Leases: Preliminary Views*, approximately one-third of the respondents did not support the preliminary view of the Boards that all leases should be capitalized (FASB and IASB, 2009). Industry companies and statement preparers are of the opinion that the two different leases cannot be accounted for using one method. The two types of transactions represent two different economic transactions that the current standards reflect.

A survey conducted by Deloitte revealed that one quarter of the respondents² had to make a major IT investment to comply with the new standard (Deloitte, 2011). Some accounting professionals have some doubts if the proposed standard is an improvement due to the complexity of the proposed standard. (Vinke-Smits, 2010).

As mentioned before the results from this study can contribute in the discussion that is illustrated above between standards setters, statement users, industry and professionals.

1.4 Research method

Following previous research the accounting quality of the two lease accounting methods is examined using a value relevance metric. Studies discussed in a review article of Soderstrom and Sun (2007) about the consequence of the adoption of IFRS on accounting quality use the value relevance of accounting amounts as a measure of accounting quality³.

By comparing the value relevance of financial statements of companies that engage in financial leases with financial statements of companies that engage in operating leases it can be assessed if capitalizing both types of leases leads to higher accounting quality.

This study only focuses on lessee accounting. Conducting a similar comparative study for the proposed lessor accounting model is not possible because according to the exposure draft the two current models will be replaced by two new models regarding lessor accounting. Besides the fact that a comparative study is not possible for lessor firms, there appears to be less consensus between

² Companies that manage different sized lease portfolios.

³ Bartov et al, Barth et al. (2008), and Hung and Subramanyam (2007), use a value relevance metric to measure accounting quality (Soderstrom & Sun, 2007).

standard setters, users, prepares and the industry about proposed changes concerning the lessor accounting model. According to the summary of comment letters (FASB and IASB, 2011) “many respondents observed that the lessor accounting proposals in the exposure draft were less developed than those for lessee accounting”, also “a significant number of respondents questioned whether the lessor accounting proposals were an improvement to current financial reporting” (FASB and IASB , 2011, p. 12). It is therefore very likely that the lessor accounting model as it is proposed will change extensively before it is implemented. Because of these reasons the focus of this study is on the financial statements of the lessee.

1.5 Summary of findings and implications

All regressions in this study were performed both on firm-year observations corrected and uncorrected for scale effects. Results from the regressions that were performed on the firm-year observations corrected for scale effects suggest that the financial lease accounting model is more value relevant. Comparing the results obtained from regressions performed on separate samples of operating and financial lease firms show that the financial lease sample produces a higher explanatory power and higher coefficients of the accounting variables, compared to the results from the operating sample. Significant positive interaction coefficients obtained from the regression performed on a combined sample show that accounting variables affected by the financial lease accounting model are more value relevant.

Result from the regressions performed on firm-year observations that were not corrected for scale effects suggest that there is no difference in value relevance of the financial and operating lease accounting model. These results contradict the results obtained from the scale corrected firm-year observations. The explanatory power of the operating lease sample is higher compared to the financial lease sample when the separate samples are compared. All regression coefficients of the operating lease are higher compared to the coefficients of the financial lease sample. Results from the combined sample analysis show that the accounting variables affected by the financial accounting are not more value relevant. These results suggest that there is no difference in value relevance between recognizing lease information on the balance sheet and disclosing lease information in the notes.

Previous research of Brown et al. (1999) showed that value relevance metrics be influenced by scale effects. Therefore it is concluded that the results from this study provide modest evidence that using the financial lease accounting to report leases results in financial reports with a higher accounting quality.

Findings from this study support the opinion of the Boards that capitalizing all leases could result in more relevant lease information for investors and contribute in the discussion between the Boards and statement preparers who oppose the right-of-use model.

The remainder of this study is organized as follows. In chapter two an overview of the current and proposed lease accounting standards is given. It gives useful background information for this study that is set out in the subsequent chapters. Chapter three describes the theory behind value relevance and the purpose of value relevance studies to standards setting. A literature review and the research hypothesis are given in chapter four. In the literature review studies are discussed on the topics of leasing, value relevance and reporting versus disclosure of accounting information. In chapter five the research design is described. The results are given in chapter six. A conclusion is drawn in chapter seven.

Chapter 2 Background information: current and proposed standards

In this chapter back ground information is given to clarify the research question and motivation of this study. As mentioned in the introduction this study investigates if the proposed lease standard improves the quality of financial reporting, by comparing the two accounting models of the current standard. Because the current standards and the proposal are the basis of this study they will be discussed briefly in this chapter. The main points of the current lease standards of IFRS and US GAAP are discussed in the first section. The second section discusses the points of the proposal that are important for this study. In the third section the motivation of the IASB and the FASB for implementing a new standard are given. Section four describes the objective of the new standard.

2.1 Current standards

The appropriate accounting policies under IFRS and US GAAP regarding lease transactions are prescribed in the following accounting standards: *International Accounting Standard 17 Leases* (IFRS), and *Financial Accounting Standard No. 13 Accounting for Leases* (US GAAP). These standards are discussed in this section based on the actual standards as published by the IASB (European Commission, 2010) and the FASB (Financial Accounting Standards Board, 1976).

2.1.1 Financial Accounting Standard No. 13

Lease definition

In SFAS 13 the FASB defines a lease as an agreement that conveys the right to use property, plant or equipment usually during a certain stated period of time. This definition does not include service contracts which do not transfer the right to use property, plant or equipment from one contract party to the other. However, agreements that do transfer the right of use meet the definition of a lease even though substantial services have to be provided by the lessor to the lessee for the operation and maintenance of the leased asset.

Classifications of leases

Agreements that meet the lease definition are classified either as a capital lease or an operating lease. A lease agreement is a capital lease if it meets at least one of the four classifying criteria. Leases that do not meet one of these criteria are classified as an operating lease.

The objective of the four classifying criteria is to determine if a lease substantially transfers all the benefits and risk that accompany the ownership of the leased asset. These classifying criteria are stated as follows:

1. Ownership of the leased asset is transferred to the lessee by the end of the lease term.
2. A bargain purchase option is included in the lease contract.
3. The lease term is equal to 75% or more of the estimated economic life of the leased asset.
4. The present value, at the beginning of the lease term, of the minimum lease payments⁴ equals or exceeds 90% of the fair value⁵ of the leased asset. A lessee shall compute the present value of the minimum lease payments using his incremental borrowing rate⁶ or the implicit rate⁷ computed by the lessor. The implicit rate of the lessor is only used instead of the incremental borrowing rate when the implicit rate is practical for the lessee to obtain and if it is lower than the incremental borrowing rate.

Accounting method capital leases

The lessee accounts for a capital lease by recording an asset and an obligation on the balance sheet. Both the asset and the obligation are valued at an amount that is equal to the present value of the minimum lease payments. This present value is computed in the same way as the present value that is used in the classification of lease agreements. If the computed present value is higher than the fair value of the leased asset, the asset and obligation are valued at this fair value. The capitalized asset shall be depreciated as follows:

- If the lease meets the first or second classifying criteria the lease asset shall be depreciated in a manner consistent with the lessee's own depreciation policy for owned assets.
- If the first or second criteria is not met, the asset shall be depreciated in a manner consistent the lessee's own depreciation policy, except that the period for depreciation shall be the lease term.

During the lease term each minimum lease payment shall be divided into a reduction of the lease obligation and an interest expense computed as a constant periodic rate of interest on the remaining balance of the obligation.

Lease assets, including the accumulated depreciation, and the related obligations need to be disclosed separately on the balance sheet or in the footnotes. The lease obligations are subject to the same considerations as other obligations, they need to be classified on the balance sheet with current- and noncurrent liabilities. The depreciation charge needs to be presented separately in the

⁴ The payments the lessee is obligated to make or can be required to make in connection with leased asset. Excludes executor costs such insurance, maintenance and taxes to be paid by the lessor.

⁵ The selling price of the leased asset in an arm's length transaction between unrelated parties.

⁶ The rate that, at inception of the lease, the lessee would have incurred to borrow the money with similar terms to purchase the leased asset.

⁷ The discount rate that, when applied to the minimum lease payments, causes the aggregate present value at the beginning of the lease term to be equal to the fair value of the leased asset.

income statements or in the footnote, unless the charge is included in the total depreciation expense for owned asset and this fact is disclosed.

A firm will have to disclose the gross amount of capital lease assets it has employed as of the balance sheet date; the amount needs to be divided by major classes according to nature or function. This information may be combined with comparable information for owned assets. A firm also needs to disclose the total amount of future minimum lease payments it is obliged to pay on the balance sheet date. This total amount should be classified for each of the succeeding fiscal years and for the remaining future period after the fifth year.

A financial lease is recognized in the financial statements because it has, in many respects similar economic effects for the related contracting parties as an installment purchase.

Accounting method operating leases

In most cases rental (lease) payments on operating leases become payable on a straight-line basis, i.e. they shall be charged to expenses when they occur during the lease term. If the rental payments do not occur on a straight-line basis the rental payments should nevertheless be recognized on a straight-line basis, unless another systematic and rational method is more representative of the time pattern in which (benefit from the) use is derived from the leased asset. In this case the more representative method should be used.

A firm needs to disclose any initial or remaining non-cancelable lease terms related to operating leases in excess of one year. The future minimum rental payments required as of the latest balance sheet date should be presented separately for the five succeeding years. An aggregate amount should be presented for the future minimum rental payments after the fifth year.

2.1.2 International accounting standard 17

Lease definition

The IASB define a lease in IAS 17 as an agreement whereby the lessor conveys the right to use an asset to the lessee in return for a payment or a series of payments.

Classifications of leases

Similar to SFAS 13, the classifications of lease agreements under IAS 17 is also based on the extent to which a lease transfers the benefits and risks associated with ownership of the leased asset from the lessor to the lessee. When all risks and benefits of the lease asset are substantially transferred from lessor to lessee, a lease agreement is classified as a financial lease. If this not the case the agreement is classified as an operating lease.

To determine how a lease agreement should be classified depends on “the substance of the transaction, rather than the form of the contract”. IAS 17 therefore does not contain quantitative

criteria to determine the qualification, although some qualitative examples of situations and indications are given that (alone or together) result in qualifying the lease as a financial lease. Examples of such situations are:

1. The lease transfers ownership of the leased asset to the lessee at the end of the lease term.
2. There is a purchase option given to the lessee to purchase the asset at a price below fair value at the time of execution of which parties are reasonably certain, at the start of the lease, that it will be exercised by the lessee.
3. The lease term covers most of the economic life of the asset.
4. The fair value of the lease asset substantially amounts to the present value of the minimum lease payments at the start of the lease.
5. The leased asset is of such specialized nature that only the lessee can use the asset without major modifications.

Examples of indications that could lead to a finance lease are:

1. If losses that occur due to cancellation of the lease by the lessee are borne by the lessee.
2. Gains or losses resulting from fluctuation in the fair value of the residual are borne by the lessee.
3. The lessee has the ability to extend the lease for a second period for a rent that is significantly below market rent.

Accounting method financial leases

Under IAS 17 a financial lease⁸ is accounted for in a way that is comparable to SFAS 13. Like SFAS 13, IAS 17 requires that finance or capital leases are capitalized on the balance sheet, which means that IAS 17 also requires the recognition of a depreciation expense and that the lease payments are divided in a rental expense and a reduction of the lease liability.

At the commencement of the lease an asset and a liability have to be recognized on the balance sheet. This lease asset and liability are valued in the same way as under SFAS 13. The resulting depreciation and the lease payments are also accounted in a manner that is similar to SFAS 13 and will therefore not be discussed again separately. Both standards are similar because IAS 17 is derived from SFAS 13 (De Martino, 2011).

There is a difference between the two standards regarding the disclosure of the future lease payments. Under IAS 17 the lessee is required to disclose the total future minimum lease payments at the end of the reporting period, and their present value for each of the following periods: not later

⁸ IAS17 uses the term finance lease instead of 'capital' lease. In study this type of lease will be referred to as finance (or financial) lease.

than one year, between one and five years, and later than five years. Under SFAS 13 the lessee discloses the same information but with a classification of five years and a “thereafter portion”.

Accounting method operating leases

Under IAS 17 the lease payments made for operating leases have to be recognized as an expense on straight-line basis over the lease term, unless another systematic method gives a better reflection of the time pattern of the benefits resulting from the lease. This way of accounting is again similar to SFAS 13.

In addition to recognizing an expense IAS 17 requires the lessee to disclose the total of future minimum lease payments going to be made for operating leases for the following three periods: within one year, between one and five years, and later than five years. SFAS 13 requires the same disclosure but classifies the total amount over six periods instead of three.

2.2 Proposed standard

As mentioned in chapter one, the FASB and the IASB published an exposure draft of a new lease accounting standard in August 2010 (IASB 2010). The draft proposes a new approach to lease accounting that will ensure that assets and liabilities resulting from leases are recognized in the financial statements. This section discusses this new accounting approach based on what is written in the proposal of the FASB and the IASB.

2.2.1 Lease definition

A lease is defined in the draft as a contract in which the right to use a specified asset or assets is conveyed, for a period of time, in exchange for considerations. This definition is similar to the definition under IAS 17.

2.2.2 Right of use model

Under the new lease standard the FASB and IASB want to abandon the classification of leases with the risk and reward model. They propose that all leases should be accounted for using a right-of-use model. When applying this model a lessee will recognize an asset representing its right to use the leased asset during the lease term and a liability to make the lease payments to the lessor.

Accounting method right-of-use model

A lessee recognizes the asset and liability at the date of commencement of the lease. The liability is valued at the present value of the lease payments that have to be made during the lease term. To compute this present value the lessee's incremental borrowing rate is used or, if it can be readily determined, the implicit rate of the lessor. The right-of-use asset (leased asset) is valued at the same amount as the liability, including any direct costs.

During the lease term the liability has to be valued at amortized costs using the effective interest method and the asset is valued at amortized cost. A lessee is required to recognize an amortization

expense of the right-of-use asset and an interest expense on the liability to make lease payments in the statement of comprehensive income. Amortization on the asset is computed on a systematic basis over the lease term or, if shorter, over the useful life of the leased asset. The amortization method and period selected by the lessee has to be in accordance with IAS 38 *intangible assets*. The interest expense is determined using the effective interest method.

A lessee is also required to recognize items in the comprehensive statement of income regarding revaluation gains and losses made on the leased asset, changes in the liability resulting from reassessments of lease payments, and any impairment losses on the leased asset. These requirements are outside the scope of this study and shall therefore not be discussed.

Under the proposed standard assets, liabilities, income, expenses and cash flows arising from leases shall be presented separately from other assets, liabilities, income, expenses and cash flows. The liability to make lease payments has to be presented separately from other financing liabilities and the leased asset has to be presented as if it was a tangible asset, separately from assets the lessee does not lease. Amortization and interest expenses arising from a lease have to be presented separately from other amortization and interest expenses, either in the statement of income or in the notes. The cash payment for a lease has to be classified as a cash flow from financing activities.

2.3 Reasons for new standard

There are several points of criticism (IASB, 2009, pp. 14-15) on the existing accounting model that have led the Boards' to develop a new standard. These points of criticism are:

1. the current model fails to meet the user's needs,
2. the complexity of the current model, and
3. the current model is conceptually flawed.

Also the SEC recognized the inadequacies of the existing lease accounting standards in one of their reports⁹ published in June 2005 (IASB, 2009, p. 15).

2.3.1 Failure to meet User needs

Users routinely make adjustments because many users are of the opinion that operating leases give rise to assets and liabilities. To recognize these assets and liabilities and the effects of operating leases on the performance of a firm, adjustments are made to the financial statements. However, the information available to users in the notes of the financial statements is insufficient to make reliable adjustments. Another failure is caused by the existence of the two accounting models for leases under the current standards. The use of two models to account for leases can cause that similar

⁹ Title of report: *Report and Recommendations Pursuant to section 401 (c) of the Sarbanes-Oxley Act of 2002 Arrangements with Off-Balance Sheet Implications, Special Purpose Entities, and Transparency of Filings by Issuers*

transactions are accounted for in different ways. This reduces comparability for users. Woods and Seay (2011) also note that lease transactions can be structured in such a way to achieve a desired accounting result due to the clearly defined standards that are used to classify leases. The last failure is that the existing standards provide opportunities to structure transactions in such a way to achieve a particular lease, the lessee obtains a source of unrecognized financing that can be difficult for a users to understand.

2.3.2 Complexity

The current accounting models have been criticized by auditors and prepares for its complexity. In particular, it appears difficult to determine the dividing line between finance leases and operating leases in a principle way. Therefore, the standards use a mixture of subjective judgments and 'bright-line' tests that can be difficult to apply.

2.3.3 Conceptual flaw

Some have argued that the current accounting model is conceptually flawed. By entering into a lease agreement, the lessee obtains a valuable right to use the leased asset which meets the Boards' definition of an asset. With this right the lessee also obtains an obligation to make lease payments that meets the Boards' definition of a liability. However, if the lease classifies as an operating lease neither that right nor that obligation are recognized. De Martino (2011) mentions that there has never been much consensus amongst scholars or accounting professionals, ever since the current standards were issued by the Boards. Both the IFRS and the US GAAP have particularly been criticized on the inadequacy of the set up to correctly distinguish the different components, as well as the actual nature of those transactions (De Martino, 2011).

2.4 Objective of new standard

According to the Boards leasing is an important source of finance for firms (IASB, 2010). Therefore, lease accounting should provide financial statement users with a complete and clear picture of a firms' leasing portfolio.

The objective for the new standard stated in the draft is to "establish principles that lessees shall apply to report relevant and representationally faithful information to users of financial statements about the amounts, timing and uncertainty of cash flows arising from leases" (IASB, 2010, p. 17).

Relevance and reliability (representationally faithful information) are two characteristics to determine the usefulness of an accounting number (IASB, 2001). These criteria are used by the Boards' in the development of new standards (IASB, 2001 and Barth, Beaver & Landsman., 2001). An accounting amount is relevant if it is capable of influencing the economic decision of a statement user (IASB, 2001). Reliability is achieved when an accounting amount represents faithfully that which it either purports to represent, or could reasonably be expected to represent (IASB, 2001). Based on the

information given in the exposure draft and in the frameworks the objective can be simplified into improving the accounting quality of financial statements. Accounting qualitative financial statements contain relevant and reliable information. This association between relevance, reliability and accounting quality is also emphasized by Soderstrom and Sun (2007): "The quality of accounting is determined by the quality of the accounting standards chosen. If the IASB continues to improve the quality of IFRS, we would expect financial reporting under IFRS to become increasingly value relevant and reliable" (Soderstrom & Sun, 2007, p. 688).

Chapter 3 Theoretical Framework Value Relevance

The difference in accounting quality of the two lease accounting methods is determined by comparing the value relevance of the two methods. This chapter gives an explanation about value relevance. Value relevance is the topic of numerous accounting studies and has different interpretations. It is important to cover these different interpretations and the different concepts of value relevance because the topic “value relevance” is vital in this study. The reason why a value relevance metric is selected to measure accounting quality will be discussed in chapter five. Section one of this chapter defines the term value relevance. In the second section the different types of value relevant studies are described. The last section relates value relevant studies to accounting standard setting, because this study is motivated by the proposal of a new accounting standard.

3.1 Definition of value relevance studies

Francis and Shippers (1999) state in their study about the relevance of financial statements that “it has been asserted that the current reporting model does not appropriately recognize and measure the economic assets deployed to create shareholder value”. A similar view has been expressed in other literature like Jenkins (1994) and Rimerman (1980) (Francis & Schipper, 1999, p. 323). According to Elliot (1995) today’s financial statements do not reflect information-age assets, such as capacity for innovation, and human resources which results in a limited usefulness of financial statements. Based on these views value relevance can be defined as the ability of financial statements to reflect in which ways firms create value for their shareholders. A similar description of value relevance is given by Barth, Beaver and Landsman (2001). They describe value relevance as “how well accounting information reflects information used by equity investors in valuing a firm” (Barth, Beaver, & Landsman, 2001, p. 77).

Francis and Schippers (1999) state four different interpretations of the value relevance theory. The first interpretation is that financial statement information leads stock prices by capturing intrinsic share values toward which stock prices drift. Under this interpretation value relevance can be measured by the profits obtained through accounting-based trading rules.

Under the second interpretation financial information is value relevant if it contains variables that are used in a valuation model or helps in predicting these valuation variables. For example, the value relevance of earnings used in a discounted dividend valuation model, or a discounted cash flow valuation model can be measured through the ability of earnings to predict future dividends or future cash flows.

Interpretation three is based on the concept that value relevance is determined by a statistical association between financial statement information and security prices or returns. This statistical association measures to which extent investors actually use the information to determine security

prices, implying that value relevance is measured by the ability of financial statement information to change the total information mix in the marketplace. Under this interpretation information in financial statements is value relevant if it conveys “new” information which causes investors to revise their expectations resulting in a change of security prices. Implementing this interpretation in an empirical setting therefore requires taking into account the linked concepts of the timeliness of information and the formation of expectations by shareholders.

The fourth interpretation is also based on a statistical association which specifically focuses on the association between accounting information and market values or returns over a long time window. Under this interpretation value relevance is measured by the ability of financial statements to capture or summarize information, regardless of source, used by the market to determine security prices. A significant statistical association between the accounting information and market values might mean that the accounting information is correlated with other information used by investors. This interpretation does not require financial statements to be the earliest source of information for information contained in these statements to be value relevant. It is consistent with the idea that financial statements are value relevant either through accounting information content that delivers new information, or through a disciplinary role that verifies more timely disclosures.

This study uses the fourth interpretation. A long time window of security prices was used to investigate the value relevance of the two different types of lease information. Based on the assumption that financial and operating lease transactions are in essence similar economic transactions, the focus of this study is on which lease accounting method does a better job in summarizing the effect of a lease transaction on firm value.

3.2 Types of value-relevance studies

In their investigation of the importance and use of value relevance studies Holthausen and Watts (2001) describe three types of value relevance studies. These are:

- relative association studies,
- incremental association studies
- and marginal information content studies.

Relative association studies compare relationships between share prices and alternative (bottom-line) accounting measures. These studies usually test for differences in R^2 of regression analyses with different bottom-line accounting numbers as explanatory variables. The accounting number that results in the greater R^2 is described as being more value relevant.

Incremental association studies examine if the accounting number of interest is helpful in explaining firm value or returns given other specified variables. In these kinds of studies an accounting amount is value relevant if its estimated regression coefficient is significantly different from zero.

Marginal information content studies investigate if a particular accounting number adds to the information set available to market participants. These studies are usually short term event studies. They research a specific event to determine if the release of an accounting number is associated with a value change of securities. A price reaction is considered an indication that the accounting number is value relevant.

This study can be defined as a relative association study. To determine the difference in value relevance of the accounting numbers, resulting from the two existing lease accounting methods, a version of the Ohlson (1995) model is used. This version represents firm value as a linear function of equity book value, net income, dividends, and other information (Barth et al., 2001). Using this model it is possible to determine which lease accounting method results in more value relevant accounting numbers. The regression analysis will be applied to two samples, each sample consisting of firms that either uses the finance lease accounting model or the operating lease accounting model. One of these accounting models results in more value relevant accounting numbers if the results show a significance difference in coefficients and explanatory power between the two regression analyses. The above described research method will be discussed more thorough in chapter five.

3.3 Use of value relevance study to standard setters

According to Barth et al. (2001) value relevance research is designed to provide evidence to standard setters that can update their prior beliefs about how accounting numbers are reflected in share price. This research can provide informative considerations for the development of new accounting standards. In their critical review of value relevance literature, Holthausen and Watts (2001) state that standard-setting inferences drawn in value relevance studies are only likely to be useful to standard setters if the underlying theory is descriptive. Without a descriptive theory an association in a value relevance study has limited implications or inferences for standard setting; they are just associations (Holthausen & Watts, 2001). The objectives of standard setters, and how using the association measure helps them to achieve those objectives, have to be specified to get a meaningful inference. (Holthausen & Watts, 2001). To fulfill the requirement stated by Holthausen and Watts (2001) a theory of how the objectives stated by the FASB and IASB relate to the association used in the research method is described.

As mentioned in chapter two, in their exposure draft (IASB, 2010) the board's state that the goal of the new leasing standard is to establish principles that report relevant and representationally faithful (reliable) information regarding lease activities, to give statement users a complete and clear view of

a firm's lease portfolio. These objectives are mainly achieved by the new standard through the recognition of all leases on the balance sheet. Using a theory described by Barth et al. (2001), comparing the value relevance of the two lease accounting methods can give an indication if capitalizing leases fulfills the objective of the Boards. A test of value relevance is one way to operationalize the criteria of relevance and reliability (Barth et al. 2001). According to Barth et al. (2001) value relevance is an empirical operationalization because an accounting amount will only be value relevant if the amount reflects information relevant to investors in valuing a firm, and measured reliably enough to be reflected in share prices.

Chapter 4 Literature review

The literature review in this chapter discusses different types of studies that are relevant to this study. The first section discusses previous studies on the topic of leasing. Studies that specifically examined the value relevance of lease accounting are discussed in the second section. In the third section three studies are discussed that compare the recognition of accounting information versus the disclosure of accounting information. For each study the objective and method are briefly discussed, after which the most important results and findings are stated. In the final section a conclusion and certain assumptions are drawn from the reviewed literature, which are then used to formulate the research hypothesis.

4.1 Leasing

The following studies about leases are discussed in this section: Imhoff, Lipe and Wright (1991 and 1997), Beattie, Edwards and Goodacre (1998), Finnerty, Fitzsimmons and Oliver (1980), and Ely (1995). The studies of Imhoff et al. (1991 and 1997) and Beattie et al. (1998) focus on the effect of the chosen lease accounting model (capital versus operating) on accounting and performance measures. Finnerty et al. (1980) and Ely (1995) examine the association between market risk and leases.

Imhoff et al. (1991) demonstrate the importance of long-term operating lease commitments for two commonly used performance indicators ROA and D/E ratios. To do this a method is constructed to constructively capitalize long-term operating lease commitments. This method is used to calculate key financial statement ratios as if operating leases were capitalized at their inception. The developed capitalization technique is applied to a sample of seven pairs of firms in different industries to investigate the effect of unrecorded assets and debt on the two measures.

The results from the capitalization suggest that operating leases have a significant effect on the two risk and performance measures, and that the magnitude of the effect varies within and across industries. Results show that on average the ROA decreased by 34% for high lessee firms, and 10% for low lessee firms. The D/E for high lease firms increases by 191% compared to 47% for low lease firms. Based on these results Imhoff et al. (1991) conclude that constructive capitalization of long-term operating leases improves relevance and comparability of firm specific risk and performance measures.

In a reaction on the suggestion made by the G4+1 and the AMIR¹⁰ to capitalize all leases, Imhoff et al. (1997) cite evidence suggesting that the income effects of operating leases might be material¹¹, and demonstrate how their capitalization model can be used to estimate the impact of capitalizing

¹⁰ Association for Investment Management and Research

¹¹ Imhoff et al. assumed in their first capitalization study that adjustments to earnings figures would be zero (Imhoff, Lipe, & Wright, Operating Leases: Impact of Constructive Capitalization, 1991).

operating leases on operating income and net income. In their demonstration a numerical analysis is performed on the Southwest Airlines financial reports from 1990 to 1994. The impact on the two earnings figures is evaluated by examining the change in the ROA and the ROE ratios. To examine the change in these performance ratios the balance sheet effects were also calculated.

Southwest Airlines operating lease assets were 25% of reported assets in 1990, and grew to about 33% in 1994. The operating lease liability has a bigger impact, being 55% of total recognized liabilities in 1990 to about 78% in 1994. The balance sheet effects of capitalizing operating leases can be generalized, they systematically increase the amount of assets utilized to generate profits, and they systematically increase the proportion of debt capital used to finance the firm (Imhoff et al., 1997). The income statement effects cannot be generalized. While the capitalization of operating leases will systematically result in a decrease of equity, the impact on net income is dependent on certain circumstances. If the weighted average total life of the operating lease portfolio is less than two-thirds expired, capitalizing them will decrease net income¹². Since this is normally the case for most portfolios of operating leases, capitalization is usually expected to decrease net income. The effect of capitalization on operating income is the same in every situation. "Profitability is affected by replacing the rent expense with depreciation expense on the unrecorded asset. Since the rent expense must include the equivalent of interest plus the principal on the unrecorded operating lease asset and liability, it will always exceed the depreciation expense" (Imhoff et al., 1997). Therefore capitalization of operating leases will always result in a higher operating income. The change in the two relevant income statement figures (operating income and net income) due to the capitalization for Southwest airlines are not mentioned by Imhoff et al. (1997).

Results from the analysis show that ROA and ROE ratios in all years are lower when operating leases are capitalized. The pre-capitalized ratios appear to systematically overstate the performance of Southwest Airlines each year from 1990-1994. The percentage of overstatement of ROE resulting from using the unadjusted ratios ranges from 4% in 1993 to 86% in 1991. For the ROA this overstatement ranges from 27% in 1993 to a high of 51% in 1991. In the case of Southwest Airlines these differences are systematically and material. However, similar adjustments made to a larger sample of firms results in both increases and decreases of the two performance ratios. The impact of capitalization on the ROA, amongst other things, depends on the level of ROA before the capitalization of operating leases. However, in firms where the nominal amount of cash flow commitments for operating leases are growing significantly, increasing assets will dominate the increase in operating income when operating leases are capitalized, resulting in a lower ROA after

¹²The sum of interest expense plus depreciation expense in any given year will exceed rent expense until the lease is about 53% to 63% expired for leases of ten to 30 years at implied interest rates of 8% to 12% (Imhoff, Lipe, & Wright, Operating Leases: Impact of Constructive Capitalization, 1991).

constructively capitalizing operating leases. When operating leases are significant and growing capitalizing these leases will also result in reduction of ROE.

Imhoff et al. (1997) also evaluated the income effects for other US corporations by performing the same analysis on three other firms. An intertemporal analysis was performed on the financial statements of K-mart Corporation, across two fiscal years 1994 and 1995. They also performed a cross-sectional analysis on two retail grocery store chains, Weis Markets and National Convenience Stores, for the 1993 fiscal year. Comparing the pre- and post-capitalization operating margins (operating income/revenue), ROE ratios and ROA ratios of K-mart shows that the year-to-year percentage change of these performance figures improve by capitalizing operating leases. Results from the cross-sectional test also show that the capitalization of operating leases has a significant effect on income measures. The pre-capitalized operating margin and ROA are higher for Weis Markets than for National Convenience Stores by 179% and 69%, respectively. However, when operating leases are capitalized these differences are reduced in half to only 84% and 29%. The adjustment of the ROE ratio shows a similar result. When operating leases are not capitalized Weis Markets reports a 9% higher ROE ratio. When the operating leases are capitalized the ROE is 35% lower for Weis Markets than for National Convenience Stores.

Beattie et al. (1998) perform a prospective analysis on the effects of a regulatory requirement regarding the capitalization of operating leases to assess the economic consequences of such a policy change. An indication of the impact is obtained by looking at the effect on accounting ratios. The operating leases of 232 UK listed companies for 1994 were capitalized with a refined version of the model used by Imhoff et al. (1991 and 1997) to determine the potential effect on nine accounting ratios. Ratios were tested by comparing pre-capitalization ratios with post-capitalization ratios.

The results from the capitalization performed by Beattie et al. (1998) show that operating leases represent a major source of long term finance. Unrecorded liabilities on average represent 39% of reported long-term debt, while the unrecorded assets represent 6% of total assets. Results from the ratio tests show that capitalization had a significant impact, at the 1% level, on six of the nine ratios, these were profit margin, ROA, assets turnover, and three gearing ratios. One other ratio, return on equity, had a significant impact at the 5% level. Return on capital employed and interest cover were not significantly affected.

Bowman (1980) researchers whether there is an association between finance leases and the market risk of lessee firms. By evaluating this relationship Bowman wants to determine if market participants view certain leases as a form of debt financing. Results from two tests performed show that there is a

significant association between market risk and financial leases¹³. These results suggest that security markets reflect lease data (Bowman, 1980).

Finnerty, Fitzsimmons and Oliver (1980) also examine whether there is an association between leases and market risk. Similar to the study of Bowman (1980), the emphasis of their study is whether the systematic risk of firms with substantial leases have been altered by accounting regulations (ASR 147 and SFAS 13).

Finnerty et al. (1980) evaluate whether there has been an alteration in systematic risk by testing if there has been a significant change in beta coefficients of securities across various time periods. These time periods being: the 26 month period preceding the release of ASR 147, the 26 month period after the release of ASR 147, but preceding the publication of the SFAS 13 exposure draft, and the 26 month period after the publication of the SFAS 13 exposure draft. Three different samples were tested, the first sample contained firms with substantial leases. The second sample, the control group, was made up out of firms with no substantial amount of leases. The third group consisted out of random firms and functioned as an additional control group to determine if the selection of the control group had any effect on the result. Firms in the first and second group were matched using the SIC codes.

Finnerty et al. (1980) do not find a change in the market's risk assessment of the leasing firms and non-leasing firms around the release of ASR 147. They also did not find any indication of a change in risk characteristics for firms in all three samples around the release of SFAS 13. According to the authors this evidence indicates that the changes in reporting requirements of ASR 147 and SFAS 13 did not have any effect on the market's assessment of risk. The movement of leasing information in the footnotes (ASR 147), and subsequent movement from the footnotes to the financial statements (SFAS 13), did not change the market's assessment of systematic risk. "It appears that the information conveyed by the disclosures may have already been impounded in the systematic risk of the firms, possibly because of the availability of this information from non-accounting sources" (Finnerty .et al., 1980).

Ely (1995) examines whether investors view operating leases as property rights by determining if investors treat operating leases as assets and liabilities. Tests are performed on adjusted measures for the D/E and the ROA ratios where equity risk is regressed on these adjusted variables. This test determines if investors adjust the financial risk, measured with the D/E ratio, and asset risk, measured with ROA, of a firm for operating leases when assessing the equity risk of a firm.

¹³ Results from one test did not show a significant result because of multicollinearity between two independent variables in the regression model.

A significant relationship between equity risk and the D/E adjustment for operating leases is found. Investors seem to use a D/E ratio that is adjusted when evaluating the equity risk of a firm. No inconclusive evidence is found that investors also use an adjusted ROA in their assessment for equity risk. These results provide evidence that investors evaluate operating lease liabilities when they determine equity risk (Ely, 1995).

4.2 Value relevance of lease information

A few previous studies examined the value relevance of leasing information. These studies are Ro (1978), Murray (1982), El-Gazzar (1993), Chen and Hsieh (2000), and Lindsey (2006).

Ro (1978) empirically examines whether the decision of the SEC taken in 1973 to adopt ASR 147 had an impact on the prices of securities. ASR 147 was issued by the SEC to improve the disclosure of leasing information (Cheng & Hsieh, 2000). The release required the mandatory disclosure of lease information that was not previously required by accounting regulations such as: the present value of the future lease commitments, the implicit interest rate used in computing the present value, and the impact on net income if such leases were capitalized (Ro, 1978).

To see if the SEC decision had an impact on security prices Ro created two test groups. One group, the control group, consisting of firms which did not have to disclose information on non-capitalized leases. The other group, the treatment group, consisting of firms that were required to disclose present value figures and the income effect of capitalizing financial leases. To determine if there was an impact on security prices differences in stock returns between the two groups were analyzed during a 21 month period (January 1973 till September 1974).

Ro (1978) overall found that the disclosed lease information had an adverse impact on the prices of securities. Security prices started to be affected seven months before the decision was implemented, which indicates that market participants anticipated the effects of the decision. The lease information effect was only visible for firms that both disclosed the present value of non-capitalized financial leases together with the income effect. No significant return difference was found for firms that only disclosed the present value which means that this item did not supply investors with new information. According to Ro this implies that either the balance sheet effect of non-capitalized leases was not substantial, or that this effect was already incorporated in the security price prior to the SEC's disclosure decision. Ro (1978) also found strong evidence that the lease information effect is influenced by the level of risk of a firm. Results indicate that high level risk firms were more adversely evaluated by investors compared to low risk firms.

Murray (1982)¹⁴ does not find significant abnormal returns for 18 lessees that changed their accounting method in response to SFAS 13 (Lipe, 2001).

In his study about the market effects on the closeness of debt covenants resulting from the capitalization of leases, El-Gazzar (1993) examined if there was a market reaction noticeable for affected firms during the events of the regulatory process leading up to the implementation of SFAS 13. He found that affected firms experienced a significant negative abnormal return during the regulatory process. The cumulative average abnormal return for the total period that was examined was also significantly negative. Affected firms were required to retroactively capitalize leases meeting the financial lease classification.

Chen and Hsieh (2000) evaluate whether the earnings impact of SFAS 13 is significant to firm valuation by examining the relationship between stock returns and earnings. When SFAS 13 was implemented in 1976 firms got a four year grace period to retroactively comply with the new standard. Firms were required to restate prior year earnings for the effect of SFAS 13 if they chose to adopt the standard during the grace period. The earnings impact could therefore be determined by comparing the restated earnings to the corresponding earnings that were originally reported.

Chen and Hsieh (2000) use three different annual return-earnings association models. These models contain two earnings coefficients that capture the value relevance of the pre-SFAS 13 earnings and of the SFAS 13 earnings impact. Besides examining if the earnings impact is relevant to firm valuation, the models are also used to determine if there is a difference in value relevance of the pre-SFAS 13 earnings and the earnings impact of SFAS 13. They use a linear model, a rank model, and a rank-adjusted model. The rank models are used because prior research has showed that the explanatory power of the earnings variable in the earnings/returns relationship was very low due to specification problems.

Regardless of which regression model was used, Chen and Hsieh (2000) did not find significant results indicating that stock returns are explained by the SFAS 13 earnings impact. Results also indicate that the value relevance of the two earnings numbers do not significantly differ from each other. Because there are indications that the value relevance of the SFAS 13 earnings impact is higher for firms that are more affected by the standard, the tests were performed again on a sub-sample, which consisted out of firms that have SFAS 13 impact earnings in the top 50% of the total sample. Results from these tests indicate that the earnings impact is relevant to valuation of firms with a large SFAS 13 impact. The relevance of this earnings impact also seems higher than the pre-SFAS earnings.

¹⁴ Could not retrieve article from Murray (1982): *the irrelevance of lease capitalization*.

Lindsey (2006) determines whether investor's price operating lease disclosures in the notes differently than capital lease amounts recognized on the balance sheet by examining the value relevance of operating and financial leases. He uses a regression analysis which evaluates if there is an association between the market value of equity of a firm and their financial and operating leases.

Based on the results that found, Lindsey (2006) concludes that there is a significant negative relationship between operating lease liabilities and the market value of firms. Likewise, the results reflect a significant negative relationship between financial lease liabilities and the market value of firms. These results indicate that the market view both disclosed operating leases and recognized financial leases as relevant economic liabilities of firms that are similar to long term debt. Lindsey (2006) also finds that there is a difference in value relevance between the two types of leases. Investors value financial leases differently than operating leases in the valuation of a firm.

4.3 Recognition versus disclosure

The difference between the two lease accounting models boils down to whether a company fully recognizes lease information in the financial statements or whether it recognizes the yearly payment in the profit and loss statement and disclose information about the future lease payments in the footnotes of the financial statement. There is an ongoing discussion whether or not disclosure is an adequate substitute for recognition. Standard setters are of the opinion that the most useful information should be recognized, they believe that disclosure is not a substitute for recognition when an item meets recognition criteria. In contrast, the efficient market hypothesis maintained in most empirical research is often thought to suggest that the market accurately processes information irrespective of its location within the financial report (Barth, Clinch and Shibano, 2003 and Beattie, Goodacre, & Thomson, 2000). The reporting versus disclosure debate relates to this study because the objective of this research is to determine whether investors can obtain similar information from the operating lease as the recognized financial leases. This section therefore discusses three studies that research if investors value disclosed information differently compared to recognized information.

Beattie et al. (2000), like the study of Ely (1995) discussed in the previous section, also investigate the association between operating lease disclosures and equity risk. They investigate this association for the British capital market to specifically make a contribution in the recognition versus disclosure discussion. Beattie et al (2000) perform an indirect test on the relationship between equity risk and the D/TA to determine if investors and analysts adjust this ratio for operating leases. They also test if investors adjust the ROA in their assessment of equity risk, because it is logical to assume that investors adjust both financial risk and asset risk of a firm in their assessment of equity risk. In these tests financial risk is measured by D/TA, and asset risk is measured by ROA. Ely (1995) performs similar tests for her US sample but tests the association between equity risk and D/E instead of D/TA.

The results found by Beattie et al. (2000) are similar to the results that were found by Ely (1995). These results show that market participants incorporate operating lease disclosures in their assessment of equity risk by making an adjustment to D/TA. Like Ely (1995), Beattie et al. (2000) find mixed evidence that investors also adjust the ROA in their assessment of equity risk. Furthermore, results specifically point out that investors find operating leases disclosed in the footnotes less risky than other forms of debt recognized on the balance sheet. Beattie et al. (2000) do not state whether investors make this evaluation because they find operating lease transactions less risky than financial lease transaction or whether this risk assessment is made because they evaluate disclosed information as less risky.

According to Beattie et al. (2000) one argument that is put forward in the recognition versus disclosure discussion is that specifically for small and medium sized firms disclosure is not an adequate substitute for recognition, because these firms are not as well researched as large firms. In view of this argument, the tests were also performed on three subsamples consisting of small, medium and large sized firms to test whether the market makes a financial risk adjustments for operating leases across all sizes of firms or whether adjustments are restricted to large, well researched firms. Based on the results from the tests, Beattie et al. (2000) concluded that the adjustment to financial risk for off-balance sheet operating leases does not appear to be confined to large, well researched firms.

Beattie et al. (2000) also conclude that the recognition of operating lease liabilities across different company sizes is consistent with the argument that it does not matter whether operating lease liabilities are disclosed or recognized due to market efficiency. Recognition of these leases to reduce imperfections for small companies is therefore not necessary. However, the confirmation that the British market views operating leases as property rights, the same as financial leases, seem to support the desire of standard setters that both types of leases should be measured and recognized on the balance sheet in the same manner.

Davis-Friday, Folami, Liu & Mittelstaedt (1999) investigated whether market participants value recognized financial statement data differently from data that is disclosed by examining how the market values a firm's obligations for PRB before and after these firms adopted the SFAS 106 standard. SFAS 106 required that the PRB obligation would be recognized on the balance sheet through the use of accrual accounting. SFAS 81, the previous standard that prescribed the accounting for the PRB liabilities, required the disclosure of those liabilities. To detect possible differences in the valuation of disclosed or recognized PRB items tests were performed that examined the relationship between these items and the market value of equity. The tests were performed on non-financial and non-utility companies that immediately chose to adopt by recognizing

the PRB liability in 1992 or 1993¹⁵. These companies were required by SAB 74 to disclose an estimate of the PRB liability, that they were going to recognize, one year prior to recognition. This way the disclosed and recognized items are measured in the same manner and cover the same situation.

Davis-Friday et al. (1999) used three different regression models to evaluate the association between stock prices and PRB liabilities. The three models all contained, among others, coefficients for the PRB liability and the pension plan assets and obligations. The first regression model uses one net value for pension plan assets and the pension plan obligations. In the second and third model the pension plan asset and obligation enter the regression individually. These two models are the same except that the second model uses the accumulated benefit obligations, whereas the third model uses the projected benefit obligation. The advantage of models two and three is that they allow the pension variable coefficients to vary. However, variables regarding the PRB and pensions are typically highly correlated which can result in co-linearity. This problem was reduced by netting the pension asset and obligation as was done in the first regression. Dummy variable coefficients are used to capture price differences between recognition and disclosure. The PRB disclosure coefficient is computed by the PRB recognition coefficient and dummy variable coefficient together. Each regression model is used in the analysis of the total sample and on two separate subsamples of 1992 and 1993 adopters respectively.

The results of Davis-Friday et al. (1999) show that the PRB recognition coefficients are significant in each regression model, except for 1993 adopters in the second model. When separate coefficients are used for the pension asset and obligation, the significance of the PRB coefficient is reduced. When separate coefficients are used, the PRB recognition coefficient is found to be insignificant in the second model. In the third model the PRB coefficient is still significant but at a lower level than in the first model. Using the first model the disclosure PRB coefficient is found to be significant for the full sample and the 1992 sample. These results suggest that both RPB liabilities disclosed prior to the adoption of SFAS 106 and PRB liabilities recognized after the adoption are significantly associated with stock prices (Davis et al., 1999). Therefore the conclusion can be drawn that market participants use both the disclosed and recognized PRB items in their valuation of a firm, therefore both seem to be value relevant.

Davis-Friday et al. (1999) also present results regarding the question whether there is a significant difference in value relevance between the disclosed and recognized items. The coefficient that captures the difference between recognition and disclosure (disclosure versus recognition) is significantly negative in the first model for the full sample at the 0,08 level. In the 1992 subsample

¹⁵ Hereafter in this study companies that adopted the new standard in 1992 will be referred to as “1992 adopters”, and companies that adopted the new standard in 1993 will be referred to as “1993 adopters”.

this coefficient is also significantly negative at the 0,05 level. Furthermore, the PRB disclosure coefficient is significantly smaller than the recognition coefficient. These results suggest that the market changed its perception of the PRB liability as companies changed from disclosure to recognition. For the subsample containing the 1993 adopters the disclosure versus recognition coefficient is insignificant. Results from additional test using only disclosures made in 1991 suggest that this is due to the near simultaneous disclosure and recognition of the PRB liability in the first quarter in 1993. The disclosure versus recognition is insignificant in the second and third model. The authors attribute this result to high collinearity between the pension and the PRB liability variable. They find various symptoms of multicollinearity. Based on these findings they conclude that the results of the first model are more reliable. These results indicate that there is a significant difference in value relevance between the disclosed and recognized liabilities. The results that suggest a difference was generally found with models in which multicollinearity is less of a problem than in the models that did not find a significant difference. Davis-Friday et al. (1999) therefore interpret the results as modest and uncertain support for the idea that the market attaches less value to disclosed information than to recognized information.

Ahmed, Kilic, & Lobo (2006) examine the value relevance of the reported fair values of derivative financial instruments. They determine if investors value derivative financial instruments differently depending on whether the fair values of these instruments are recognized or disclosed. In 2000 the FASB implemented SFAS 133. According to Ahmed et al. (2006) this new standard required that the fair value of all derivatives was recognized on the balance sheet as an asset or liability. Prior to the implementation of SFAS 133 the accounting treatment of the underlying asset, liability, or transaction to which the derivative instrument is designated, determined if derivatives were recognized at fair value in the financial statements or disclosed in the footnotes. Ahmed et al. (2006) investigate the difference in value relevance between recognized and disclosed fair values by comparing these values in the pre- and post-SFAS 133 periods.

Ahmed et al. (2006) perform tests on two different samples of holding bank companies. Firstly, a cross-sectional test was performed on sample of holding bank companies that used both methods to report their derivative instruments held for risk management purposes in the pre-SFAS 133 period. Secondly, a pre- versus post-SFAS 133 period test was performed on a sample of holding bank companies that disclosed all their derivatives in the pre-SFAS 133, and therefore had to recognize all their derivatives after the implementation of SFAS 133. The tests examines if investors give a different valuation to fair values derivative instruments depending on whether these fair values are recognized or disclosed. For the cross-sectional test a regression model was used in the first test were the market value of a bank holding company was a function (a) of the fair values of recognized and disclosed derivatives, (b) on-balance sheet non-derivative assets and liabilities and (c) proxies

for intangibles. To mitigate the effect of potentially omitted variables two control variables were added. Non-performing loans are included as a control variable that reflects information on default risk incremental to allowance for loan loss reserves. A significant positive value for the recognized- or disclosed derivative coefficient would indicate the value relevance of recognized or disclosed derivatives. The regression model used in the pre- versus post-period analysis is very similar to the model of the cross-sectional test, but differs in two important ways. Firstly, the coefficients of the explanatory variables are permitted to differ across the pre- and post-periods. Secondly, the model only includes one explanatory variable for both disclosed derivatives in the pre-SFAS 133 period and for recognized derivatives in the post-SFAS 133 period, instead of including a separate explanatory variable for recognized and disclosed derivatives.

Results from the cross-sectional test performed by Ahmed et al. (2006) show that the coefficient of the recognized derivatives is positive and significantly different from zero. This suggests that the recognition of the net fair value of derivatives is value relevant. The coefficient of the disclosed derivatives is not significant, suggesting that the fair values of disclosed derivatives are not value relevant in determining the market value of equity (Ahmed et al., 2006). Ahmed et al. (2006) also test if the recognition coefficient is significantly greater than the disclosure coefficient. The findings from this test show that the recognition coefficient is significantly greater than the disclosure coefficient at the 1% level. This suggests that the disclosure of derivative instrument is of less importance for the market than the recognition of these derivatives (Ahmed et al., 2006).

Results from the pre- versus post-period analysis show that the net fair value coefficient of derivatives is not significantly related to the market value of equity in the pre-SFAS 133 period. However, in the post-SFAS 133 period this coefficient is significantly positively related to the market value equity. These results suggest that market participants give more weight to the fair values of derivatives after the implementation of SFAS 133 when these are recognized than they did prior to the implementation when these fair values were disclosed (Ahmed et al., 2006).

4.4 Formulation of research hypothesis

Leases are an important source of finance for a firm (IASB, 2010). Previous studies have shown that investors take leases into consideration when valuing a firm and that they consider operating leases and financial leases to be similar transactions. Ro (1978) found a market reaction when firms had to disclose new lease information following the implementation of ASR 147. Disclosure of new lease information had an adverse effect on security prices (Ro, 1978). According to Ely (1995) investors treat operating and financial lease transactions in a similar way. Both types of leases are treated as property rights that require the recognition of an asset and liability. Bowman (1980) found that investors see financial lease obligations as a form of debt. Based on the findings by Ely and Bowman

one could assume that operating leases obligations are also seen as debt by investors, because they treat both operating and financial leases in the same manner as property rights.

The lease accounting model used to report a lease has an influence on the financial statements. Imhoff et al. (1991, 1997) and Beattie et al. (1998) found that the capitalization of operating leases has a significant and material effect on accounting numbers like assets, liabilities, equity, operating income and net income. Also certain performance measures that investors use in their firm valuation are affected by the lease accounting model that is chosen to report a lease. The difference between the financial and operating lease accounting model is how the lease information is presented to statement users. When the financial lease accounting model is chosen a lease is recognized in the financial statements compared to the operating lease model which discloses most information about in the notes to the financial statements. There is an ongoing discussion whether the disclosure of information is an adequate substitute for the recognition of information. There is no consensus about this in the literature. Ahmed et al. (2006) found that information about financial derivatives is more value relevant when it is recognized instead of disclosed. Davis-Friday et al. (1999) found modest evidence that disclosed information about PRB liability is less value relevant compared to recognized information. Beattie et al. (2000) found that investors do take disclosed lease information into account in their risk assessment of a firm.

The same lack of consensus is noticeable in literature specifically about leasing. For example, studies of Ely (1995), Finnerty et al. (1980), and Murray (1982) present result which indicate that investors do not process disclosed operating lease information differently compared to recognized financial lease information. Ely (1995), like Beattie et al. (2000), also found that investors make adjustment for operating leases in their risk assessment of a firm. Results from Finnerty et al. (1980) support the findings of Beattie et al. (2000) and Ely (1995). They found that changes in reporting requirements resulting from the implementation of ASR 147 and SFAS 13 did not have any effect on the market's assessment of risk. Murray (1982) does not find significant abnormal returns for 18 lessees that changed their accounting method in response to the adoption SFAS 13.

Cheng and Hiesh (2000), El-Gazzar (1993) and Lindsey (2006) give contradicting results which indicate that financial lease information is more value relevant compared to operating lease information. These results therefore imply that disclosure is not an adequate substitute for recognition, under the assumption that financial- and operating leases are similar transactions. Cheng and Hiesh (2000) found that the earnings impact of SFAS 13 is relevant for the valuation firms that are highly affected by SFAS 13. El-Gazzar (1993) found a market reaction around changes in accounting regulation. Firms that had to retroactively capitalize leases in response to the adoption of SFAS 13 experienced a significant negative abnormal return. Lindsey (2006) concludes that investors price operating and financial leases differently in the valuation of firms.

Based upon the findings of Cheng and Hiesh (2000), El-Gazzar (1993) and Lindsey (2006) and by assuming that value relevance is a measure of accounting quality the research hypothesis is stated as follows:

Companies that use the financial lease accounting method to record leases have financial reports with a higher accounting quality.

Although there is evidence that investors process the disclosed lease information and adjust financial statements as if operating leases are capitalized, Lückerrath-Rovers (2007) shows that adjusting for operating leases using capitalization models like those of Imhoff et al. (1991, 1997) and Beattie et al. (1998) is a difficult task. Various assumptions have to be made to capitalize leases because not all required information is disclosed in the notes to the financial statements. Also, as Imhoff et al. (1997) indicate not all effects on the performance measures are systematically the same in every situation. For instance the effect on the ROA and ROE depends on specific circumstances of a company. This would imply that market participants can make a more accurate assessment of the value of a firm when the management report leases using the financial lease accounting model because “company management has specific knowledge of the lease contracts and is best placed to measure related assets and liabilities” (Beattie et al., 2000). This would mean that financial lease information is more value relevant and using this accounting method would result in financial reports with higher accounting quality.

Chapter 5 Research Design

To determine if the lease accounting model proposed in the draft standard provides financial statements with a higher accounting quality, the accounting quality of the models used under the current standard are compared. This comparison can be used due to the similarities of the current financial lease accounting model and the proposed right-of-use accounting model. These similarities are emphasized by the Boards in the exposure draft. They state that lessees would be most affected if they have a significant portfolio of assets held under operating leases, and that the proposed changes will be less fundamental for leases currently classified as finance leases (IASB, 2010, p. 7). The two accounting methods are compared by performing two linear regression models on the operating and financial lease sample. The first regression is performed on the two separate samples, for the second regression the two samples are combined.

In the first section an explanation is given about the selected measure for accounting quality and the regression models are discussed. Section two gives an explanation about how the two samples are constituted.

5.1 Method

5.1.1 Accounting quality measure

There are several measures that can be used to measure accounting quality. Examples of accounting quality measures used by researchers are persistence, smoothness, and timeliness of earnings, loss avoidance and investor responsiveness (Dechow, Ge, & Schrand, 2010). Most of these proxies are used by Barth, Landsman and Lang (2008) in a study of the International Accounting Standards (IAS) and accounting quality. In this study the accounting quality of the IAS is compared with the accounting quality of non-U.S. domestic accounting standards. To determine if accounting amounts reported under IAS are of a higher accounting quality, Barth et al. (2008) investigated whether accounting measures exhibit less earnings management, more timely loss recognition, and higher value relevance. They interpreted earnings that exhibit less earnings management, recognize losses on a more timely bases, and accounting amounts that are more value relevant as being of higher quality.

Metrics used by Barth et al. (2008) to capture earnings management are based on the variance of the change in net income, the ratio of the variance of the change in net income to the variance of the change in cash flows, the correlation between accruals and cash flows, and a lower frequency of small net income as evidence of less earnings management. The metric used to measure timely loss recognition is the frequency that a large negative income is reported. A higher frequency is interpreted as evidence of more timely loss recognition. Finally, the metrics for value relevance are

the explanatory powers of net income and equity book values for stock prices, and stock return for earnings. A higher explanatory power is interpreted as higher value relevance.

This study uses value relevance as a measure of accounting quality. Besides Barth et al. (2008), value relevance is used as a measure of accounting quality in various other studies. Two other examples for instance are Bartov, Goldberg, and Kim (2005) and Hung and Subramanyam (2007). Bartov, et al. (2005) measure the value relevance of earnings produced under three accounting regimes German GAAP, U.S. GAAP, and IAS, by considering the association of stock returns and reported earnings as a measure of the quality of accounting standards. Hung and Subramanyam (2007) investigate the effects of IAS adoption on the relative and incremental value relevance of book values and net income. Value relevance is measured in terms of the ability of accounting measures to explain contemporaneous stock prices (Hung & Subramanyam, 2007).

A value relevance metric was chosen to measure accounting quality because it can reflect the effect of capitalizing or disclosing leases on the balance sheet and income statement. For instance net income and equity book value, both being metrics used to measure value relevance by Barth et al. (2008), are affected by the selected accounting model. The balance sheet effects of capitalizing leases¹⁶ systematically increase the amount of assets, and the proportion of debt capital used to finance the firm (Imhoff et al., 1997). This will result in a decrease of equity (Imhoff et al., 1997). Findings from a capitalization test performed by Beattie et al. (1998) confirm these effects. Test results show that for their sample operating leases represent a major source of long term finance. Unrecorded liabilities on average represent 39% of reported long-term debt, while the unrecorded assets represent 6% of total assets. Contrary to the balance sheet effects, not all income statement effects of the chosen lease accounting model can be generalized, but depend on certain situations. According to Imhoff et al. (1997) if the weighted average total life of the operating lease portfolio is expired for less than two-thirds, net income will decrease by capitalizing these leases. Since this is normally the case for most portfolios of operating leases, capitalization is usually expected to decrease net income. The effect of capitalization on operating income is the same in every situation. "Profitability is affected by substituting the rent expense with a depreciation expense on the unrecorded asset. Since the rent expense should include the equivalent of interest plus repayment of the principal on the unrecorded operating lease asset and liability, it will always exceed the depreciation expense" (Imhoff et al., 1997). Therefore capitalization of leases will always result in a higher operating income.

Earnings management and timely loss recognition metrics were not used because they are not influenced by the chosen lease accounting model. The choice of a lease accounting model cannot be

¹⁶ Firm uses financial lease accounting model instead of operating lease accounting model to account for leases.

made to manage earnings or to delay the recognition of losses. Once this choice is made a lease will have an effect on earnings numbers which is determined by the accounting standards and which cannot be influenced by management. Due to similar reasons one can doubt if the chosen lease accounting model influences the timely recognition of losses. Once a lease accounting method is chosen it cannot be changed to prevent a loss.

5.1.2 Regression models

The value relevance of the current lease accounting models is determined by measuring the value relevance of accounting amounts that are affected by the choice of the type of lease accounting model. Value relevance of these accounting amounts is measured by running two regression models on the data which are based on a valuation model provided by Ohlson (1995). The Ohlson model represents firm value as a linear function of expected future abnormal earnings, and the present value of expected future abnormal earnings. With additional assumptions of information dynamics, firm value in the model can be re-expressed as a linear function of equity book value, net income, dividends, and other information (Barth et al., 2001). To measure the value relevance of lease accounting models total liabilities are included in the re-expressed model, and dividends are excluded.

Equation 1 shows the first regression model which is run on the two separate samples in an equation. Value relevance is measured by comparing the explanatory power (R^2) of this regression and by examining the regression coefficients. One lease accounting model is more value relevant if its regression analysis produces higher coefficients and a higher R^2 .

Equation 1: first regression model run on separate samples

$$P_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 NIPS_{it} + \beta_3 TLPS_{it} + \varepsilon_{it}$$

- Where P_{it} , is the price of a share of firm i three months after the fiscal year end t , adjusted for stock splits and dividends,
- $BVEPS_{it}$.is the book value of equity per share of firm i at the end of year t ,
- $NIPS_{it}$ is the net income per share of firm i at in year t ,
- $TLPS_{it}$ are the total reported liabilities per share of firm i at the end of year t ,
- and ε_{it} is other value relevant information of firm i for year t .

$BVEPS_{it}$, $NIPS_{it}$ and $TLPS_{it}$ are all expected to be positive related to P_{it} .

Based on results from prior research, I predict that information from the financial lease accounting model is more value relevant. Lindsey (2006) showed that investors price financial and operating leases differently. His results show that financial leases have a stronger association with share prices than operating leases. Cheng and Hsieh showed that the earnings impact of SFAS 13 was relevant

to stock prices. Davis-Friday et al. (1999) and Ahmed et al. (2006) provide evidence that disclosed information is of less importance to the market. If financial lease accounting information is more value relevant the coefficients of the independent variables from the financial lease sample should be higher than the coefficients from the operating lease sample. Also, the R^2 of the regression model from the financial lease sample should be higher than the R^2 from the operating lease sample.

Equation 2 shows the second regression model. The second regression model is performed on the two samples combined. Results from this regression determine whether the value relevance of the financial lease information is significantly higher than operating lease information. This second regression model contains the same independent variables as the first with an added dummy variable to indicate whether a firm is a financial lease firm or not. Interaction variables are added to measure if financial lease accounting variables have a significantly higher or lower value relevance compared to operating lease accounting variables.

Equation 2: Second regression model run on combined sample

$$P_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 NIPS_{it} + \beta_3 TLPS_{it} + \beta_4 FL + \beta_5 FL * BVEPS + \beta_6 FL * TLPS + \beta_7 FL * NIPS + \varepsilon_{it}$$

FL is the dummy variable which has a value of one if a firm is engaged in financial leases or zero when a firm is not engaged in financial leases. Each independent variable is multiplied with the financial lease dummy variable to obtain the interaction variables. These interaction variables are *FL * BVEPS*, *FL * TLPS* and *FL * NIPS*. Corresponding to the predictions made before for the results of the first regression model, I predict that the stock price is positively related to the dummy variable and the interactions variables.

5.1.3 Factors influencing value relevance (R^2)

Research suggests that at least four factors are likely to contribute to a change in value relevance of earnings and book values over time (Collins, Maydew, & Weiss, 1997). These four factors are:

- The increased importance of service and technology based firms that invest in intangible assets,
- the frequency and magnitude of nonrecurring items,
- negative earnings and
- the growing number of small firms in Compustat.

Collins et al. (1997) want to investigate if these factors cause a change in value relevance over time. Their motivation is the claim made in professional literature that the value relevance of earnings and book values has declined. From their results they conclude that the combined value relevance has not declined but that there has been a shift instead. The incremental value relevance of earnings has

decreased, while the incremental value relevance of book values has increased. Much of this shift is caused by the increasing significance of one-time items, the increased frequency of negative earnings, and changes in average firm size and intangible intensity across time (Collins et al., 1997). These findings indicate that one-time items, negative earnings, firm size, highly intangible firms might influence the value relevance which is measured by the R^2 from a regression, which need to be controlled.

Another factor that could influence value relevance are scale differences. Brown, Lo, and Lys (1999) show that scale differences present in level regressions affect the measured R^2 . Due to these scale effects a level regression will show an increased R^2 . Scale is defined by Brown et al. (1999) as the size of an observation or, in the context of this study, the size of a share. The scale effect found by Brown et al. (1999) is present because samples are made out of share observations of different sizes. Differences in share sizes are the result of stock splits, differences in returns on equity, and differences in dividend payout ratios, for example. Holding a firm's assets constant, increasing the number of shares and splitting stock reduces the share size. Also, holding profitability constant, higher dividend pay-out ratios result in smaller share sizes. Finally, differences in share sizes are also due to differences in performance. "That is, over time, share sizes can increase with good performances and decrease with dividend payments" (Brown et al., 1999).

Brown et al. (1999) predict and find that the R^2 increases, when the coefficient of variation (CV) of the scale factor increases. In other words, holding value relevance constant, the R^2 of a regression model will be higher in samples in which the cross-sectional distribution of the scale (size) factors has a larger variance. The results of Brown et al. (1999) show that the R^2 's in regressions of share price on earnings per share (EPS) and book value per share (BVPS) are positively correlated with the cross-sectional CV of the scale factor. Because R^2 and scale are related, an increase of the scale factors in the sample leads to an increase of R^2 , while the actual value relevance has not changed. Based on their findings Brown et al. (1999) conclude between-sample comparisons are invalid unless one controls for differences in the scale factor's CV.

As part of their research Brown et al. (1999) investigated the relationship of their findings with the findings of Collins et al. (1997). They find that the analysis performed by Collins et al. (1997) suffers from an omitted correlated variable and that the statistical of the four variables (factors) are proxies for the scale effect. Based on these findings this study will control for scale effects and not one-time items, negative earnings, size, and intangible intensity.

Both regression models described in the previous section will be performed twice; once on per share data that is not corrected for scale effects and once on per share data that is corrected for scale effects.

Following Brown et al. (1999) scale effects will be controlled by deflating each observed variable with a proxy for the scale factor. A deflator is used instead of an explanatory variable because the statistical variable of interest is the R^2 of the regression analysis, since this metric shows the underlying explanatory power of the underlying (lease) variables. It would be inappropriate to introduce an additional variable to proxy scale because the R^2 would then also reflect the explanatory power of share size. Using a deflator yields an R^2 that reflects the explanatory power of the lease variables and not that of share size. The price of a share one year before the valuation date is selected as deflator. Price is chosen because it is a better proxy for share size than EPS and BVPS (Brown et al., 1999).

5.2 Sample selection

5.2.1 Operating lease sample and financial lease sample

To be able to determine the value relevance of the two lease accounting models, the regression analysis, described in the previous chapter, is performed on two samples. One sample consists of firms only engaged in operating leases; the other sample is made out of firms engaging in both financial and operating leases. The samples are based on data between 2000 and 2011 from randomly selected US firms engaged in either type of lease. One reason US firms are chosen is because firms in the US will experience a large impact when the proposed lease standard is adopted, given the fact that they often have lots of leases currently classified as operating leases (Kathman, 2011). Selecting US firms also removes the need to control for potentially confounding effects on accounting quality of country-specific factors (Barth et al. 2008).

Firms were selected from the Compustat database on the basis that they either recognize a capital lease or disclose an operating lease, meaning that the variable debt capitalized leases or minimum 1st year rental commitments have to be above zero. Selecting firms on this condition resulted in an initial sample of 50,764. Before these observations were assigned to one of the two lease samples, following prior research, financial firms (5,288) due to their specific characteristics, and firms with a fiscal year that does not end in December (14,182) were deleted from the sample.

Firm-year observations which only have operating leases (minimum 1st year rental commitments > 0) are included in the operating lease sample. The remaining firm-year observations are assigned to the financial lease sample; these firms are engaged in both financial and operating leases (debt capitalized leases > 0). Due to missing observations of the debt capitalized leases variable 1,251 firm-year observations were eliminated from the sample. For this study it would be more suitable to have a financial lease sample of firms that only engage in financial leases but there are not enough firms available which meet this criterion. Operating leases are by far the most dominant lease type compared to financial leases (Lückerath-Rovers, 2007, p. 14). Categorizing firms in this way, results

in a financial lease sample of 11.039 firm-year observations and in an operating lease sample of 19.004 firm-year observations.

5.2.2 Capitalizing operating leases

Operating leases of the firm-observations included in the operating lease sample are capitalized to be able to determine if these transactions are material. Materiality of leases is determined for all firm-year observations in the two samples to be certain that observations used in the regression analysis contain lease information that is relevant to investors. Lückcrath-Rovers (2007 p. 79) assumes that the relevance of operating-lease commitments is determined by the materiality of these commitments. This study follows that assumption. The leases are capitalized by using the model of Lückcrath-Rovers (2007). She based her model on the model of Imhoff et al. (1991, 1997) but made some alterations to get a better indication of the present value of the total lease obligation on the balance sheet date. A description of the capitalization method is included in the appendix. This method is used to obtain a capitalized operating lease liability for each firm-year observation which is used to determine the materiality of a lease.

certain data about the operating lease payments (rental commitments) is needed to capitalize the leases. This is another reason to select US firms. Firms applying US GAAP have to disclose their future operating lease payments after the balance sheet date in six categories. The first five categories disclose the lease payments of the first five years after the balance sheet date. The sixth category (thereafter portion of leases) discloses the total future lease payment after the fifth year. Most firms that apply IFRS disclose the same information but only use three categories, making it challenging to collect the data and discount the operating lease payments. Due to missing operating lease data 1.861 were eliminated from the sample. Remaining operating leases in the sample are capitalized by discounting the disclosed future operating lease payments over the remaining life of the leases.

The remaining life variable needed to compute the capitalized lease variables are difficult to evaluate. As Imhoff et al. (1997) state, most companies have a lease portfolio that consists of two types of asset categories: land and machinery and equipment. These two categories have significantly different economic lives. Assuming that every company has a mixed lease portfolio, the remaining life variable is an average remaining life which should have a maximum value between 15 and 20. Therefore all firm-year observations with a computed remaining life of more than 20 years were deleted. Due to extreme computed remaining life variables 339 firm-year observations were eliminated from the sample.

Applying all corrections as described, resulted in an operating lease sample of 16.804 firm-year observations.

5.2.3 Determining materiality of leases

As mentioned in the previous section the materiality of all leases is determined to make sure that only firm-year observations with relevant lease information are included in the regression analysis. There is no uniform measure for the materiality of leases. De Bos (1996) suggests a lease is material when the present value exceeds 25% of long term debt. Kathman (2011) considers leases to be material when they equal or exceed 5% of total assets (pre-capitalization) or 25% of total debt (pre-capitalization). This study uses a materiality threshold of 5% of total liabilities.

In the operating lease sample materiality is computed by dividing the computed capitalized operating lease liability through total liabilities. Twelve firm-year observations were eliminated from the sample due to missing total liabilities variables. In total 5.465 firm year observations were eliminated because they did not meet the defined materiality threshold. In the financial lease sample the materiality is computed by dividing the debt capitalized lease variable through total liabilities. Eleven firm-year observations were eliminated because of missing total liabilities variables. In total 9.535 firm-year observations did not have material leases and were eliminated for this reason. After eliminating all non-material leases the operating lease sample contained 11.327 firm-year observations, and the financial lease sample consisted of 1.493 firm-year observations.

5.2.4 Obtaining share price data

Share prices were obtained from the CRPS database. Share prices from 2012 were not available so all firm-year observations from 2011 were therefore eliminated, resulting in 1.002 eliminations in the operating lease sample and 119 eliminations in the financial lease sample. Regarding the firm-year observations from the 2000 to 2010 stock data could not be retrieved from the CRSP database for 2.316 firm-year observations in the operating lease sample and 499 firm-year observations in the financial lease sample. These firm-year observations were deleted from the samples. Further eliminations were made due to missing share prices, factors to correct for dividends and stock splits, net income, equity and common outstanding share variables. In total 574 eliminations were made in the operating lease sample and 71 in the financial lease sample due to the above mentioned missing variables.

The final operating lease sample consisted of 7.435 firm-year observations. The final financial lease sample contained 804 firm-year observations.

Chapter 6 Results

In this chapter the results of this study are discussed. Descriptive statistics are given in section one to obtain an overview of the data. Results from the regression that was performed on the two separate samples are discussed in the second section. In the third section results from the analysis on the combined sample are discussed. In both the second and third section results are compared with the predictions and the implication for the value relevance of lease information is explained. The third section is concluded by accepting or rejecting the research hypothesis.

6.1 Descriptive statistics

The descriptive statistics of the variables that are used in the regression models are shown in Table 1 below. The statistics of the unscaled firm-year observations are shown in the top half of the table. Descriptive statistics of firm-year observations corrected for scale effects are shown in the bottom half of the table.

Table 1: Descriptive statistics no outlier correction

Unscaled observations						
	Operating lease sample (N = 7.435)			Financial lease sample (N = 804)		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation
P	28,510	11,810	99,060	21,615	9,725	43,789
BVEPS	43,630	5,125	3.067,290	7,733	4,637	10,011
TLPS	95,087	3,008	7.400,600	17,859	5,138	30,845
NIPS	34,339	0,256	2.919,030	0,226	0,025	7,949
Scaled observations						
	Operating lease sample (N = 7.435)			Financial lease sample (N = 803)		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation
P	2,094	1,005	18,601	4,906	1,001	64,386
BVEPS	5,953	0,410	171,831	5,734	0,486	77,936
TLPS	14,359	0,270	477,388	49,938	0,605	1.067,686
NIPS	-1,542	0,018	133,486	-7,798	0,003	231,595

Definitions of variables

P is the CRSP stock price three months after the fiscal year end adjusted for stock splits and dividends.

BVEPS is the book value of equity per share (Compustat item CEQ divided by Computat item CSHO).

TLPS are the total liabilities per share (Compustat item LT divided by Computat item CSHO).

NIPS is the net income per share (Compustat item NI divided by Computat item CSHO).

Variable names of compustat items

CEQ: Common/Ordinary Equity – Total

LT: Liabilities – Total

NI: Net Income (Loss)

CSHO: Common Shares Outstanding

Scaled observations were obtained by dividing all variables by the stock price three months after the previous fiscal year (P^{t-1}).

Every variable in both unscaled and scaled firm-year observations has large standard deviations compared to its mean values. This indicates that every sample of each variable is affected by extreme influential points (outliers). Another indication of outliers is that the means are large

compared to the medians. Examining the histograms and extreme values of each variable confirms this. Each sample of each variable needs to be corrected for these outliers because they can alter the statistical results from the regression analyses. The outliers in per share observations and scaled observations are corrected via different methods.

Outliers in per share firm-year observations are corrected by winsorizing. Observations of variables with values in the lowest or highest percentage are equaled to the values of the 1st or 99th percentiles. Descriptive statistics of the winsorized samples are shown on the next page in the top half of Table 3.

For the scaled firm-year observations, all observations with a scale deflator of less than one ($P_{it-1} < 1$) are deleted from the sample, because extreme values are often caused by denominators that are less than zero. In the operating lease sample 646 firm-year observations are deleted due to scale deflators with a value of $P_{it-1} < 1$. From the observations that remain, those observations that have variables with a value outside a certain range are deleted. These ranges and the number of firm-year observations, which are eliminated are shown in Table 2.

Table 2: Ranges to determine extreme influential values

	Ranges	Firm-year observations deleted	
		Operating lease sample	Financial lease sample
P	0 < > 5	53	6
BVEPS	0 < > 10	172	19
TLPS	0 < > 10	23	4
NIPS	-2 < 1	13	1

P is the CRSP stock price three months after the fiscal year end adjusted for stock splits and dividends.

BVEPS is the book value of equity per share

TLPS are the total liabilities per share

NIPS is the net income per share

This last adjustment is made to ensure that both samples of scaled firm-year observations contain observations with values that are plausible. The descriptive statistics of scaled firm-year observations after the correction for outliers are shown in the bottom half of Table 3 on the next page.

Table 3: *Descriptive statistics outliers corrected*

Unscaled observations outliers winsorized						
	Operating lease sample (N = 7.435)			Financial lease sample (N =804)		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation
P	24,657	11,810	36,725	20,190	9,725	29,396
BVEPS	7,625	5,120	8,060	7,784	4,637	9,262
TLPS	8,837	3,010	13,973	17,547	5,138	29,087
NIPS	0,487	0,260	1,817	0,102	0,025	2,393
Scaled observations outliers deleted						
	Operating lease sample (N = 6.537)			Financial lease sample (N = 695)		
	Mean	Median	Standard deviation	Mean	Median	Standard deviation
P	1,092	0,996	0,668	1,120	0,990	0,739
BVEPS	0,536	0,395	0,596	0,587	0,465	0,530
TLPS	0,532	0,228	0,930	0,958	0,505	1,220
NIPS	-0,019	0,023	0,180	-0,030	0,012	0,184

P is the CRSP stock price three months after the fiscal year end adjusted for stock splits and dividends.
 BVEPS is the book value of equity per share.
 TLPS are the total liabilities per share.
 NIPS is the net income per share.

Outliers in the samples with unscaled observations were winsorized by equaling bottom 1% to the 1st percentile, the top 1% to the 99th percentile.

Outliers in the samples with scaled observations were deleted if observations had variables with a value outside the range (Refer to table two for ranges).

In chapter five the effects of the chosen lease accounting model on accounting variables were described. Because this study relies heavily on these effects, I have examined whether these effects are also present in the independent variables for this study, as determined by prior research.

To recapitulate, reporting a lease using the financial lease accounting method instead of the operating lease method will increase total liabilities, and decrease the book value of equity and net income of a firm. Taking these effects into consideration one would expect that a sample of financial lease firms would on average have higher total liabilities, a lower amount of equity and a lower net income. These effects are not directly noticeable when comparing the descriptive statistics of the two samples. Examining the descriptive statistics of the unscaled observations in Table 3, it seems that financial lease firms on average have higher total liabilities and lower net incomes compared to operating lease firms. The mean value of equity book value is approximately the same for both operating-and financial lease firms. Descriptive statistics of the scaled observations show a similar pattern but differences between operating and financial lease firms are smaller.

Not all the expected effects of the lease accounting model are observable from the descriptive statistics. This might be caused by other factors that influence the accounting variables such as the level of investment or the financial structure of a firm. Studies like Imhoff et al. (1991, 1997) and

Beattie (1998) that research the effect of capitalizing leases, only use operating leases to determine that effect. Following these studies the leases of the operating lease firms will be capitalized and examined to confirm the described effect of the lease accounting model on the independent variables.

Leases of the operating lease firms are capitalized using the same model from Lückers-Rovers (2007) that also was used to determine the materiality of leases in the sample selection. By capitalizing operating leases the accounting variables can be recomputed as if those leases are capitalized on the balance sheet instead of disclosed in the footnotes. The original variables were compared to the recomputed variables to determine if they were significantly different from each other. Table 4 below reflects the results from this comparison.

Results for the unscaled observations are presented in the top half of the table. The lower half shows the results for the scaled observations. The second column from the left contains the means of the original accounting variables. These are the same as the operating lease sample means, presented in Table 3. The third column from the left contains the means of the recomputed accounting variables. The fourth column from the left shows the difference between the means and whether this difference is significant. Significance of the differences was determined by conducting a paired sample t-test.

Table 4: Paired sample t-test disclosed and capitalized leases

Unscaled observations			
	Mean (leases disclosed)	Mean (leases recognized)	Difference in means
BVEPS	7,625	7,236	-0,389**
TLPS	8,837	12,762	3,942**
NIPS	0,487	0,258	-0,229**
Scaled observations			
	Mean (leases disclosed)	Mean (leases recognized)	Difference in means
BVEPS	0,536	0,490	-0,046**
TLPS	0,532	0,920	0,388**
NIPS	-0,019	-0,041	-0,022**
**Significant at the 0,05 level (2-tailed)			

P is the CRSP stock price three months after the fiscal year end adjusted for stock splits and dividends.

BVEPS is the book value of equity per share.

TLPS are the total liabilities per share.

NIPS is the net income per share.

Mean (leases disclosed): mean values of independent variables when leases are disclosed in the notes

Mean (leases recognized): mean values when leases are capitalized using Lukerath-Rovers model as leases are recognized on the balance sheet.

All the variables in both types of observations confirm the described effects of the choice between one of the two lease accounting models. By capitalizing leases the book value of equity and net

income declines, whereas total liabilities increase. The difference in means is the largest for the total liabilities (3,942 and 0,388 respectively), these differences are significant at the 5% level. For the book value of equity variables (-0,389 and -0,046 respectively) and the net income variables (-0,229 and -0,022 respectively) these differences are smaller but still significant at the 5% level. These results support the decision to examine these three accounting variables.

6.2 Analysis of results operating and financial lease sample

Performing the first regression model on the unscaled and scaled observations gives the results shown in Table 5. Unscaled observations results are given in the top half of the table, scaled observations results are given in the bottom half the table.

Table 5: Results first regression model on separate operating and financial lease samples

Regression model: $P_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 NIPS_{it} + \beta_3 TLPS_{it} + \varepsilon_{it}$								
Unscaled observations analysis								
		Intercept	BVEPS	TLPS	NIPS	Adj. R ²	Model significance (F-test)	N
Financial sample	lease	8,098	1,130**	1,130**	3,004**	0,363	153,765**	804
Prediction			>	>	>	>		
Operating sample	lease	8,170	1,414**	0,256**	7,085**	0,442	1.807,712**	7.435
Scaled observations analysis								
		Intercept	BVEPS	TLPS	NIPS	Adj. R ²	Model significance (F-test)	N
Financial sample	lease	0,803	0,436**	0,087**	0,743**	0,196	57,464**	803
Prediction			>	>	>	>		
Operating sample	lease	0,921	0,304**	0,035**	0,584**	0,102	247,509**	6.537
**Significant at the 0,05 level (2-tailed)								

Results from the unscaled observations show that the model is significant for both the operating lease sample and the financial lease sample. The financial lease sample yields a lower R² compared to the operating lease sample (0,363 versus 0,442). The regression coefficients are all significantly positive in both samples. Comparing the coefficients from the regressions of the two samples it appears that the BVEPS (0,308 versus 0,102), TLPS (0,117 versus 0,078) and NIPS (7,085 versus 3,004) coefficients are all larger for the operating lease sample than for the financial lease sample.

Results from the scaled observations are the opposite of the unscaled results. The regression model is significant for both samples. The R² (0,196 versus 0,102) of the financial lease sample is higher compared to the operating lease sample. Both samples yield regression coefficients that are positively significant. The regression coefficients BVEPS (0,436 versus 0,304), TLPS (0,087 versus

0,035), and NIPS (0,743 versus 0,584) are all higher for the financial lease sample compared to the operating lease sample. Values of the scaled observations results are smaller than the values for the unscaled observations as expected. Scale effects present in observations, not corrected for scale differences, are the cause of inflated coefficients and explanatory powers, as described by Brown et al. (1999).

If the results are compared with the predictions it appears that the results obtained from the unscaled observations are contradicting the predictions that were formulated, whereas the results from the scaled observations are in agreement with those predictions. The R^2 and regression coefficients obtained from the unscaled observations are lower for the financial sample compared to the operating lease sample, which is not in line with the predictions. These results can be interpreted as an indication that recognized financial lease information is not more value relevant than disclosed operating lease information. Both the R^2 and regression coefficients obtained from the scaled observations are higher for the financial lease sample. These results are in line with predictions and indicate that recognized financial lease information is more value relevant than disclosed operating lease information. However, the results obtained from the regressions that were performed on the scaled observations are not convincing in proving that financial lease information is more value relevant. Differences of the value relevance metrics between the financial- and operating lease sample are small and might be insignificant. Therefore these results need to be interpreted as an indication that there is a difference in value relevance between the two accounting models. The contradicting results obtained from the regressions performed on the unscaled observations confirm that this evidence is not convincing in proving that financial lease information is more value relevant.

6.3 Analysis of results combined sample

Results obtained by running the second regression model on the complete sample are shown in Table 6 (page 52). The variables of interest are the three interaction variables because the coefficients of these variables indicate whether the financial lease accounting variables are significantly more value relevant.

The coefficients of the BVEPS and TLPS interaction variables are negative but not significant for the unscaled observations. The NIPS interaction variable is negative and significant. When the regression is performed on the scaled observations the BVEPS, TLPS and NIPS are significantly positive.

These results from the unscaled and scaled observations are contradicting. The insignificance of the BVEPS and TLPS interaction coefficients and the negative significance of the NIPS interaction variable are not in line with predictions. Insignificance of the BVEPS and TLPS interaction coefficients implies that recognizing a lease obligation on the balance sheet does not provide an

investor with more value relevant information, compared to when this information about the lease liability is disclosed in the footnotes. The negative significance of the NIPS interaction coefficient at the 0,05 level suggests that the earnings impact of the operating lease accounting model is more value relevant compared to the earnings impact of the financial lease accounting model. Interaction coefficients obtained from the scaled observations are positive and significant at the 0,05 level. These results are in line with the predictions and indicate that using the financial lease accounting model to recognize a lease provides the investor with more value relevant information compared to the operating lease accounting model.

Having discussed all the results the research hypothesis can now be accepted or rejected. The research hypothesis was stated in the following way:

Companies that predominantly use the financial lease accounting method to record their leases have financial reports with a higher accounting quality.

To determine if the financial lease accounting model provides financial statements with a higher accounting quality the value relevance of the operating- and financial lease accounting models were compared. If the financial lease accounting model provides financial statements with a higher accounting quality accounting information influenced by the financial lease accounting model should have more value relevance.

Taking all results into consideration the research hypothesis is accepted. Results from the first regression performed on scaled observations provided indications that using the financial lease accounting model to report does not result in more value relevant accounting information. The second regression performed on the combined sample of unscaled observations yielded results that show there is no significant difference in the value relevance of the two lease accounting models. When the regressions are performed on firm-year observations controlled for scale effects contrary results are obtained. The results from the first regression performed on the separate samples give indications that the value relevance of the financial lease accounting model is higher compared to the operating lease sample. Results from the second regression confirm this. Evidence obtained from this regression shows that accounting variables influenced by the financial lease accounting model are significantly more value relevant compared to accounting variables which are influenced by the operating lease accounting model.

The hypothesis is accepted based upon the results that were obtained from the regressions that were performed on the firm-year observations that were corrected for scale effects since Brown et al. (1999) showed that scale effects have a significant influence on value relevance metrics.

Table 6: Results regression on combined sample

<i>Regression model: $P_{it} = \beta_0 + \beta_1 BVEPS_{it} + \beta_2 NIPS_{it} + \beta_3 TLPS_{it} + \beta_4 FL + \beta_5 FL * BVEPS_{it} + \beta_5 FL * TLPS_{it} + \beta_6 FL * NIPS_{it} + \varepsilon_{it}$</i>											
	Intercept	BVEPS	TLPS	NIPS	Intercept financial lease firms	Interaction variable BVEPS	Interaction variable TLPS	Interaction variable NIPS	Adj. R ²	Model significance (F-test)	N
Unscaled observations	8,170	1,414**	0,256**	7,085**	-0,073	-0,284	-0,085	-4,081**	0,419	848,159**	8.239
Scaled observation	0,921	0,304**	0,035**	0,584**	-0,119	0,132**	0,052**	0,160**	0,113	132,031**	7.340
Prediction		+	+	+		+	+	+			
**Significant at the 0,05 level (2-tailed)											

Chapter 7 Conclusion

In this chapter the research question of this study is answered by drawing a conclusion based upon the obtained results. The conclusion is formulated in the first section. In the second section limitations of this study are mentioned together with a suggestion for future research. The third section discusses what implications this study has for the proposed lease standard.

7.1 Conclusion

In this study the accounting quality of the two current lease accounting models were compared. The financial lease accounting model recognizes leases in the financial statements compared to the operating lease model which discloses lease information in the notes, except for the yearly rent charge. The FASB and the IASB are planning to implement a new lease accounting standard which will introduce one lease accounting model for all leases. They published a draft version of this standard in 2010. The new accounting model proposed in this draft has similarities with the current financial lease accounting model. By comparing the value relevance of the operating lease model with the value relevance of the financial accounting model this study wants to examine if the proposed lease accounting standard will improve the accounting quality of financial reports. This objective resulted in the following research question:

Does the financial lease accounting method provide the financial statements with more accounting quality compared to the operating lease accounting method?

Based on the assumption that recognized financial lease information is more value relevant compared to disclosed lease information, the expectation was that firms predominantly using the financial lease accounting model would have financial reports with a higher accounting quality. A value relevance metric was selected to measure the accounting quality.

Significant results were found in the empirical analysis on firm-year observations corrected for scale effects which show that lease information recognized through the financial lease accounting model is more value relevant to investors, which is in agreement to the prediction formulated in this study. Based on these results it is concluded that using the financial lease model instead of the operating lease sample to report leases does result in financial reports with higher accounting quality. Some caution is needed in concluding that recognized financial lease information is more value relevant compared to operating lease information. Contradicting results were found when firm-year observations uncorrected for scale effects were used in the analyses. These results suggest that there is no difference in value relevance between recognized lease information from the financial lease accounting model and disclosed lease information from the operating lease accounting model. An explanation for these results is that investors use the disclosed operating lease information to adjust reported amounts in the financial statements to eliminate the financial and operating

distinction. In other words no difference in value relevance exists between disclosed and recognized lease information. This explanation is not backed by specific statistical results since no disclosed lease information was specifically examined in the empirical analysis of the data, but it is in agreement with the efficient market hypothesis which is maintained in most empirical research. The efficient market hypothesis is often thought to suggest that the market accurately processes information irrespective of its location within the financial report.

Prior research on lease accounting presents contradicting findings. Studies that indicate that investors indeed adjust operating leases to eliminate the distinction between the two lease types are Ely (1995) and Beattie et al. (2000). Both studies found that investors adjust operating leases in their risk assessment of firms. Also Murray (1982) found no significant abnormal returns for firms that had to start recognize leases in a response to SFAS 13 indicating that investors were already adjusting for operating leases for their assessment of firm value. Studies that do find a difference in value relevance are Cheng and Hsieh (2000) and El-Gazzar (1999). Cheng and Hsieh (2000) found that the earnings impact of SFAS 13 is relevant for the valuation of firms that are highly affected by SFAS 13. El-Gazzar (1993) found firms that had to retroactively capitalize leases in response to the adoption of SFAS 13 experienced a significant negative abnormal return.

Due to the contradicting results found in this study it is concluded that modest evidence is found in support of the conclusion that using the financial lease accounting model to report leases will lead to higher accounting quality.

7.2 Limitations and suggestions for future research

This study has some limitations. These limitations are: the dominant usage of the operating lease type, the lack of control variables used, the influence of risk on the value relevance of lease information and the presence of serial correlation in the researched samples. Each limitation will be discussed in this section.

7.2.1 Dominance of operating leases

The first limitation has to do with the fact that operating leases are by far the dominant lease type, compared to financial leases (Lükerath-Rovers, 2007). This makes it challenging to compare the two lease accounting models. It was impossible to find firm-year observations with only financial lease obligations and no operating lease obligations. By capitalizing the operating leases of the financial lease firms it was determined that on average 90% of the total leases are operating leases and 10% are financial leases¹⁷. As a consequence the effect of the financial lease accounting model on the accounting variables might be too small to observe a convincing difference in value relevance information is more value relevant. El-Gazzar (1993) and Cheng and Hsieh (2000) performed studies

¹⁷ Leases were capitalized using the model of Lükerath-Rovers (2007). Of the 804 firm-year observations 145 were lost due to missing lease data resulting in a sample of 654 firms.

around changes in accounting regulation and could examine if new lease accounting information had an effect on security prices. A suggestion for future research is to examine security prices of lease firms after the new lease standard is implemented. After the new standard is adopted it is also possible to compare the same operating lease information in pre- and post adoption period to determine if there is a difference in recognized or disclosed lease information.

7.2.2 Control variables for firm characteristics

The second limitation of this study is the lack of control variables for firm characteristics in the regression equations. It is possible that the operating and financial lease firms, which were compared in this study, are not the same. For instance, some firms may choose to be a financial lease firms due to their firm characteristics or because their firm characteristics forces them to be a financial lease firm due to accounting regulations. If this is the case and these characteristics are correlated to value relevance it could be that the found results are driven by this correlation. A suggestion for future research is to include control variables in the regression models.

Lükerath-Rovers (2007) discusses several studies that investigate the incentives for firms to identify determinants why firms use operating leases. Some studies discussed by Lükerath-Rovers (2007) give determinants why firms choose operating or financial leases. The determinants identified in these studies can serve as control variables for firm characteristics. These studies are:

- El-Gazzar, Lilien and Pastena (1986),
- Sharpe and Nguyen (1995),
- Graham, Lemmon and Schallheim (1998).

El-Gazzar et al. (1986) investigate determinants of the managerial lease accounting choice. Sharpe and Nguyen (1995) researched the incentive to lease from a capital market perspective. Graham et al. (1998) analyzed the relationship of the tax status of a firm and the firm's usage of leasing. The review of these three studies by Lükerath-Rovers (2007) were used to obtain possible control variables for firm characteristics because they examined operating and financial leases separately. The identified firm characteristics which could be controlled for are presented in Table 8 (page 56). For each characteristic a variable is given that can be used in the regression equations to control for the characteristic. A short description is given of each characteristic below the table.

Table 8: Firm characteristics and possible control variables

Firm characteristic	Possible variables
1. Leverage	Debt-equity ratio, change in debt-equity ratio, industry-adjusted debt-equity ratio
2. Size	Sales or number of employees
3. Performance measures	EBITA plus rent
4. Effective tax rate	Tax charge or before financing marginal tax rate
5. Management compensation	Bonus dummy variable
6. Industry	Industry dummy variable

1. Leverage

El-Gazzar et al. (1986) analyzed whether there was a difference in leverage between operating and financial lease firms. Based on previous research they predicted a positive relationship between the leverage measures and the choice for operating leases instead of financial leases. According to El-Gazzar et al. (1986) previous research indicated that firms with financial ratios closer to the limits of debt covenants should be motivated to loosen covenants constraints and would therefore choose operating leases instead of financial leases. According to the results of El-Gazzar et al. (1986) all three leverage measures had a significant positive relation to the usage of operating leases instead of financial leases.

2. Size

El-Gazzar et al. (1986) argue that large firms are motivated to choose accounting methods that lower current-period income and therefore avoid operating leases. Large firms prefer lower current period income because they are more likely to suffer from higher taxes (El-Gazzar et al., 1986). In contrast to their prediction, using sales as a measure for firm size, El-Gazzar et al. (1986) found a positive insignificant relationship between firm size and operating leases. Graham et al. (1998) predicted that large firms use debt financing instead of operating leases. Results from Graham et al. (1998) showed a significant negative relationship between size and operating leases. The result from El-Gazzar et al. (1986) and Graham et al. (1998) show that size might have an influence on the choice for one of the two lease types. Variables that can be used to control for size are sales (El-Gazzar et al., 1986) or number of employees (Sharpe & Nguyen, 1995).

3. Performance measures

According to Lükerath-Rovers (2007) the effect of performance measures on the choice between the lease types is based on two ideas. First, lower performing firms may choose operating leases to improve financial statement performance ratios based on total assets. Second, lower performing

firms prefer operating leases because they probably face higher external financing costs and are therefore closer to exhausting their debt capacity.

Sharpe and Nguyen (1995) tested if there is a relationship between firms that face higher external financing cost and the usage of leases. They used three different variables to measure external finance costs: a cash flow measure (EBITA plus rent), the Standard and Poor's bond rating of a firm and a no-dividend dummy variable. They tested operating and financial leases separately in three different years: 1986, 1988 and 1991. In 1988 and 1991 a negative, but not significant, relationship was found between the operating lease share of a firm and cash flow. In 1986 this relationship was positive and significant however. For the financial lease share the relationship was positive in all the three years, but only significantly so in 1988. The characteristic that a firm does not pay out dividend has a significant positive relationship with a firm's total lease tendency. A high bond rating had a significant negative relationship with operating leases but no significant relationship with financial leases.

The findings from Sharpe and Nguyen (1995) demonstrate that the performance measure cash flow might determine whether a firm prefers one of the two lease types, making it appropriate to control for this factor.

4. Effective tax rate

Two studies discussed by Lükerath-Rovers (2007) go into how the tax rates of firms affect the choice between operating or financial leases. El-Gazzar et al. (1986) used the tax rate to formulate two different hypotheses. Their first hypothesis states that firms with a high effective tax rate are more likely to choose income reduction options, such as financial leases instead of operating leases. They motivate this hypothesis by arguing that the effective tax rate is a measure of political costs. Firms with high political costs will be motivated to lower their political visibility by minimizing their income.

Their second hypothesis states that firms with low tax rates are more likely to use operating leases instead of financial leases. The second hypothesis is motivated by the concept that operating leases shift tax advantages from lessees to lessors. Sharpe and Nguyen (1995) argue that high tax rates have a positive effect on financial leases because interests payments are fully of a financial lease are tax deductible like interest payments for debt. They assume that the positive relation found by previous studies between debt and the tax rate is also applicable to financial leases and tax rates. Although the described relationship between tax rates and the lease types are not supported by empirical results in the review of Lükerath-Rovers (2007) one could control for different tax rates based upon their argumentation.

5. Management bonus plans

The choice between for financial or operating leases may be influenced by a bonus plan awarded to the management. El-Gazzar et al. (1986) argue that most of the bonus plans awarded to management are based on ROA or ROE. El-Gazzar et al. hypothesized that the management of firms with bonus plans based on ROA or ROE would choose the operating lease accounting model instead of the financial lease accounting model. This hypothesis can be motivated by the fact that the choice for a lease type has an effect on ROA and ROE as described in chapter 4. Because of the balance sheet effect of capitalizing a lease, choosing the operating lease accounting model results in a higher ROA and ROE. El-Gazzar et al. (1986) found a significant positive relationship between management bonus plans and operating leases. Following El-Gazzar et al. (1986) management bonus plan can be controlled for by using a dummy variable which has the value of 1 when a firm has a bonus plan based on ROA or ROE.

6. Industry

The industry in which a firm is active may be a determinant for the choice of a lease type. It might be possible that certain assets are used in an industry which forces firms, due to accounting or industry regulations, to use one of the two lease types. Graham et al. (1998) included an industry variable for utility firms because the return for utility shareholders is calculated from the firm's capital base. Utility firms would therefore prefer operating leases because they do not count as a part of a firms capital base.

In this study no utility firms were analyzed but the industry in which a firm is active could be a characteristic which could be controlled for. Previous studies like Graham et al. (1998) and Sharpe and Nguyen (1995) included industry dummy variables to control for industry effects.

7.2.3 Effect of firm risk on value relevance

The third limitation relates to the level of risk of a firm. Ro found strong evidence that the level of risk of a firm has an influence on the lease information effect. Ro found that share prices of high risk firms were more adversely affected following the decision of the SEC to adopt ASR 147. This finding of Ro suggests that lease information becomes more relevant for investors for high risk firms. However, high risk firms were not specifically examined separately. Future research could examine if a difference in value relevance between the financial- and operating lease model is noticeable, specifically focusing on high risk firms.

7.2.4 Serial correlation in sample

The last limitations is the presence of serial correlation in the researched samples of firm-year observations. Serial correlation means that the error terms of the firm-year observations are correlated. Some of the regression outputs of SPSS¹⁸ showed some low values for the Durbin Watson statistic which is an indication of serial correlation. Because of these low values it was decided to perform the Durbin Watson tests on all samples to verify whether serial correlation present within these samples. Results from these tests confirm the presence of serial correlation in samples that were used. As a consequence the R² might be inflated and estimated coefficients may appear more significant than they really are.

7.3 Implications for proposed leasing standard

In the exposure draft of the FASB and IASB it was proposed to use a right-of-use model to report all leases. Using this model would mean that a firm needs to capitalize all leases to give financial statement users with a complete and clear picture of a firm's leasing portfolio. Findings from this study support the opinion from the Boards that capitalizing all leases could result in more relevant lease information for investors and contribute in the discussion between the Boards and statement preparers who oppose the right-of-use model.

¹⁸ Statistical software package used for data analysis

Appendix : Capitalization model

During this study operating leases of firms in the samples were capitalized for various reasons using the capitalization model of Lückérath-Rovers (2007). This appendix gives a description of this capitalization model.

The main objective of the capitalization of operating leases is to obtain the value of the liability as if the entire lease portfolio was shown on the balance sheet. In her study Lückérath-Rovers (2007) gives the necessary information for the theoretical capitalization of an operating lease during the lease period from an equation¹⁹. The Myers equation calculates the present value of a lease by considering all changes in cash flows due to lease (Lückérath-Rovers, 2007). The information used in the Myers equation indicates which assumptions have to be made by an investor to capitalize the entire operating lease portfolio of a firm since not all information is disclosed. The assumptions that have to be made are:

1. The remaining life of the lease portfolio.
2. The total life of the lease portfolio.
3. How the disclosed future lease payments are divided over future years.
4. The implicit interest rate.

These assumptions are made to use the disclosed information about future lease payments to compute a value for a lease liability and asset that would have been capitalized if the lease was not classified as a operating lease.

Lückérath-Rovers (2007) used the model to capitalize leases of firms that reported under IFRS. In this study the leases of firms are capitalized that report under US GAAP. Because IAS 17 and SFAS 13 prescribe different ways to present the disclosed lease information the assumption regarding the lease payments and the model are adjusted compared to the model of Lückérath-Rovers (2007). IAS 17 requires the lessee to disclose the total of future minimum lease payments going to be made for operating leases in three period categories: within one year, between one and five years, and later than five years. SFAS 13 also requires the disclosure of the future minimum lease payments but presented separately for the five succeeding years. An aggregate amount is presented for the future minimum rental payments after the fifth year. This means that under SFAS 13 a lessee discloses six different payment categories.

The remainder of this appendix is organized the following way. Firstly the assumptions of the model listed above are described. Secondly an explanation is given how the assumptions are used to compute the capitalized operating lease liability and asset. Thirdly the effect of capitalization on the accounting variables used in this study is discussed.

¹⁹ The necessary information is derived from the Myers et al. (1976) equation.

1. Remaining life

To determine over which period the disclosed future lease payments need to be discounted the remaining life of the operating lease portfolio is required. The remaining life used to discount the future lease payments needs to reflect different maturities. Disclosed operating lease information in a firm's annual report concerns a lease portfolio consisting of leases with different maturities and therefore different remaining lives. Lükerath-Rovers (2007) uses two different assumptions for the remaining life variable. For the calculation of the lease liability the remaining life computation of Imhoff et al. (1991) is used. Imhoff et al. compute the remaining life with equation 3.

Equation 3: Remaining life of lease portfolio

$$RL = 5 + \left(\frac{CF_6}{CF_5}\right)$$

The sixth lease payment category (CF_6) is divided by the fifth lease payment category (CF_5) to obtain the lease period after the fifth year. Five years are added belonging to the five minimum lease payments that are disclosed in the first five lease expiry categories.

For the calculation of the lease asset Lükerath-Rovers (2007) uses a refined calculation for the remaining life assumption. This calculation computes a weighted average remaining life which takes into account the difference in maturity of short- and long term leases in the portfolio. The average remaining life is computed by assigning a weight to each disclosed lease payment category. The weight of each lease payment category is computed with equation 4

Equation 4: weight of lease payments

$$w_e = \frac{CF_e}{\sum_{e=1}^6 CF_e}$$

Each future lease payment category (CF_e) is divided by the total amount of disclosed future lease payments. The weights (w) are used in equation 5 to compute the weighted average remaining life.

Equation 5: weighted average remaining life

$$RL = w_1 * 1 + w_2 * 2 + w_3 * 3 + w_4 * 4 + w_5 * 5 + w_6 * \left(5 + \frac{CF_6}{CF_5}\right)$$

Each weighted payment category is multiplied by the corresponding year of the lease payment category. The length of years corresponding to the sixth lease payment category is calculated using the equation of Imhoff et al. (1991). This weighted average remaining life is used to obtain an accurate indication of the effect of capitalizing operating leases on depreciation costs and net income.

2. Total life

An assumption of the total life is relevant to determine the already depreciated part of the lease asset. The total life is calculated by multiplying the remaining life by two. This assumption is made because no information is disclosed in the financial statements which give some indication about the original maturity of the leases. An equal division of remaining and passed maturity seems fair (Lükerath-Rovers, 2007 p. 102).

3. Division of lump sum future lease payment over future years

Because the future lease payments beyond year t_{+5} is disclosed in a lump sum amount an assumption is required how this amount should be divided over future years beyond t_{+5} . Following Lükerath-Rovers (2007) it is assumed that this amount is equally divided over future years.

4. Implicit interest rate

The implicit interest rate is needed to be able to discount the disclosed future lease payments. Each lease has its own implicit interest rate which for examples is used to determine whether a lease classifies as a financial or operating lease Lükerath-Rovers (2007 p. 98). The implicit interest rate should be the most accurate interest rate. Because firms are not required to disclose this interest rate an assumption must be made what this interest rate would be. Following Lükerath-Rovers (2007) a fixed interest rate of 6% was used for every firm in the sample.

Capitalized operating lease liability

With the four assumptions discussed above the capitalized lease liability and asset can be calculated.

The capitalized lease liability (*PVOL*) is estimated by computing the present value of the disclosed future lease payments using the assumptions made for the remaining life and implicit interest rate (i) as shown in equation 6.

Equation 6: present value of operating lease payments

$$PVOL = \sum_{t=1}^n \frac{CF_t}{(1+i)^t}$$

Capitalized lease asset

To fully reflect the overall balance-sheet effects of the capitalization of operating leases an estimation of the value of the leased asset is required. Three assumptions are needed to estimate the lease asset (Lükerath-Rovers, 2007 p. 106).

First, it is assumed that the straight-line method is used to depreciate the lease asset.

Second, it is assumed that at inception of the lease both the lease asset and liability equal 100% of the present value of the future lease payment.

Third, at the end of the lease period both the unrecorded asset and the unrecorded liability equal zero.

These assumptions are comparable to the terms of a 100% debt financing based on annuities and related asset depreciated with the straight-line method. In this form of debt the repayment on the loan within the first annuity is smaller than the first depreciation charge. This causes a difference in the value of the lease liability and asset value during the lease term. Because the leased asset value is not equal to the lease liability the proportion of the lease asset has to be assumed. Following Lükerath-Rovers (2007), the asset proportion of the lease liability is computed using equation 7 which is a function of the interest rate and the weighted remaining- and total life.

Equation 7: asset proportion

$$AP = \frac{WRL * \left(\frac{1 - (1/(1+i)^{WTL})}{i} \right)}{WTL * \left(\frac{1 - (1/(1+i)^{WRL})}{i} \right)}$$

When the asset proportion (AP) is computed the leased asset (PVA) is then calculated by multiplying the asset proportion (AP) with the capitalized operating lease liability (PVOL) as shown in equation 8.

Equation 8: capitalized operating lease asset

$$PVA = AP * PVOL$$

Effect on other accounting variables

The capitalization of an operating asset and liability on the balance sheet has also an effect on other accounting variables. The effects on accounting variables used in this study are described in this section.

Equity

The impact on equity is a result of the difference between the capitalized lease liability and lease asset. Capitalizing operating leases will have a negative effect on equity. The capitalized lease liability always exceeds the corresponding asset due to the assumptions that were made to compute the lease asset. Because of taxes a part of the difference between the lease liability and the lease asset will also have an effect on the deferred tax liability of a firm. The equation used to determine the effect on equity is shown in equation 9. Following Lükerath–Rovers (2007) the effect on equity is determined by adjusting the difference in value between the lease liability and the lease asset for the effect on the deferred tax liability. It was assumed that every firm in the sample had a marginal tax rate of 35%.

Equation 9: effect capitalization of operating leases on equity

$$Equity = (1 - t) * (PVOL - PVA)$$

Net income

Net income is affected by the capitalization of operating leases because under operating lease accounting model lease payments are fully deductible from pre-tax income, whereas under the financial lease accounting method the interest and depreciation are deducted from the pre-tax income. According to the assumption that were stated to determine the lease asset net income is negatively affected in the earlier years of a lease term and positively in the later years. Depreciation and interest exceed the repayment of the lease obligation at the start of the lease term. This effect is reversed at the end of the lease term. The income effect of is computed using equation 10.

Equation 10: effect capitalization of operating leases on net income

$$Net\ income_{post} = Net\ income + (1 - t) * (CF_1 - w_1 * PVA - i * PVOL)$$

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