



**UNIVERSITY OF GOTHENBURG**  
**SCHOOL OF BUSINESS, ECONOMICS AND LAW**

Master Degree Project in Accounting

# **The Reliability of Fair Value in Investment Property**

a study on Swedish real estate companies

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## **Preface**

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Gothenburg 24th of May 2015

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## **Abstract**

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**Background and discussion:** Since 2005 all listed companies in Europe have to present their financial reports according to the International Financial Reporting Standards regulation. For listed real estate companies the new regulations led to the adoption of IAS 40, which consequently caused a shift from the cost method to the fair value method. This change started a debate of reliability versus relevance, as the cost method was seen as more reliable, while fair value is seen more relevant.

**Purpose:** The purpose of this thesis is to investigate how reliable the value of investment property is in the annual reports of Swedish real estate companies. The factors of ownership structure, management incentives and capital structure are investigated to see how they affect the reliability of the value.

**Research design:** Two approaches are used in this study; the first and main study uses data from the annual reports of all listed real estate companies on NASDAQ OMX Stockholm between 2005 and 2013. Second, four interviews were conducted, where two banks and two external evaluators have been interviewed to verify the results of the first study. The collected data is then analysed and compared to the theoretical framework.

**Results and conclusions:** The quantitative study shows that investment properties on average are sold at 13.6 per cent above booked value and the property is increased with an average of 1.8 per cent each year. This indicates that the values of investment property do not represent a true and fair view and thus the reliability aspect can be questioned. Furthermore, the factors of capital structure, management incentives and ownership structure do affect the reliability, however not as much as the variables of year, external valuator or big four auditor.

**Suggestions for further studies:** For further research it would be interesting to include the company's assumptions in the valuation process. Another interesting research would be to closely investigate the time factor of the sale. Finally, it would be interesting to include some years before the implementation of IAS 40 as it would give the possibility to compare the reliability aspect before and after the implementation of the new standard.

**Keywords:** Investment property, IAS 40, Fair Value, Reliability

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# 1. Introduction

For a long time there has been an ambition to create more comprehensible and comparable financial reports between countries and this has led to the current harmonization process of accounting practices (Nobes & Parker, 2006). The European Union has come far in the harmonization process and since January 2005 it is mandatory for all listed companies in the Union to apply International Accounting Standards Board's (IASB) regulation when creating financial information (EU, 2002; Nellessen & Zuelch, 2010). The IASB gives out the International Financial Report Standards (IFRS) that describe how the financial information should be reported (Marton, Lundquist, Lumsden & Petersson, 2013). The purpose of writing the financial reports according to IFRS is to improve comparability between companies both nationally and globally (IASB, 2012). Additionally, IFRS is a principle-based framework, meaning that there is room for the user's own interpretation. Before the implementation of IASB there was the International Accounting Standards Committee (IASC) who was the authority that gave out regulations under the name International Accounting Standards (IAS). The IAS's are still in use whereas the new standards given under IASB are labelled IFRS (Marton, et al, 2013).

By adapting similar accounting standards, it is easier for creditors, investors and other stakeholders to establish an opinion of the company's results and financial position. However, in order for the users to establish an opinion that mirrors a true and fair view of the company it is essential that the reports be of good quality. In order to improve the quality and help with the development of the annual report the IASB has developed a conceptual framework. The framework states that the financial information need to have four qualitative characteristics; (1) relevance, the information needs to be relevant so that users can use it in the decision-making process. Information is relevant if it affects the assessment of past, present and future events. (2) Reliability, the information shall not contain any material errors or be manipulated in any way. (3) Comparability, financial reports should be comparable, both over time and with other companies. (4) Understandability, the information should be easy to understand for a user with reasonable business knowledge that has studied the reports with reasonable accuracy (IASB, 2012).

One effect from the regulation change and adoption to IFRS is that the valuation process' has shifted from using the cost method to the fair value method (Laux & Leuz, 2010). The idea behind the use of fair value is to account the real market value, in other words the price on an open and active market (IASB, 2012). This change has affected the preparations of the financial reports in a major way (Barlev & Haddad, 2003). The fair value is defined as the price to sell an asset or settle a liability and in theory it is the same as the market price (Marton, et al. 2013). However, there are three different levels of fair value, where level one is the price on quoted prices on an active market, level two is the price on a comparable asset on an active market and level three is when there is no active market or no comparable assets (IFRS 13, §72). When it comes to the reliability of the value, the first two levels receive little to none critique, however the third level is criticised because the presence of subjectivity (Nellessen & Zuelch, 2010).

In connection to the change in regulation the accounting standard IAS 40 was introduced to Swedish listed companies. IAS 40 concerns investment property, which is defined as

“Property (land or a building—or part of a building—or both) held (by the owner or by the lessee under a finance lease) to earn rentals or for capital appreciation or both, rather than for: (a) use in the production or supply of goods or services or for administrative purposes; or (b) sale in the ordinary course of business” (IAS 40, §46).

The standard give organisations the option to use fair value, when it comes to the valuation of investment property. Prior to the introduction of the standard, the method accepted and used when valuing investment property was the cost method. With the use of the cost method the value tends to be far from the market value and therefore it does not supply the users with a true and fair view. Consequently, the increase of value relevance of financial information is the main reason for the development of IAS 40 (Bengtsson, 2008). This can be seen since even if the cost method is chosen, the fair value and the changes in fair value is required to be disclosed in the notes (IAS 40, §75). Thus as Mirza and Holt (2011) explain, the fair value needs to be calculated even though the standard offers the option to use the cost method.

According to IAS 40 the fair value of investment property can be calculated in different ways, depending on the property’s characteristics and the information available. Fair value should first and foremost be valued by comparing the investment property with transaction of similar assets on the market. The compared asset should be in similar condition, at a similar location and with the similar rental and other agreements (IAS 40, §45). If such valuation is not possible the option is to use either market price of investment property that has different characteristics, or that is on a less active market or lastly use the discounted future cash flow (IAS 40, §46).

### **1.1 Problem Discussion**

Stakeholders like creditors and investors should be provided with financial information that is both relevant and reliable (Artsberg, 2005). However, Bengtsson (2008) state that relevance and reliability are in conflict with each other and it is therefore hard to achieve both. On one hand the financial information is more likely to be reliable when the valuation is based on the historical cost of the transaction. On the other hand the relevance of the financial information will be higher when the fair value is used, since it reflects the current situation more accurate (Bengtsson, 2008). Studies have shown that value relevance has increased with the use of fair value; nevertheless the actual market value tends to be higher than the booked value. This phenomenon is explained by the fact that there is still a lot of subjectivity and assumptions in the valuation process of investment property (Lorentzon, 2011). Danbolt and Reese (2008) further explain that since there is room for both manipulation and error, the reliability of real estate values is argumentative and not clear-cut. Investment property is one of the world’s biggest assets (Muller et al., 2011), therefore the value will affect the result, which affects the company’s position and thereby the users decisions (Mirza and Holt, 2011).

Nordlund (2008) found that it is not unusual that the book value of investment property is lower than the market value by ten per cent. Bengtsson (2008) states that firm's subjectivity is mirrored in the unrealised value changes, as there may be incentives to achieve a certain value. The possible subjectivity might not be an issue for the firm, but does affect the reliability of the financial information and thereby also the users. The purpose behind the annual report is to show and present the position and result of an organisation's economic year (Mirza & Holt, 2011). For users to be able to make economic decisions, the financial information need to be of good quality and give a true and fair view of the company's position (IASB, 2012). Information cannot be biased and it is important that the users trust the accounting. Considering the possibility for subjectivity in IAS 40, the possibility for the information to be misleading could be questioned (Artsberg, 2005). The market for investment property is seen as heterogeneous, which has resulted in the use of different valuation models (Nellessen & Zuelch, 2010). Since the valuations can be performed with consideration to the two different methods in IAS 40, there are a lot of possible models for valuation (IASB, 2012). However, the most used alternative is some kind of present value method based on the fair value approach (Nellessen & Zuelch, 2010). What the different methods have in common is that they all include subjective estimations of future conditions, which has lead to several studies finding indications that the models are sensitive for errors or manipulation (e.g. Christensen & Nikoleav, 2009; Muller, Riedl & Sellhorn, 2011; Nellessen & Zuelch, 2010).

As mentioned above, the degree of reliability can be measured via the selling price compared to the carrying value (Nordlund, 2008) and the unrealised value change (Bengtsson, 2008). The reason behind the deviation of values is several but involves some kind of management intervention (Pinto, 2013). One factor that the researchers Muller et al (2008) and Demsetz and Lehn (1985) identified to impact the accounting choice when evaluating investment property is the ownership structure. Disperse ownership organisations were found to have fewer incentives in affecting the value compared to organisations with concentrated ownership (Muller et al, 2008; Demsetz & Lehn, 1985). Another factor that can affect the value is the capital structure, Lee and Masulis (2011) found that there is a positive relationship between leverage ratio and earnings management. Furthermore, to not break the debt agreements with lenders, companies with excessive leverage tend to manage the earnings. DeFond and Jiambalvo (1994) support this notion, as their research show that companies manage earnings when they are close to violating the debt covenant. Another case where managers are found more likely to manipulating the numbers by boosting the fair value is prior to raising new debt according to Dietrich, Harris and Muller (2001). Several authors argue that fair value appraisals are more likely to be subject for managerial discretion (Dietrich, et al, 2001; Pinto, 2013). Pinto (2013) further states that managers can use the valuation of assets to strategically achieve financial reporting goals.



## **1.2 Purpose and research question**

The purpose of this thesis is to investigate the reliability of the investment property's value in the books, and what can affect this value. In this thesis reliability is evaluated by looking at the difference between the book value and selling price as well as the unrealised value in Swedish real estate companies. By doing this, we can measure to what degree the values differs and consequently how reliable the carrying value is, since the fair value should by definition reflect the market value and thereby there should not be a difference between the two. Additionally, we want to investigate how the capital structure affects the reliability of the fair value and how the concentration of ownership may have an impact on the deviation and if there exists an incentive for managers to affect the value in any way. Based on the purpose the following question will be used:

*How reliable is the fair value of investment property in Swedish listed real estate companies? To what extent do the factors of management incentives, ownership structure and capital structure affect the value?*

## **1.3 Research design and Limitations**

In order to answer the research question and fulfil the purpose of this thesis we have collected data from annual reports and conducted interviews. By examining the annual reports, the fair value versus the selling price of investment property and the unrealised value changes can be compared as well as the ownership structure and capital structure. By digging into those factors, we are also able to evaluate possible management incentives. The findings from the financial reports will be analysed in a regression model and the results will be used as a foundation for the interviews with professionals, which are performed to get their perspective of the reliability of the fair value of investment property. The fundamental idea with the interviews is to verify the findings from the statistical analysis. The empirical findings will then be analysed based on the conceptual framework, IAS 40 and IFRS 13 and theories in capital structure, ownership structure and management incentives.

This thesis investigates the reliability of fair value accounting in investment property from a user perspective. It is limited to Swedish listed investment property companies only and companies with other types of property, such as operation properties are excluded. The study includes all listed real estate companies on Nasdaq OMX Stockholm during the investigated time period of 2005 – 2013. Finally, non-listed companies will not be included in the study, as those companies are not obliged to follow IFRS and IAS 40.

## **1.4 Contribution and Relevance**

This thesis is influenced by previous research in the area. Several studies have examined fair value accounting in investment property on both a Swedish and global level. Dietrich et al. (2001) studied the reliability of fair value in investment property in UK during 1988-1996. Bengtsson (2008) and Nordlund (2008) studied how effective the fair value was in 2006 and 2007, i.e. just after IAS 40 was implemented. Lorentzon (2011) compare the reliability of fair

value accounting in the real estate sector with the forest sector between 2004 and 2008. This study contributes by investigating the reliability of the fair value method in investment property since the implementation of IAS 40 in 2005 to the latest financial year in 2013 and interprets the results from both a qualitative and quantitative approach. By performing a quantitative and qualitative study will we be able to discover and explain the reliability from both a numerical and practical perspective. By also looking at ownership structure and capital structures we can see if there are incentives to affect the valuation. Further this thesis will look into if there are any incentives for managers to affect the numbers. As this study uses other factors for incentives of valuation techniques compared to previous findings, it can clarify potential differences further.

We believe that our research is practically relevant, as users should get a true and fair view from the financial reports. The reliability can be questioned if internal needs and biases impact the value of investment property. Consequently, this thesis will practically contribute to improve the understandability from a user perspective. Stakeholders, such as creditors can get necessary information that help them in the investment process and investors can get a better insight in the asset valuation. Additionally, standard setters may benefit from the findings as the thesis point out potential issues with the implementation of the standards.

## **2. Theoretical framework**

The thesis' frame of reference consists of relevant regulations, the conceptual framework, theories and previous research in earnings management, ownership structure, and capital structure. In terms of regulations, the standards of IAS 40 and IFRS 13 have been used in order to understand the issues and regulations for valuation of investment property under fair value. The conceptual framework is applied as it fundamentally guides how the financial information should be prepared and presented. The previous research is provided in order to get an understanding of what factors may impact the value. Earnings management and the agency problem are included since these theories may give an explanation behind managerial behaviour and the value of investment property. Similarly studies on the ownership structure and management incentives can provide an explanation on the reliability of the fair value. Finally, theories and studies on the capital structure can give us a fundamental understanding on how debt and equity impact the reliability of the value.

### **2.1 IAS 40 - Investment property**

IAS 40, investment property, was introduced to listed companies that follow IFRS in 2005. Investment property is "land or a building or part of a building or both held by the owner or by the lessee under a finance lease to earn rental income or for capital appreciation or both" (IAS 40, §5). When a company acquires new investment property, they initially value the investment property by acquisition cost (IAS 40, §20). For the following valuation, the standard give companies the option to either value their real estate at fair value or by the cost model. The chosen valuation method will then be applied to all assets of the same type. Nevertheless, no matter which valuation method is used, companies have to display the fair value in a disclosure purpose (IAS 40, §32). When the property is recognized as an investment property it can be classified as an asset when the following conditions are met: "...It is probable that the future economic benefits that are associated with the property will flow to the entity, and the cost of the property can be reliably measure" (IAS 40, §16). The fair value method under IAS 40 has been criticized for its ability to give companies room for subjectivity and in order to give clearer directions was the standard IFRS 13 fair value measurements realized in 2013 (Marton et al, 2013).

### **2.2 IFRS 13 - Fair Value**

IFRS define fair value as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date" (IFRS 13, §9). Hence, fair value concerns the market value as the definitions focuses on what can be paid in an ordinary transaction between companies (Marton et al, 2013). However, finding a market value or inputs from an active market may not always be easy, as no or few inputs may be observable on the market (Lorentzon, 2011). Depending on the accessible data, the standard provides three different methods for valuation in a hierarchal order (IFRS 13, §67). As can be displayed in the figure below, the first level requires data from identical objects in an active market for identical assets. Hence, the company has to look in to previous sales in the market. In

case that no active market exists or there are two few inputs are level 2 inputs used. These are non-quoted market prices but are observable for other inputs in an active market. It may also concern observable inputs on non-active markets (IFRS 13, §80). Finally, if it is not possible to find any observable data for assets or liabilities the value will be based on assumptions and internal judgments from the company (IFRS 13, §86). Commonly the cash flow method is used in this case (Marton et al, 2013).

## **2.3 Conceptual Framework and the qualitative characteristics under fair value**

In order improve the quality of the financial information IFRS has implemented the qualitative characteristics of relevance, reliability, comparability and consistency. If those characteristics are followed the comparability of the financial reports will increase (IASB, 2012). As this thesis only is based on a discussion regarding the reliability and relevance of the valuation of property these two characteristics are further described.

### **2.3.1 Relevance**

One of the primary aspects of the annual reports is that the presented information should be relevant for the user (IASB, 2012). The degree of relevance might thou be hard to interpret as the annual reports are practiced by various users with different interest in the information presented. Generally, the information in the annual reports is considered relevant if it is likely to affect economic decisions (IASB, 2012). Relevance also includes that the accounting could be used as a tool to estimated future performance for the company. Those estimates can later be checked with the existing information at a future date. Marton et al (2013) argue that relevance has a temporal aspect, as the information about economic events need to be presented within a limited time period in order for it to be applicable. When it comes to fair value, several authors argue that fair value is more relevant compared to the cost method (Hermann, Saudagarn & Thomas, 2006; Marton et al 2009; Landsman 2007; Bengtsson 2008). Marton et al (2013) states that the value relevance is higher for fair value compared to the cost method as the fair value method is a recent estimate and follows the most recent value of the asset.

### **2.3.2. Reliability**

The concept of reliability concerns that the financial information should be trustworthy and mirror a true and fair view (IASB, 2012). The conceptual framework explicitly states that the financial information should be truthful and not include any misinformation. Misinformation is for example biased information, errors and internal assessment errors and this information would risk misleading investors in their investment decision (IASB, 2012). In order to ensure that the reliability is high the aspect of validity, verifiability, neutrality, prudence, completeness and substance over form should be fulfilled (IASB, 2012). Several authors argue that valuation of investment property under fair value is less reliable than under the cost method (Bengtsson, 2008; Lorentzon, 2011, Danbolt and Reese, 2008). This is since there is a lot of subjectivity in the valuation process and the user cannot verify the valuation on an inactive market (Bengtsson, 2005). On the other hand Herrmann et al. (2006) argue that the reliability is actually increased as the validity and neutrality aspects are better met compared to when the cost method is used. This

is since that the cost method does not allow positive increases in valuation and this would affect the neutrality and validity.

## **2.4. Earnings management**

Accounting standards need to be applicable to a variety of situations and the companies' preparers (i.e. the manager) are left with choices on how to present the events in the accounting information. This is because of the complexity of describing a business in pure numbers. The preparer can also influence the accounting information by affecting the timing of the events. So the accounting standards leave wiggle room when choosing accounting method and how the chosen method is applied (Penman, 2007). Jaggi and Leung's (2003) study found that there is considerable flexibility when it comes to accounting choices. Managers that have internal information can according to Landsman (2007) use it to model the information to their advantage. In several studies the authors find that firms manage earnings to show off certain financial records (Healy & Wahlen, 1999; Jaggi & Leung, 2003; Landsman, 2007; Dietrich et al., 2001).

There are several definitions of earnings management and in this research we have used Healy and Wahlen (1999) definition, that we believe is simple and clearly explains the concept. The definition is:

Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers” (Healy & Wahlen, 1999, p. 368).

When reporting income, the accounting choices play an important role to the users of financial statements, and managers might use the numbers to achieve certain objects (Watts and Zimmerman, 1978, 1979). Since there is room for the management to use judgment there is opportunities for “earnings management” where managers choose estimates and reporting methods that do not reflect the underlying economics accurately (Healy & Wahlen, 1999). Earnings management is used to achieve desired result in the financial statements. The adjustments and manipulations of accounting information affect the earnings quality (Penman 2007; White, Sondhi & Fried, 2003). According to Penman (2007), investment property is most susceptible to manipulation in the real estate industry. This may be since investment property is the largest asset on the balance sheet and therefore a difference of one per cent in one variable in the calculation can lead to great differences in the fair value (Muller et al., 2011; Christensen, Glover & Wood, 2013).

In order for the financial reports to be as usable as possible, the IFRS regulations are flexible so the companies can give the best information in the reports. The flexibility is used in order to improve the quality and usability of the financial reports; however, it also gives the possibility to manipulate the earnings to favour internal interests (Healy & Wahlen, 1999). There are different

ways to manage earnings such as the debt-equity hypotheses (Jaggi & Leung, 2003) and creative accounting (Naser, 1993). The incentives behind earnings management can be different, like bonus plans (Healy, Kang, & Palepu, 1987; Gaver and Gaver, 1995) and stock value (Lev, 2003).

Managing earnings usually involves some kind of creativity from the management (Healy & Wahlen, 1999). *Creative accounting* is situations where organisations can interpret accounting principles in different ways, in other words, when organisations use loopholes in the regulations to manipulate the financial statements (Naser, 1993). The reason behind creative accounting is naturally to improve the financial results of the company. One approach is the *debt-equity hypothesis*, which states that organisations with higher debt-equity ratio choose accounting choices that will increase income (DeFond & Jiambavlo, 1994). DeGeorge, Patel and Zeckhauser (1999) state that companies that have unacceptable earnings might choose to manipulate upwards since banks can reject credit applications of companies that do not have positive earnings. Moreover as fair value involves subjectivity, companies are commonly using earnings management in order to create hidden reserves. By undervaluing assets are they able to revalue assets at a future date and by that get a profit when needed (Healy & Wahlen, 1999).

The use of earnings management can be divided into three incitements; personal gain, continuing support from investors and lastly to meet contractual conditions (Lev, 2003). A personal gain behind the motive can be to increase income to consequently obtain bonuses (Landsman, 2007; Healy et al., 1987; Gaver & Gaver, 1995). Lev (2003) argues that if a company reports poor numbers, the investors may be disappointed, which can lead to a decreasing share price according to and the fear of this leads to earnings management. Asthana (2007) found that when under pressure to achieve performance objectives managers used the plan assets expected return was used to increase the company value. Therefore, earnings can be managed upwards to show positive results and to reach (or exceed) the performance from previous periods and analysts' expectations. However when benchmarks are met, the manipulation will instead be downwards so that future thresholds will be easier to reach (DeGeorge et al., 1999). In addition to reach the objectives and in that way increasing the earnings per share, Jordan, Clark and Pate (2013) state that the agency theory can explain the motive for earnings management, related to the relationship between the managers and shareholders, and the belief that managers (agent) want to deliver a good performance.

## **2.5. Agency Theory**

Agency theory focuses on the relationship between two parties, where one party (the agent) performs the work that another party (the principal), who has delegated some authority to make decisions. In other words the agent is representing the principal. In agency theory there are generally assumptions that are made in three different areas, about people, organisations and information (Eisenhart, 1989). People will act in a way that maximises their own utility and therefore there is a good reason to believe that the actions of the agent do not always represent the principal's best interests (Jensen & Meckling, 1976). Furthermore, people will have bounded rationalities and risk aversion. The second area assumptions made are about organisations and the

theory assumes that the goals will diverge between the members (Eisenhart, 1989). The last area is information and the assumption is that there is information asymmetry, where the agent has more information than the principal. The theory uses the metaphor of a contract to describe the relationship (Jensen & Meckling, 1976). Since information has a cost and can be bought it is regarded as a commodity (Eisenhart, 1989).

There are two problems that agency theory is concerned with resolving. The agency problem is the first problem, and it arises when the goals of the two parties are in conflict and it is expensive and difficult for the principal to confirm what the agent is actually doing. The second problem that arises is the fact that the principal and agent tend to have different attitudes towards risk. The risk-sharing problem can lead to the two parties disagreeing in what actions to take (Eisenhart, 1989). The problem that rises from the difference in the agent and principals interests and risk aversion can become costly. To limit the conflicts in interests the principal need to create suitable incentives and by acquiring monitoring costs that minimise the agent's actions that deviate from the principal's actions. It is impossible for the principal to ensure that the agent acts in their interest cost free, in most agency relationships there will be both monitoring and bonding costs (Both financial and non-financial). Furthermore, since there will always be a deviation between the agent's interests and the principal's and the dollar equivalent of the principal's experienced reduction in welfare is defined as the "residual loss". The sum of these costs, monitoring cost, bonding expenditures and the residual cost equals the agency cost (Jensen & Meckling, 1976).

## **2.6. Ownership Structure**

Most countries have public companies where the control lays with a large owner, typically a private person or a family (La Porta, Lopez-de-Silanes and Shleifer, 1999). The ownership structure of an organisation should be viewed as an endogenous consequence of the decisions that mirror the shareholders influence (Demsetz, 1983). Large shareholders can use their voting power to insure that they receive benefits that other shareholders do not get. Large shareholders might therefore choose to not open up the fund, even though it might increase the value of their shareholdings (Nisklanen, Rouhento & Falkenbach, 2011). However in modern corporations, the typical shareholder cannot oversee managerial performance or exercise any real power (Demsetz, 1983).

In their study Demsetz and Lehn (1985) investigate three factors that they believe will affect the ownership structure: (1) value optimised size of the company, (2) the potential of an effective control and (3) legislation that regulates the business of the organisation. The first factor concerns the cost that occurs when purchasing shares, since the higher market value the more expensive the shares. To keep a concentrated ownership the new shares that are issued need to be distributed to existing owners. However, if the new shares are issued to existing owners, it needs to be done with a discount for risk and therefore it is more profitable to have a diffused ownership structure. As a result public companies tend to have a diffused structure so that the people claiming the profit can be separated from those making the decision (Demsetz & Lehn, 1985).

When it comes to the second factor, effective control, Demsetz and Lehn (1985) state that under perfect circumstances there should not be any diffused ownership without external control. The external control is costly and therefore it needs to be effective. Furthermore, the environment in which the organisation operates in will also affect the cost of control. In stable environments the cost of control is lower than for organisations on an unstable market that is constantly changing. Therefore the companies in an unstable market should have concentrated ownership, since then the cost will be lower (Demsetz & Lehn, 1985). The cost of control is called agency cost and is the basis for the agency theory (Jensen & Meckling, 1976). Jensen and Warner (1988) support this and further explain that the shareholders will have a stronger incentive to supervise the managerial activities when ownership is not concentrated. Demsetz (1983) further explain that when the ownership is dispersed, the conflict between the interests of the management and owners will be resolved in the management's favour. The third and last factor that Demsetz and Lehn (1985) consider is the legislations and regulations effect on the ownership structure. The authors find that markets with stricter legislations and regulations tend to have dispersed ownership than companies on a less regulated market. The reason behind is assumed to be that on a loosely regulated market there is a need for stricter internal control, which is achieved by concentrated ownership. On a strict market the belief is that there is no need for as much control from the owners.

### **2.6.1. Ownership structure and earnings management**

The ownership of a firm is closely related to the accounting choices. Depending on the ownership structure, managers will have different incentives to manage earnings (Dempsey, et al. 1993). The relationship between ownership structure and earnings management is supported by several studies (e.g., Smith, 1976; Kamin and Ronen, 1978a and 1978b; Salamon and Smith, 1979; and DeFond and Jiambalvo, 1991). Management controlled firms will misrepresent the information when it is in their best interest by controlling the information in the annual reports (Salamon & Smith, 1979). Dempsey, Hunt & Schroeder (1993) further explain that the consistent findings are that companies controlled by the management are more likely to smooth or manage earnings, and do it more frequently than companies that are controlled by the owners. There are two reasons behind this, first is based on the fact that managers will use the accounting information to display a good performance and keep shareholders satisfied so that they will not be replaced. The second reason Dempsey et al. (1993) found is that management-controlled companies generally have managerial compensation programs. The management bonus plans often are connected with the accounting earnings that are reported and the management remuneration, which gives the managers incentives to report earnings that will under those plans maximize their benefit (Healy, 1985; Watts and Zimmerman, 1986). The compensations plans are in place so that the managers act in alignment with owner's interests (Dhaliwal, 1988). Hunt and Holger (1990) also find that the result of studies about smoothing support the notion that management-controlled firms are more likely to smooth income than firms that are ownership-controlled. Form and content of accounting information is influenced by the corporate ownership structure, which suggest that accounting decisions are made by managers to increase their benefit (Hunt & Holger, 1990)



## **2.7. Capital Structure**

The capital structure is a company's financing of total capital and fundamentally consists of assets, liabilities, equity and hybrid securities. The latter are examples of convertibles that are a combination of equity and debt. The underlying capital structure affects the firm's cost of capital, risk, expected return and ultimately the company value (Brealey, Mayers & Marcus, 2011). A firm's capital structure can be described as a two-side approach, with the assets on the left side of the balance sheet and to the right side is the financing of the assets. More explicitly, a company's assets consist of property, plant and equipment and other types of intangible assets, such assets have been financed with liabilities, internal or external equity or hybrid securities (Brealey et al, 2011). Farooqi Lind (2008) explains that liabilities could be divided between short and long-term debt and in the Swedish market is the payment period for short term debt less than a year and long term debt, such as bank debt entrains for a longer period. The equity financing is regulated through the fact that investors are offered to buy stocks in the company and the more percentiles financed by stocks, the more equity financed is the company. Hybrid securities can differ depending on if a lender chooses to get stocks as a payment instead of interest rate (Farooqi Lind 2008).

Naturally, the capital structure differs between businesses and in order to understand why a certain structure is optimal it is essential to look into literature and theories in the area.

### **2.7.1 The Miller and Modigliani theorem**

The chosen capital structure is generally a financing decision and not an investment decision. The problem with the optimal financing decision extends back to the 1950s and the Miller and Modigliani theorem. The researchers Miller and Modigliani studied the ideal capital structure and became famous for their propositions in 1958 and 1963 (Brealey et al, 2011). Those propositions do however assume a perfect market without transactions costs, taxes or liquidation costs. The first proposition concluded that a company's value is independent of the capital structure. This is due to that the value of a business is determined by its earnings power and the value is not affected by the underlying financing of the company. The value is thus based on the left side of the balance sheet, the assets. The second proposition assumes that the weighted average cost of capital is constant (Miller & Modigliani, 1958). This idea is based on that the desired yield on invested capital increases with leverage, however a great leverage means that the investors demand higher return. The cost of total capital is however not changed, as the cost for external capital is lower than for internal capital (Myers, 2001). However, the authors revised their proposition in the 1960s and added tax into the propositions, as loans are tax deductible. Thereby is the taxable income lower for companies with long-term debt, compared to firms without debt. Ultimately, more capital is kept in the company and according to the revised proposition should the debt to equity ratio be as high as possible in order to maximize the value of the company (Hallgren, 2002).

### **2.7.2. Financing**

Myers and Majluf (1984) present another view of the capital structure. According to the authors, firms rank the preferred financing via a certain order, presented in their pecking-order theory. The fundamental idea of the theory is that some financing alternatives are more attractive than others. The desirability of a financing alternative depends on the asymmetric information that comes with external financing, as management have more information than the external investors. Moreover, asymmetric information concerns that management have more information about the future profitability, value of the company and risk. Basically, the theory point out which capital structure that is preferable under certain exposures (ibid).

Cost of capital, release of information and less control are exposures that affect the company's decisions. Those aspects are related to the information asymmetry and corporations do naturally want company specific information to stay within the company (Brealey et al., 2011). Myers and Majluf (1984) state that companies will therefore to the greatest extent finance their activities internally. In case of external financing is debt prioritized in front of equity as debt carries lower cost of capital and the information is only given to one part. The last option, equity is the leased prioritized financing option as this option requires the company to give information to a great variety of parties and the cost of capital is higher. The pecking-order theory gives an explanation to why debt financing is prioritized by businesses when they seek external financing. The concept also gives an insight into why profitable companies have less long-term debt. This is since profitable companies can use their internally generated cash flows to finance activities whereas less profitable companies are forced to seek external financing and consequently have a higher percentile debt (Myers, 2001).

### **2.7.3. Capital structure in investment properties**

However, when it comes to the capital structure of real estate companies the pecking order is not followed entirely. Studies have shown that real estate companies tend to choose debt financing before internally generated cash flows. The explanation behind this is that investment property requires large amounts of capital and gives rather low cash flows, forcing real estate companies to use debt financing (Brealey et al, 2011). A study by Morri and Cristanziani (2009) found that real estate firms have higher leverage compared to other business. The explanation is the tax deductibility and the tax shield that comes with debt. The authors do as well find that a high operative risk yields a lower leverage. They explain this phenomenon with that real estate businesses want a stable risk profile in order to not adventure its total risk too much (ibid). Bond and Scott (2006) reasons that depending on if the financing is internal or external are different signals given to investors, and those signals controls the financing. Asymmetric information are a reason behind the signals and consequently may it be reasonable to consider the pecking order theory when acknowledge real estate companies capital structure. Finally, Fastighetsnytt (2012) founded that the capital structure in Swedish firms is distinguished with a low solvency ratio as only three listed firms have a ratio above 1.

## **2.8. Summary and hypotheses**

Since 2005, listed companies in Sweden have to follow IFRS, a principle-based framework, which means that it leaves the user room for own interpretations. IAS 40 is the standard used when it comes to accounting of investment property and it demands that the fair value is disclosed. To clarify issues with the fair value method, the standard IFRS 13 gives directions on how to carry out the valuation (IASB, 2012). Investment property is valued with a three level hierarchy (IASB, 2012). The last level usually includes some kind of cash flow method (Marton et al, 2013) and it is less reliable as it gives room for subjectivity (Bengtsson, 2008). Since the definition of fair value equals the definition of market value, the difference in the two will affect the reliability of the value (Marton et al, 2013). Since the framework is subjective the preparer of financial information is left with the choice of how the financial information should be prepared and can therefore model it to his or her advantage (Penman, 2007). As can be seen above, several researchers (Healy & Wahlen, 1999; Jaggi & Leung, 2003; Landsman, 2007; Dietrich et al, 2001) found support that companies manage their earnings to show a desirable performance. When managers turn to earnings management, the disclosed financial information does not represent the economic situation adequately (Healy & Wahlen, 1999). There are three different reasons behind earnings management; the first is a personal reason for the manager such as bonus plans or fear of losing the job if certain results are not achieved. Secondly managers can manipulate the numbers in order to continue to get support from investors by showing of desirable results. The third reason is that firms that are close to breaking contractual conditions will manage the earnings to avoid this. This is connected to the debt situation, firms with a higher debt-equity ratio are more likely to make accounting choices to increase income or companies that are trying to get financing from banks will try to show the best possible picture of the situation (Lev, 2003).

The first variable that is assumed to affect the value of investment property is the ownership structure. Hunt & Holger (1990) state that the accounting information's form and content will be influenced by the corporate ownership structure. The structure should be seen as endogenous outcomes that reflect the influence that the shareholders have (Demsetz, 1983). If the structure is diffused then the people claiming the profit will be separated from the ones making the decisions (Demsetz & Lehn, 1985). In other words it all comes down to the separation of benefit and control. However, as Demsetz explains, when there is a diffused structure then there is a need for external control. This is because when there is a conflict between the shareholders and the manager, it will be solved in the management's favour (Demsetz, 1983). Firms that are controlled by the management will misrepresent the financial information when it is in their best interest. These companies are more likely to manage earnings and they also do it more frequently either to keep the shareholders satisfied or to receive compensation (Dempsey et al, 1993). Furthermore, the size of the shareholders votes can affect the decision, in their advantage (Nisklanen et al, 2011).

In the end, these behaviours can be explained by the agency theory since it is based on the relationship between a principal, the shareholders, and an agent, the manager (Eisenhart, 1989). Both the shareholder and management want to maximise their gain, which can lead to earnings

management. There will be an information asymmetry present, since the managers will have access to internal information that the owners do not have (Jensen & Meckling, 1976). Information asymmetry is a problem with both the capital structure and the ownership structure as can be seen above. To make sure that the management act in a way that is maximising the owners benefit there can be bonus plans. However, these bonus plans may also be an incentive for the management to report as good result as possible by managing the earnings.

Another variable that is believed to impact the reliability of fair value is the capital structure. The capital structure is the financing of the total capital. In other words it is the company's assets, liabilities, equity and lastly the hybrid securities (Brealy et al, 2011). In the real estate industry investment properties are likely to be manipulated as they make a large part of the balance sheet and a minor manipulation will lead to great difference in the capital structure (Muller, et al, 2011; Christensen et al, 2013). The debt-equity ratio will affect the company's value, and should therefore be as high as possible to maximise the total value of the company (Hallgren, 2002). The company can choose to finance its activities either externally or internally, and dependent of the choice the cost of capital and information asymmetry will be different (Brealy et al, 2011; Myers & Maljuf, 1984). When it comes to the real estate industry, studies have shown that the debt financing is chosen rather than internally generated cash flows, this is explained by the fact that investment property tend to require large amounts of capital and generate low cash flows (Brealy et al, 2011). This leads to the fact that the leverage tends to be higher in real estate companies than in other businesses (Morri & Cristanziani, 2009).

Based on the previous research on earnings management, ownership structure and capital structure we have formulated three hypotheses:

*H1: Bonus plans will affect the reliability of investment properties values.*

*H2: The ownership structure will affect the reliability of investment properties values.*

*H3: The capital structure will affect the reliability of investment properties values.*

The three hypotheses capture different aspects on the reliability of the fair value in investment property. Firstly, H1 is related to earnings management and how incentives may cause managers to influence the valuation to increase their expected outcome. H2 relates to how the ownership structure affects the value, as some of the firms have a concentrated ownership and others have a more dispersed ownership, where a concentrated ownership is assumed to be more involved in the valuation process. The last hypothesis, H3, captures the idea that poor finances may be an incentive to boost the value.

### **3. Methodology**

In the third chapter the course of action will be described and the decisions made along the way will be explained. The chapter starts by explaining the overall research design and the collection of data for the frame of reference. Then an explanation of the two studies, sample collection, data procedure and model specification is described as well as the decisions made for each study and how these decisions might affect the results.

#### **3.1 Research Design**

To meet the purpose, which was to investigate how reliable the fair value of investment property is in Swedish real estate companies, we have formulated the following research question(s):

*How reliable is the fair value of investment property in Swedish listed real estate companies? To what extent do the factors of capital structure, management incentives and ownership structure affect the value?*

To answer the research question, two methods were used. Firstly, the main approach was to perform a quantitative study in which data from annual reports was collected and statistical tests were performed. Secondly, a qualitative study is performed in order to verify and complement the first study by investigating the findings and interpretations from the first study. The focus is thereby on the first study, and then the second study was performed to increase the verifiability of the first study. The qualitative study was conducted by doing interviews with both the users and creators of financial information, which we have identified as analysts and creditors. This part was performed to dig deeper into the problem by attacking it from a practical way. The use of two methods is triangulation, where the phenomenon is attacked by different angles (Collis & Hussey, 2009). The advantage with triangulation is that it provides a stronger research design as one is able to confirm the data from two methods and thereby is the validity increased. However, disadvantages with triangulation concerns that the data may be biased based on the researcher's knowledge and beliefs and that the researchers may lack appropriate knowledge in the implication of the triangulation method (Ibid). To make the two methods valid, we have objectively and carefully analysed the findings from each method.

Moreover both primary and secondary data have been used in the research process. Secondary data has been used to gain understanding in the area and to develop and build a foundation for the frame of reference. Primary data has been collected for the quantitative tests and for the qualitative interviews with users of financial information.

### **3.2. Frame of Reference**

The material for the frame of reference was gathered from a great variety of sources. We have used University of Gothenburg's access to different search engines in order to find the right material. It is essential to choose a renewed source and to be selective when choosing search engines (Collis and Hussey, 2009). Consequently, the search engines of Scopus and Business Source Premier have been used as those sources provide a good foundation for research in accounting. Additionally, Google Scholar has been used in order to find some references from previous studies. Collis and Hussey (2009) state that the search is fairly broad in the beginning and it is thus essential to narrow the search down. In order to find relevant literature for the investigated area and to get the necessary theories, we used words such as "fair value" and got more than 7000 hits. Consequently, we added more words, such as "investment properties", IAS 40, "Capital structure", "ownership structure", "Agency theory" in order to narrow the possible hits down. By using different combination of those words, we got more relevant hits. Relevant articles and books were chosen and then scanned for applicable information.

When collecting and reading articles, we have made sure that they are peer reviewed and thus have the data been controlled by an independent researcher (Olsson & Sørensen, 2011). We have used as recent literature as possible since recent works increases the reliability and captures the timeframe of the study. However, some theoretical concepts that were found relevant and also were used in most studies were used in the thesis even though they were relatively old. When it comes to fair value and IAS 40, it was especially important to also use literature published after 2005 as IAS 40 and fair value became mandatory for public companies following IFRS that year.

### **3.3 Study 1 – Financial reports**

The first study was conducted by looking at financial information available in the annual reports of the companies investigated, and it is the main study in this thesis. The data gathered was then analysed by performing statistical tests, which makes the approach quantitative.

#### **3.3.1. Data collection**

To be able to perform our quantitative tests, we gathered necessary data from the annual reports and databases. We tried to use databases as much as possible when collecting the data as it is less time consuming compared to collecting the data manually from the annual reports, also the risk of error is decreased. We used the databases of Business Retriever and Bloomberg as those databases are well known and considered to be of high reliability. From Business Retriever, we downloaded the income statements and balance sheet for each company and year in a Microsoft Excel document. By that we could collect the data for total capital, equity, debt, EBIT, interest expense, interest income, financial income, current assets and current liabilities. Those figures were used in calculations of the different variables included in the capital structure, return on equity and return on assets. Via Bloomberg we accessed historical data for the stock prices and WACC. However when we could not access the necessary information in the databases, we used the annual reports. The data collection from the annual reports was time consuming as we

manually gathered the data and each company had different structures for their reports. From the annual reports we gathered data for:

- The selling price for investment properties that had been sold during the year, the underlying booked value for properties and the realized change in value.
- The unrealised value change and the opening balance of the investment property each year.
- The ownership structure, bonus plans and stockholdings for top management.
- Valuation method (fair value level 1, 2 or 3) and if the company just valued their real estate internally or hired an external valuator as well.
- If the companies' auditor belonged to one of the big four audit firms.

As we manually collected and interpreted the data from the annual reports is there room for error. In order to decrease the probability of error, the data has been gathered thoroughly and we therefore assume it to be correct. We used Microsoft Excel to gather all the data in the same place before the testing begun and the data was structured so that it would be easily analysed. When it comes to secondary analysis of already collected data in databases, Bryman and Bell (2007), states that the data lacks familiarity and control for the user. Bloomberg and Business Retriever are seen as databases with high quality and we assume that the data is correct, still we have controlled for extreme values in the datasets in order to make sure that they do not impact our results. Additionally the data was collected separately and may have been interpreted in different ways, however, to improve the reliability we have controlled and compared each other's data collection. After the data collection was done, we noticed that top management in each company had stockholdings and thus did we not consider the stockholdings in the statistical testing as it would not be possible to draw any conclusion from the results. Finally we also observed that none of the companies used the quoted prices valuation method (fair value level 1) and therefore we excluded this data from the statistical tests as well.

### **3.3.2. Sample selection**

This study was based on a total selection of all listed real estate companies on NASDAQ OMX Stockholm during the investigated time period. It is recommended to make a total selection of the whole sample in order to make generalizability possible (Collis & Hussey, 2009). It was achievable to make a total selection of the entire population as there are relatively few listed real estate companies on NASDAQ OMX Stockholm (NASDAQ, 2015). Choosing listed companies gave us the possibility to access qualitative data from the corporation's annual reports. The accounting standards ensure that the information from the companies is comparable. Additionally, the financial information in the reports are controlled and confirmed by certified public accountants, ensuring that the information mirrors a true and fair view.

It is also essential to limit the research to an area and time period (Bryman & Bell, 2007). The first criteria used for the study was that the listed companies directly or indirectly invest in real estate through ownership or development. However, businesses such as property funds, or other types of businesses that have operating properties, and are not primarily investigating in real

estate were excluded. Further, non-listed private and public utility companies were excluded from this study, primarily since there is a lack of public accessible data from non-listed companies. Moreover, private companies have the possibility to choose between accounting methods, as they are not enforced to follow IFRS or IAS. Concerning the time limit, this study was limited to the period between 2005 – 2013, as IAS 40 was introduced 2005 and 2013 was the last financial year where we could access annual reports.

Initially, we used DataStream to find and sort out relevant companies and discovered that 34 companies were listed as real estate companies with investment properties. However, after categorisation for listing date (2005 - 2013), the NASDAQ OMX Stockholm list and a pure investment property focus, we were down to 16 companies. Several real estate companies were listed on NASDAQ OMX Stockholm in 2013 but those companies are excluded from the study, as they do not provide information for a full fiscal year. The included companies differ in their size as some are listed on the OMX large cap, whereas other are listed on the medium and small cap. Consequently the total assets of the observed firms in 2013 were quite different as the total firm size range from 5 billion SEK to 35 billion SEK.

### **3.3.3. Variables**

There are different types of variables that can be used when you measure the connection between empirical observations, those are dependent, independent and control variables (Norusis, 2005). We are going to start by describing our dependent variables, since they are the foundation of our thesis, then we are moving on and describing the independent variables, which are the ones believed to affect the dependent ones. The last variables that are described are the control variables, to see if there are any other reasons for the dependent variables' movement.

#### **3.3.3.1 Dependent variables**

##### **1. Market price - Carried value**

We measure the reliability of the fair value method by looking at the difference between the selling price and the carrying value; this variable will be called *results from sales*. This is the same definition of the fair value reliability as Dietrich et al (2001) use in their study. The variable is operationalized by dividing the difference with the book value and thus gets a per cent difference, which makes the values comparable.

##### **2. Unrealised value changes / Total investment property**

The second variable used for measuring the reliability is the unrealised change of the fair value as a percentage of the total value of the investment property. This variable will be called *unrealised value*. The unrealised value changes are used in Bengtsson's (2005) study. Bengtsson (2005) states that the unrealised value changes are interesting as it displays if the accounting is subjective. Moreover, the second dependent variable is used as a complement to the first dependent variable in order to observe differences between the two. Even though by using the



second variable we could use all observations, since even if there is not any sales there are unrealised value changes, we will only look at the observations where there has occurred a sale. This is done due to the comparability aspect.

Variable	Coding	Previous research
Results from sales	(Selling price - book value) / Book value	Dietrich et al (2000)
Unrealised value	Unrealised fair value change / total value of investment property	Morri & Cristanziani (2009)

Table 3.1 Overview of dependent variables

### 3.3.3.2 Independent variables

- **Leverage**

As mentioned in the theoretical framework, the financing affects a company's ability to generate value. The second proposition of Miller and Modigliani states that a company should have a high debt to equity ratio in order to increase the value (Hallgren, 2002). However, the capital structure is also essential in a company's discussion with lenders and providers of financing. Financiers may have certain demands on the level of debt in order to provide capital to the company. Dietrich et al., 2001; Lee & Masulis, 2008; Nellessen & Zuelch, 2010 have in their studies of real estate valuation used the leverage ratio as a variable, as companies that are close to break a debt agreement tend to try to increase the reported income. The leverage ratio is measured by dividing the long-term debt with total equity.

- **Short-term solvency**

Controlling for risk is an important factor when improving the study's credibility (Nellessen & Zuelch, 2010). Part of a company's intrinsic risk is located in its ability to pay short-term debt as a low ability to pay its debt yields a higher risk. The business risk can be assessed through measuring the level of liquidity in a company. The risk is possible to measure through the ratio of short-term assets and short-term liabilities. The measure can be seen as a company's ability to solve short-term liabilities with assets such as cash and reserves and short-term investments. The short-term solvency should be at least 100 per cent, which means that the short-term debt could be paid immediately (Nellessen & Zuelch, 2010). A high ratio means that a great amount of resources could be used to solve short-term debt.

- **Interest coverage**

Fundamentally, the capital structure of a company consists of debt and equity. It is common that real estate companies are financed with a high level of debt, and naturally does the amount of debt have an impact on the company's results (Morri & Cristanziani, 2009). The interest coverage ratio displays a company's ability to pay interest rate on its debt. Hallgren (2002) used in his study of the optimal capital structure the interest coverage ratio to display the risk with a low solidity and high debt. The ratio is calculated by dividing earnings before interest and taxes (EBIT) with the interest expense. A ratio lower than 1 indicates that the company is not able to pay its interest expenses and a ratio lower than 1.5 can be questionable (Morri & Cristanziani, 2009). If a company struggles in paying their interest expense over a longer period may it be close to bankruptcy.

- **Ownership structure**

Demsetz and Lehn (1985) define a concentrated ownership as when the five largest shareholders in a company controls more than 50% of the voting rights. Moreover, Bjuggren et al. (2007) and Ganguli (2013) uses this as an expression of concentrated ownership as well, and thus will we use the same measure in this study. Companies in which the five largest owners have less than 50% of the voting rights are considered to have a diffused ownership.

- **Management incentives**

Authors like Landsman (2007), Healy et al. (1987) and Gaver and Gaver (1995) argue that if there are bonus plans for the management they would have incentives to manipulate the numbers. We operationalize the bonus plans as a dummy variable with a 1 if there is incentive/bonus plans available and a 0 if there is no bonus plans available.

Variable	Definition	Previous research
Capital structure	$\text{Leverage} = \frac{\text{Debt}}{\text{Equity}}$	Dietrich et al., (2000) Lee & Masulis, (2008) Nellessen & Zuelch, (2010)
	$\text{Short-term solvency} = \frac{\text{Current assets}}{\text{Current liabilities}}$	Nellessen & Zuelch, (2010)
	$\text{Interest coverage} = \frac{\text{EBIT}}{\text{Interest expense}}$	Hallgren (2002) Morri & Cristanzaiani (2009)
Ownership structure	Dummy variable: 5 biggest owners' votes; > 50 % = 1, < 50 % then = 0	Demsetz and Lehn (1985) Bjuggren et al. (2007) Ganguli (2013)
Management incentives	Dummy variable: Bonus plans = 1, No bonus plan = 0	Landsman, (2007) Healy et al. (1987) Gaver & Gaver (1995)

Table 3.2. Overview of independent variables

### 3.3.3.3 Control Variables

To make sure that other factors than the independent variables do not affect the reliability of the fair value, we have chosen to look at some control variables. The variables are all assumed to have an impact on the reliability of fair value. The variables that are chosen are based on what earlier studies have investigated when looking at the valuation of investment property.

- **Valuation method**

When it comes to the valuation of investment property, IAS 40 allows a couple of different methods, where every method has a different level of subjectivity. Pagourtzi, Assimakopoulos, Hatzichristos and French (2003) argue that the method used will affect the reliability of the fair value. In this report the methods are divided based on the valuation hierarchy under IFRS 13. The hierarchy states that preferably should assets be valued based on quoted prices on an active market, if that is not possible should observable prices on a market be used and lastly if that is not possible should some kind of cash flow method be used. In the end, the assumption is that the fair value will be affected of the method chosen to calculate the value. The valuation methods will be named level 1, level 2 and level 3 after the hierarchy in IFRS 13. The chosen method is

operationalized as a dummy variable with 1 if that is the chosen method and 0 if that is not the chosen method performing the tests.

- **Internal or external valuation**

Since the fair values biggest threat is the possible subjectivity, we have chosen to use the valuator as a control variable. It is assumed that an external valuator is less subjective and therefore the estimated value will be more reliable. This is supported by previous research by Dietrich et al. (2001) that found that the reliability of the value is affected by the valuator. This notion is further supported by Francis et al. (1999), Cotter & Richardson (2002), Landsman (2007), Jordan et al. (2013), Muller & Riedl (2002) and Barth & Clinch (1998) who all include valuator as a variable in their studies. We have operationalized the valuator as a dummy variable with a 0 if the valuation of the investment property is only performed internally and a 1 if the company has used an external valuator as well.

- **Auditing firm**

Since it is the auditor's job is to ensure that the information disclosed is of good quality, there is a relationship between the auditor and the accounting quality. In earlier studies on audit quality there is evidence that show that there is a positive correlation between the quality of the audit and the size of the auditor firm. This is explained by the belief that larger audit firms have a greater incentive to protect their reputation (for example Francis et al., 1999). The study by Dietrich et al (2001) looks at the relationship between the accuracy the value of investment property and the auditor. In their study they divided the auditor firms as either part of the big 6 or else it is a small on. However, over time the big six have become the big four, PWC, EY, Deloitte and KPMG. In our study we have divided the companies in two groups; those who use one of the big four companies (1) and those that do not (0).

- **Firm size**

The firm size can potentially have a large effect on the study's result; this is supported by previous research that investigates the reliability of the fair value method (for example DeFond & Jiambalvo, 1994; Lee & Masulis, 200; Nellesen & Zuelch, 2010). They have all used the company size as a control variable. There are different ways to measure the company size, total assets, turnover or the number of employees. We have chosen to look at the total assets; as we believe it is most affected by the fair value of investment property since it is an asset. To be able to compare the numbers in the quantitative test that we perform, we use the log firm size.

- **Return on Equity (ROE)**

The ROE measures the owners' return on invested equity in the company and is calculated by taking the net earnings after tax and divide it by the book value of equity (Margaritis & Psillaki, 2010). ROE is connected to the capital structure and Margaritis & Psillaki, 2010 founded that ROE increases with leverage. Bertmar and Molin (1977) found that the leverage ratio (debt-to-equity) have a negative correlation with ROE. Hence, by including the ROE ratio we can identify possible correlations between debt and equity in the sample.

- **Return on assets (ROA)**

As can be read out in the theoretical part, the incitements of earnings management are connected to a company’s economic performance. Since the fair value of assets will affect the (ROA), since  $ROA = \text{Net income} / \text{booked value of total assets}$ . ROA has also been used in previous studies when looking at the quality of the fair value (Christensen & Nikolaev, 2009) and also specifically on the reliability of the fair value (Nellessen & Zuelch, 2010).

- **Weighted Average Cost of Capital (WACC)**

WACC is a measure to calculate a company’s cost of financing and equals the lowest return the company can accept. If the return is lower than WACC the company will not be able to pay the creditors interest rates and the owners’ required return. To get WACC you first take the debt divided by the total capital multiplied with cost of debt and then follow the same procedure for the assets. The last step is to add the two values. According to Barth et al (1998), the fair values will be more volatile than historical cost and this will be reflected in the company’s WACC. Further research finds a correlation between WACC and the adoption of IAS and the accounting quality (Li, 2008; Easley & O’Hara, 2004).

- **Year**

To make sure that the value is not affected by anything outside of the companies’ control we have chosen to use “year” as a control variable. By doing this, we can see how the overall conjuncture, such as the financial crisis in 2008, affect the value. Companies might have used the fair value to show better results by boosting or decreasing the values under certain years. This is a broadly accepted assumption and there are several studies looking into it, for example Laux and Leuz (2010) and Jaggi et al. (2010). In the tests, the year we look at will be a 1 and the other years a 0.

Variable	Coding	Previous research
Valuation method	Dummy variable: If tested method = 1, If another = 0	Pagourtzi, et al. (2003)
External valuation	Dummy variable: Internal = 0, External = 1	Dietrich et al. (2000) Francis et al. (1999) Cotter & Richardson (2002) Landsman (2007) Jordan et al. (2013) Muller & Riedl (2002) Barth & Clinch (1998)
Auditing firm	Dummy variable: Big 4 = 1, Other = 0	Dietrich et al. (2000) Francis et al. (1999)
Firm size	Log total assets	DeFond & Jiambalvo (1994) Lee & Masulis (2008) Nellessen & Zuelch (2010)
ROE	$\frac{\text{Net earnings after tax}}{\text{book value of equity}}$	Bertmar and Molin (1977) Margaritis & Psillaki (2010)
ROA	$\frac{\text{Net income}}{\text{book value of total assets}}$	Nellessen & Zuelch (2010) Christensen & Nikolaev (2009)
WACC	$WACC = \frac{D}{D + E}K_d + \frac{E}{D + E}K_e$	Li (2008) Barth et al. (1998) Easley & O’Hara (2004)

Year	Dummy variable: Year n = 1, other years = 0	Laux & Leuz (2009, 2010) Jaggi et al. (2010)
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Table 3.3. Overview of the control variables

### 3.3.4. Model specification

Due to the fact that the number of variables compared to the number of observations was relatively high, we performed four regressions. For each regression one or several variables were added. The first two regressions focus on the relationship between the dependent and the independent variables and in the last two regressions control variables are added in order to see how other variables may affect the outcome. By performing several regressions we could see that the number of variables affected the outcome, and therefore one can question the numbers in regression 3 and 4.

Y: Dependent variable 1 (difference in the selling price and the carrying value) / Dependent variable 2 (difference in unrealised value gain and ingoing value on investment property)

$\alpha$ : Constant

$\beta_i$ : Coefficient for the independent variables

i: Company

t: Time

$\varepsilon$ : random (error term)

Number of variables: 13

#### 3.3.4.1 Regression 1

The first regression was performed to see how well the independent variables explained the dependent variables. Therefore in regression 1 the model below was used.

$$\text{Results from sales} = \alpha + \beta_1 \text{Leverage}_{i,t} + \beta_2 \text{Short-term solvency}_{i,t} + \beta_3 \text{Interest coverage}_{i,t} + \beta_4 \text{Bonus plan}_{i,t} + \varepsilon$$

$$\text{Unrealised value} = \alpha + \beta_1 \text{Leverage}_{i,t} + \beta_2 \text{Short-term solvency}_{i,t} + \beta_3 \text{Interest coverage}_{i,t} + \beta_4 \text{Bonus plan}_{i,t} + \varepsilon$$

#### 3.3.4.2. Regression 2

For the second regression, the aim was to test see if the relationships were affected by the ownership structure. Therefore two regressions were performed, one with concentrated ownership (dummy variable 1) and one with disperse ownership structure (dummy variable 0). The two regressions were then compared to see if there are any differences based on the structure. For regression 2 the following model was used:

$$\text{Results from sales}_{\text{Diffused}} = \alpha + \beta_1 \text{Leverage}_{i,t} + \beta_2 \text{Short-term solvency}_{i,t} + \beta_3 \text{Interest coverage}_{i,t} + \beta_4 \text{Bonus plan}_{i,t} + \varepsilon$$

$$\text{Results from sales}_{\text{concentrated}} = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus plan}_{i,t} + \varepsilon$$

$$\text{Unrealised value}_{\text{Diffused}} = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus plan}_{i,t} + \varepsilon$$

$$\text{Unrealised value}_{\text{concentrated}} = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus plan}_{i,t} + \varepsilon$$

### 3.3.4.3. Regression 3

In the third regression, we chose to focus on the relationship between the dependent variables and the variable year. Therefore the model for regression 3 was:

$$\text{Results from sales} = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus program}_{i,t} + \beta 5 \text{ Year}_{i,t} + \varepsilon$$

$$\text{Unrealised value} = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus program}_{i,t} + \beta 5 \text{ Year}_{i,t} + \varepsilon$$

### 3.3.4.4. Regression 4

In the last regression all control variables are added to see if there are other factors than the independent ones that can explain the variance in the dependent variables. Therefore, the model for regression 4 was:

$$\text{Results from sales} = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus plan}_{i,t} + \beta 5 \text{ Year}_{i,t} + \beta 6 \text{ Valuation Method}_{i,t} + \beta 7 \text{ External valuation}_{i,t} + \beta 8 \text{ Big four}_{i,t} + \beta 9 \text{ Firm Size}_{i,t} + \beta 10 \text{ ROE}_{i,t} + \beta 11 \text{ ROA}_{i,t} + \beta 12 \text{ WACC}_{i,t} + \varepsilon$$

$$\text{Unrealised value} = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus plan}_{i,t} + \beta 5 \text{ Year}_{i,t} + \beta 6 \text{ Valuation Method}_{i,t} + \beta 7 \text{ External valuation}_{i,t} + \beta 8 \text{ Big four}_{i,t} + \beta 9 \text{ Firm Size}_{i,t} + \beta 10 \text{ ROE}_{i,t} + \beta 11 \text{ ROA}_{i,t} + \beta 12 \text{ WACC}_{i,t} + \varepsilon$$

### 3.3.5 Data analysis procedures

In order to analyse the gathered data, we used the statistical program IBM SPSS 20. The tests that have been conducted in IBM SPSS are descriptive statistics, histograms, Pearson Correlation and linear regression analyses. We started by doing descriptive statistics of the dependent- and independent variables to get an overview of the spread. The descriptive table provide us with information about the minimum and maximum values, standard deviation, mean and frequencies. By identifying the minimum and maximum we are able to see outliers, or extreme values. This method is supported by Norusis (2005), who explain that before moving on to more advanced analysis, data should be displayed and visually examined by computing statistics of “typical” values, or the central tendencies. By that one is able identify how the data is spread around these values (ibid).

As the minimum and maximum measures in the descriptive statistics showed some values far away from the mean we used histograms to clearly display those values. The histograms displayed data that were far from the average distribution and those numbers gave an indication that there were extreme values in the data set. Bryman and Bell (2007) explain that the advantage of removing outliers is that you get clearer relationships between the variables. However a disadvantage is that the findings may be misleading as you manipulate the data (Ibid). After a careful examination of the outliers and a control for typing or calculation errors we noted that the extreme values had an impact on the results and we therefore chose to remove them. By creating an interval, which was two standard deviations from the mean, we identified extreme values in the variables results from sales, short-term solvency, interest coverage and ROA. All values that were larger than two standard deviations were classified as outliers and consequently removed and thus were all regressions in the thesis performed without the outliers. Before moving on to the advanced analyses, we also performed a Pearson Correlation to see how the relationship between the different variables was. The Pearson test allowed us to see the correlation between two variables. The results range from a negative correlation of -1 to a positive correlation of +1. This gave us an idea what we could expect from the regression, and also showed us if there was any strong correlations among the explanatory variables that may affect the dependent ones (Collis & Hussey, 2009).

The next step was to perform a multiple regression analysis to investigate the relationship between the two dependent variables and the independent variables. Multiple linear regression analysis is used to test a hypothesis, by looking at the relationship between a dependent variable and two or more independent variables (Norusis, 2005). The model includes measures such as R-square, significance and the coefficients. The R-square displays how much of the model can be explained by the identified variables. R-square can have a value between 0 to 1 and the higher value of R-square, the more can the dependent variable be explained by the independent variables (Bryman & Bell, 2007). The regression model also includes measures of significance and by looking at the significance are we able to see if our models are significant for the model.

As mentioned above, we choose to do a number of different regressions to make sure that the number of variables was not an issue, since the proportion of variables compared to observations was high. Harrel (2001) recommends to have 10-20 observations per variable and with 144 possible observations (9 years \* 16 companies) our sample was on the edge. We started by doing a regression with all the independent variables except the ownership structure, which is called **regression 1**. The ownership structure was left out, as we wanted to perform a separate regression analysis on diffused ownership and one with a concentrated ownership structure. This regression was performed next, and it is called **regression 2**. After the two regressions with the independent variables was done, we added the control variable “years” to see if the dependent variables could be explained by the year, or the macroeconomic circumstances. This regression is named **regression 3**. Finally, in the last regression, named **regression 4**, we added all control variables. To make sure that the number of variables did not affect the results in the last two regressions,

since the proportion was high as mentioned before, they were compared to the earlier regressions. Since our fluctuation was high, one should keep in mind the numbers in regression 3 and 4 might be affected by the mathematical limitation.

### 3.4 Study 2 - Interviews

The second study was performed to see if the results from the first study could be verified from a practical point of view. Therefore, after the quantitative testing was performed, the results were compared to qualitative data, which we gathered through interviews. This makes the second study a qualitative approach.

#### 3.4.1. Data collection

Since the thesis aims at investigating the reliability of fair value accounting among real estate firms, banks and external appraisers were interviewed. Banks were chosen as they use the financial information from the real estate companies to provide the firms with capital. External appraisers were chosen as they value properties for the real estate companies and in the end their values are seen as being more reliable than the internal valuations, thus they have a great impact on the reliability. The companies were chosen by availability, where we called different banks and valuation firms that we felt would have the knowledge in the subject and that had an office in Gothenburg, since we wanted to do face-to-face interviews. However, there was one interview over the phone since the most suitable person for our study was located in Stockholm. In total four interviews were held, two with banks and two with external appraisers, see interview table below for additional information about the interviews. After we established contact with the companies and explained our purpose the firms were asked to select the most appropriate representatives, in order for us to get the most out of the interviews.

Company	Respondent	Position	Type	Duration	Date
SEB	J. Carlsson	Client Executive Manager	Face-to-Face	40 Min	2015/04/22
NAI Svefa	V. Skult	Analyst	Face-to-Face	40 Min	2015/04/23
Newsec	A. Eckermann	Analyst	Face-to-Face	45 Min	2015/04/24
Danske Bank	F. Linderborg	Head of Property Finance	Telephone	35 Min	2015/04/24

Table 3.4. Overview of interviewees

Additionally, before the interviews were conducted, the questions were developed and sent to the respondents. Two types of questionnaires were developed, one for banks and one for external appraisers. The questions were open and semi-structured, in order for the conversation to flow smoothly and the respondent to speak openly about the subject. The disadvantage with this approach was that the interviewee could have gone away from the topic, however, the benefit of not missing any information by sticking to the questions outweighs the disadvantage (Collis and Hussey, 2009). By sending the questions in advance the answers could have been affected, since they would not be as spontaneous as if we had not sent the questions. On the other hand, the interviewees had time to really think through the subject and give more comprehensive answers.



As can be seen in table 3.4., three of the interviews were conducted face-to-face and one was over the phone. The disadvantage with the phone interview was that we missed the expressions and body language of the interviewee, however we believed that his knowledge was more important than being able to read the body language, especially since our subject is not sensitive and the interviewee did not have any reason to hide information. The face-to-face interviews were performed at the interviewees' offices and conducted in Swedish, as that is the mother tongue for the respondents and interviewers and thus the risk of misunderstandings decreased. To make sure that nothing important was missed, the interviews were recorded and subsequently transcribed.

### **3.4.2. Reliability and Validity**

An academic study should consist of high validity and high reliability (Bryman & Bell, 2009). Validity refers to that the subject under study should measure what it is ought to measure. High validity is achieved when the method and research questions are connected to each other, i.e. the method is appropriate for the subject under study (Ibid). Validity is also high when the study is based on a chain of evidence (Yin, 2009). The qualitative study is based on interviews with professionals that are developing and using the financial information from listed real estate companies, thus the respondents are seen to have great knowledge in the area. Before the interviews, we also made sure that the interview questions were connected to the purpose and research question. Additionally, as we interviewed several respondents we were able to capture different aspects and by that also a chain of evidence.

Reliability concerns the collection of the data. An academic study with high reliability could, under similar circumstances, be replicated again with the same results (Bryman & Bell, 2009). In order to achieve high reliability, the qualitative interviews were documented carefully and the companies were asked to choose the most suitable respondents in order to get the most out of the interviews. During the face-to-face interviews, we also had the opportunity to interpret body language and other factors that may affect the communication. Additionally, we also sent the transcribed interviews to the respondents and asked them to comment if we had not interpreted their answers correctly.

### **3.5 Summary**

Three main parts built up this study, a frame of reference and two studies. The frame of reference is mainly consisting of previous research, which is the base for the development of the hypotheses and study one. In the first and main study statistical tests were performed to find support for hypotheses. Regression analysis was executed to control the relationship between the dependent and explanatory variables. After the first study, a second study was performed, to qualitatively verify the results from the first study. Consequently the second study was not as extensive as the first one, as it was applied to add a practical aspect to the first study's results. Since the first study is just limited to Sweden and a restricted time period, the sample is small and might affect the results from the statistical tests. The number of variables is high compared to the number of observations and thus was several regression tests with different variables performed

to see if there was a significant difference when more variables were included. Another fact that affects the data is that some variables were not possible to test like shareholdings of managers since all managers held shares in the company. Additionally, the first study lacks significance for many variables in the first two regression test, which may restrict us from the possibility to draw conclusions for relationships other than for the our sample. However, this is not an important issue due to the fact that we have chosen to include the whole population in this study and do not need to draw conclusions for others than our sample. Moreover the interviewees in the second study may have interpreted the questions incorrect and this may affect the reliability. Still the combination of the two methods increases the validity as the subject is attacked from two angles and thus confirmed from both a numerical and practical perspective. Finally, as the study is restricted to one area, it is not possible to draw general conclusions or predict how it is in other areas.

## **4. Study 1 – Financial reports**

The first study is conducted by performing different statistical tests on the gathered data, it starts with descriptive statistics, and then we move on to a correlation matrix before four different regression analyses are performed. As can be seen in appendix 1, we have identified 16 companies and out of the 144 investigated annual reports were 117 sales identified. The number of observations is dependent on the listing date, as some companies were listed after 2005 or unlisted before 2013, and the business strategies as some firms seldom sell their investment property. Even though the unrealised value changes are displayed every year we will just account it for each sale observation in order to make comparable analyses.

### **4.1 Descriptive statistics - Dependent variables**

By looking at the mean of the results from sales (Appendix 2), we can see that the selling price is on average 13.6 per cent higher than the value in the annual reports. By looking at the maximum and minimum values, we can observe that they range from an overvaluation of 36 per cent to an undervaluation of 427 per cent. Consequently, we can assume that the observations include some extreme values, which we will come back to below. The unrealised value has a mean of 1.8 per cent of the total carrying value of investment property. Moreover, the unrealised value changes are less volatile than the results from sales as observed changes range from -10 per cent to 18 per cent. To see the spread from the sample mean, standard deviation can be used, where the distance from the mean is calculated. If the value is zero or close to zero the data is close to the mean and the further from zero the bigger the spread (Harrel, 2001). The results from sales have a standard deviation of 0.347, which shows that there is some variation in the numbers but it is not that large. This indicates that the difference between the results from sales are fairly centred, and most companies get similar per cent result when selling their investment property. When it comes to the unrealised value, the standard deviation is 0.21, which shows that the data is quite close to the mean.

### **4.2. Descriptive for independent variables**

The independent variables leverage, short-term solvency and interest coverage, show in their descriptive statistics (appendix 2) a mean range from 0.7 to 6.2. The largest mean is interest coverage, which displays the company's possibility to pay their interest on debt. Since the mean is 6.237, the company's overall have a good position to pay the interests, however by looking at the maximum (221.56) it could be questionable due to the fact that the extreme value increases the mean. Furthermore, the minimum is low (-0.31) since values lower than 1 indicates that the company is not able to pay the interest. The lowest mean is the short-term solvency, with a value of 0.702, which is noisome in the long run, since it should be at least 1 in order for the short-term debt to be paid immediately. The low value indicates that real estate companies do not have a lot of cash and reserves. By looking at the range (0.01-9.6) we can also see that the maximum value is high, which can mean that the average would be smaller without the outliers. Therefore it is important to also look at the leverage, to see if the total debt-to-equity ratio is better. The leverage mean shows that the companies have 2.66 times as much debt to the amount of equity.

By looking at these different measures of capital, we can observe that real estate companies tend to have more debt than equity but the interest coverage ratio indicates that the firms do not have any issues on paying their debt. The other independent variables, ownership structure and bonus plans, do not have any central tendencies since they are dummy variables and consequently there are only two options. Instead focus will be on the frequencies of the chosen options (Harrel, 2001). Looking at the ownership structure it is evenly distributed, where 59 per cent have a concentrated ownership structure and 41 per cent have a dispersed structure. The bonus plan variable also shows a similar difference as 60.7 per cent of the observations have a bonus plans and 39.3 per cent do not have any bonus plans.

### **4.3. Correlation Analysis**

It is essential to test correlations between variables before performing a regression model. Harrel (2001) explain that high correlation between explanatory variables leads to multicollinearity. Multicollinearity decreases the explanatory power and by that it may be difficult to separate the potential effect on the dependent variables from the explanatory variables that have a high correlation. Consequently explanatory variables with high correlation obstruct the results in a regression. The rule of thumb for a high correlation is usually a correlation above 0.65 (Harrel, 2001). As displayed in the correlation matrix (appendix 3), there is no collinearity above 0.65 among the independent and control variables and thus can we keep all variables in the study.

However one can observe some interesting correlations with high (0.05 - 0.1) significance in the table. The significance tells how certain one can be that there is a correlation between the variables (Norusis, 2005). Thus the high significance in the matrix tells us that we can be 90 - 95 per cent certain that there is a correlation between the variables. Firstly the dependent variable, result from sales, have a negative correlation with external valuation. Hence, decreasing external valuations increases the result from sales. Moreover the unrealised value has a negative correlation with external valuation and leverage as well. This indicates that when debt increases, value changes will decrease. One can also observe strong positive correlations with ROA, ROE and WACC with the unrealised value variable. ROA and ROE naturally follows the unrealised value change as higher returns on the properties yields good returns on the unrealised values. The relation with WACC on the other hand implicate that a high cost of capital yields positive unrealised property values. Additionally the BIG four variable is positively correlated with the unrealised value. Hence, company's using one of the big four audit firms may display positive unrealised values to a greater extent than firms not using them. Finally, the year variables displayed positive correlations for 2005 – 2007 with the unrealised values and quite expectably negative correlations for 2008 – 2009. Thus, the unrealised values followed the conjuncture to a great extent. The correlations with the dependent variables will be further digested in the regressions below.

### **4.4. Multiple regression analysis**

As observed in the descriptive statistics above, the investment properties are on average sold at 13.6 per cent above the booked value and the unrealised value is on average 1.8 per cent of the

total invested property. To dig deeper into the differences and what may cause the variance, several multiple regression analyses are performed. In Regression 1 only the independent variables, less ownership structure, are tested and in regression 2 the ownership structure is included in order to see how the owners affect the values. In regression 3 and Regression 4 we test the control variables to see how much they affect the results from sales and the unrealised values. The identified outliers were removed before the regression was performed.

#### 4.4.1 Relationship with the independent variables

The relationship between the two dependent variables, results from sales and unrealised value, and the independent variables for capital structure and management incentives can be written as:

$$Y = \alpha + \beta1 \text{Leverage}_{i,t} + \beta2 \text{Short-term solvency}_{i,t} + \beta3 \text{Interest coverage}_{i,t} + \beta4 \text{Bonus plan}_{i,t} + \varepsilon$$

When performing a regression analysis, one of the first things to check is if the model fits, which is done by checking the R-square. In the model summary table the independents' explanatory power is shown, in other words how much of the variation in the independent variable can explain the variation in the dependent variable (Norusis, 2005).

Variable	Regression 1
Results from sales	0.006
Unrealised value	0.189

Table 4.1. Model summary for the dependent variables, regression 1, n=116

In our regression the R2 for the results from sales is 0.6 per cent and in unrealised value it is 18.9 per cent. By looking at these number we can see that if one of the independent variable changes and all other stay the same the dependent variables will increase with 0.6 per cent and respectively 18.9 per cent. This indicates that the independent variables better explain the movement in the unrealised values. According to Norusis (2005) a number that is close to 0 means that the independent variables are not linearly related to the dependent one.

Regression 1	Results from sales*		Unrealised value**	
	B	Sig.	B	Sig.
Constant	108.315	0.000	-0.146	0.928
Leverage	0.837	0.667	-0.493	0.386
Short-Term Solvency	1.273	0.607	1.018	0.159
Interest Coverage	0.222	0.731	0.813	0.000
Bonus Plan	-0.834	0.750	0.152	0.842

p<0.05,\*R<sup>2</sup>=0.6%, \*\*R<sup>2</sup>= 18.9%

Table 4.2. Regression with independent variables, n=116.

In the coefficients table two important numbers are the B-value and the significance. The B-value explains the relationship between the dependent variable and every variable separate and the significance tells us how significant the relationship is. For example, a significance level of 0.05 means that the relationship is a certain way with 95 per cent certainty, and when a value is

significant, the samples relationship identified can be applied to the population (Norusis, 2005). As can be seen in table 4.2., for the results from sales there are no numbers that are significant, therefore we cannot be use the numbers to explain for a larger population. However, the coefficients in table 4.2., show that the results from sales have a positive relationship with all independent variables except bonus plans, in other words, an increase in those variables will lead to an increase in the results from sales. Bonus plans are the only independent variable that are have a negative correlation, so when there is a bonus plan the results from sales will on average be lower. Looking at the unrealised value variable instead we can observe that also here every variable except one have a positive relationship. The one that have a negative relationship is leverage, thus when the leverage increases the unrealised value decreases. If there is an increase in any of the other independent variables the unrealised value will increase. By looking at the significance levels we can see that only the interest coverage is significant for this model. Consequently, the interest coverage variable is the only variable that shows a certain relationship.

#### 4.4.2. Ownership structure

The second relationship we have tested is ownership structure and its effect on the dependent variables. We have divided the regression in diffused and concentrated ownership and tested the relations with the independent variables again as the models below show:

$$Y_{Diffused} = \alpha + \beta 1 Leverage_{i,t} + \beta 2 Short-term\ solvency_{i,t} + \beta 3 Interest\ coverage_{i,t} + \beta 4 Bonus\ plan_{i,t} + \varepsilon$$

$$Y_{concentrated} = \alpha + \beta 1 Leverage_{i,t} + \beta 2 Short-term\ solvency_{i,t} + \beta 3 Interest\ coverage_{i,t} + \beta 4 Bonus\ plan_{i,t} + \varepsilon$$

Variable	R <sup>2</sup> Concentrated	R <sup>2</sup> Diffused
Results from sale	0.047	0.097
Unrealised Value	0.245	0.257

Table 4.3. Model summary regression 2, ownership structure

The explanatory power for the concentrated ownership structure is 4.7 per cent under the results from sales and 24.5 per cent for the unrealised value. For the disperse ownership structure the r-squared is similar, 9.7 per cent for the results from sales and 25.7 per cent for the unrealised value. Thus, the explanatory power increased when the ownership variable was included in the regression model. Consequently one can assume that the ownership structure affects the reliability. This also means that if one of the variables increases then the results from sales will increase with less than 10 per cent and the unrealised value with approximately 25 per cent.

Regression 2	Results from sales				Unrealised Value			
	Concentrated*		Diffused**		Concentrated***		Diffused****	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.
Constant	104.076	0.000	119.315	0.000	0.883	0.649	-2.124	0.500
Leverage	1.677	0.545	-1.235	0.649	-0.822	0.250	0.081	0.935
Short-Term Solvency	5.092	0.151	-5.415	0.098	-0.261	0.772	3.192	0.010
Interest Coverage	0.437	0.609	-0.490	0.629	0.788	0.001	0.931	0.017
Bonus Plan	-0.557	0.887	-3.418	0.366	0.461	0.647	-0.115	0.934

p<0.05, \*R<sup>2</sup>=4.7, \*\*R<sup>2</sup>= 9.7%, \*\*\*R<sup>2</sup>= 24.5%, \*\*\*\*R<sup>2</sup>= 25.7%

Table 4.4. Regression 2 with ownership structure, where concentrated n=68 & dispersed n=48.

When comparing the two different ownership structures we can see that they have opposite impact on the results from sales. All variables except bonus plans have a positive relationship when the ownership is concentrated and a negative correlation when the ownership is dispersed. Hence with a concentrated ownership the results from sales will increase when all variables except bonus plan increase. If the ownership is dispersed on the other hand, the results from sales will decrease when there is an increase in the variables, as all the independent variables have a negative relationship under a dispersed ownership structure. In those cases with dispersed ownership structure, the companies with bonus plans will have lower results from sales. However, since none of the values are significant, we cannot be certain which size the relationship will be.

For the unrealised value, we can see that with a concentrated ownership, leverage and short-term solvency have a negative relationship, while interest coverage and bonus plan have a positive relationship. Thus if the first two increases then the unrealised value will be lower and concerning the second two, the relation is opposite. An increase in interest coverage will lead to an increase in the unrealised value. When there is a bonus plan the unrealised value will on average higher than when there is no bonus plan. For the concentrated numbers, the only value that is significant is the interest coverage, so when it increases with one there will be an increase in the unrealised value of 0.788 per cent. With a dispersed ownership structure the capital structure will have a positive relationship, and therefore an increase will lead to a higher unrealised value. The only negative relationship is bonus plan, so when there is a bonus plan the unrealised value will be on an average lower. Looking at table 4.4., the only two values that are of significance are short-term solvency and the interest coverage. Especially interesting is that if short-term solvency increases by one, then the unrealised values will increase by 3.192 per cent.

#### 4.4.3. Control variables

To make sure that the dependent variables are not affected by other factors than the independent variables, the control variables are added. First the relationship between the variances in results from sales and unrealised value with the control variable year will be tested in regression 3, where the model tested is:

$$Y = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus plan}_{i,t} + \beta 5 \text{ Year}_{i,t} + \varepsilon$$

Secondly, all control variables are added in regression 4, thereby the model is:

$$Y = \alpha + \beta 1 \text{ Leverage}_{i,t} + \beta 2 \text{ Short-term solvency}_{i,t} + \beta 3 \text{ Interest coverage}_{i,t} + \beta 4 \text{ Bonus plan}_{i,t} + \beta 5 \text{ Year}_{i,t} + \beta 6 \text{ Valuation method}_{i,t} + \beta 7 \text{ External valuation}_{i,t} + \beta 8 \text{ Big four}_{i,t} + \beta 9 \text{ Firm size}_{i,t} + \beta 10 \text{ ROE}_{i,t} + \beta 11 \text{ ROA}_{i,t} + \beta 12 \text{ WACC}_{i,t} + \varepsilon$$

Variable	R <sup>2</sup> Regression 3	R <sup>2</sup> Regression 4
Results from sales	0.024	0.164
Unrealised value	0.624	0.836

Table 4.5. Model summary table control variables, n= 116

The table above demonstrates that the independent variables explanatory power (R<sup>2</sup>) for the results from sale when controlling for year is 2.4 per cent, and when adding the rest of the control variables is 18.5 per cent. Thus is the number of variables affecting the explanatory power and naturally are more variables than the independent ones influencing the selling price. For the unrealised value, the R<sup>2</sup> is 62.4 per cent when adding the years as a control variable and 83.9 per cent when adding all the values in the regression. By looking at these numbers, the unrealised value is still affected by the variables to a greater extent. What can also be seen is that the unrealised value is more affected to variable year, while the result from sales' variation is less explained by the variables. Regression model 4, with all variables displays in both cases that the variables explain the variance quite well, especially the unrealised value. It is however essential to keep in mind that the number of variables in this regression is high compared to the number of observations and thus can one question the reliability of the model.

Regression 3	Results from sales		Unrealised value	
	B	Sig.	B	Sig.
Constant	102.466	0.000	-6.388	0.000
Leverage	1.579	0.456	0.544	0.201
Short-Term Solvency	1.447	0.590	-0.029	0.956
Interest Coverage	0.258	0.726	0.377	0.012
Bonus Plan	-0.689	0.802	-0.221	0.689
2005	<b>4.063</b>	<b>0.519</b>	<b>8.848</b>	<b>0.000</b>
2006	<b>2.578</b>	<b>0.676</b>	<b>10.157</b>	<b>0.000</b>
2007	<b>4.354</b>	<b>0.448</b>	<b>9.382</b>	<b>0.000</b>
2009	<b>3.541</b>	<b>0.519</b>	<b>3.727</b>	<b>0.001</b>
2010	<b>4.208</b>	<b>0.450</b>	<b>7.982</b>	<b>0.000</b>
2011	<b>5.591</b>	<b>0.301</b>	<b>7.129</b>	<b>0.000</b>
2012	<b>5.999</b>	<b>0.276</b>	<b>6.169</b>	<b>0.000</b>
2013	<b>5.207</b>	<b>0.343</b>	<b>5.436</b>	<b>0.000</b>

p>0.05, \*R<sup>2</sup>=2.4%, \*\*R<sup>2</sup>= 62.4%

Table 4.6. Regression 3, with year as control variable, n=116



By adding year as a control variable we are checking if there are any effects of year-specific occurrences that can explain the changes in the dependent variables. As can be seen in regression 4.6., the results from sale show a positive relationship with year. However since none of the investigated years have a desirable significance, we cannot be certain on how strong the relationship is. Interestingly the year that shows the highest relationship is 2012, which means that this year the results from sales are the greatest of all observed years. In the regression with unrealised values all years displays a positive relationship and a good significance. The year standing out when it comes to unrealised value is 2009 where the relationship is lower than the other years, so this year companies chose not to increase the value of their investment property as much as the other years. The significance levels for the unrealised values show that they are significant, with the highest significance level of 0.01 per cent. Looking at these numbers it could be assumed that the financial crisis affected the numbers, since during it the company's value increase was significantly lower than other years. This can be connected to the high results from sales in 2010, which can be a result from the companies being prudent in their valuation during the crisis, so when the conjuncture changed the investment property was fairly undervalued. Consequently, the regression displays that the conjuncture will affect the unrealised value more than the results from sales.

<b>Regression 4</b>	<b>Results from sales*</b>		<b>Unrealised value**</b>	
	<b>B</b>	<b>Sig.</b>	<b>B</b>	<b>Sig.</b>
Constant	139.243	0.001	-9.278	0.101
Leverage	3.338	0.169	0.908	0.009
Short-Term Solvency	4.793	0.129	0.235	0.598
Interest Coverage	0.176	0.823	0.390	0.001
Bonus Plan	-0.941	0.736	0.290	0.466
2005	1.213	0.842	-0.676	0.435
2006	-2.123	0.724	0.892	0.298
2007	-4.170	0.456	-0.194	0.807
2008	-14.580	0.077	-2.733	0.021
2009	5.593	0.394	-2.448	0.010
2011	0.037	0.996	0.615	0.556
2012	-0.159	0.983	-0.585	0.585
2013	-1.288	0.852	-1.772	0.073
Level 2	<b>-2.369</b>	<b>0.615</b>	<b>-0.143</b>	<b>0.831</b>
External valuation	<b>-13.664</b>	<b>0.006</b>	<b>-2.178</b>	<b>0.002</b>
Big 4	<b>2.973</b>	<b>0.529</b>	<b>2.096</b>	<b>0.002</b>
Firm size	<b>-1.132</b>	<b>0.636</b>	<b>0.345</b>	<b>0.312</b>
ROA	<b>-1.075</b>	<b>0.018</b>	<b>0.210</b>	<b>0.001</b>
ROE	<b>-0.051</b>	<b>0.754</b>	<b>0.153</b>	<b>0.000</b>
WACC	<b>0.458</b>	<b>0.816</b>	<b>-0.081</b>	<b>0.771</b>

p<0.05, \*R<sup>2</sup>=16.4%, \*\*R<sup>2</sup>= 83.6%

Table 4.7. Regression 4, with all control variables, n=116

In the fourth regression model, all control variables were added to check if there is a relationship between them and the two dependent variables. The model displayed that in the results from sales there are only two significant variables, external valuation and ROA. With external valuation the results from sales are on average 13.664 per cent lower and this is the variable with the strongest relationship. However, it is essential to note that most companies use external valuers and one

should thus be aware of making too strong assumptions from this variable. If ROA increases on the other hand then the profits from sales will decrease by 1.075 per cent. The auditor and WACC are the ones that have a positive relationship with the results from sale. When WACC increases, all other variables constant, the results from sales will increase and when the auditor works for a big four company the results from sales will be on average higher. The rest of the variables have a negative relationship with the results from sales, and if they increase then the results from sales will decrease or be lower on average. Due to the fact that the values, except ROA and external valuation are not significant, we cannot determine how strong the relationships are. Additionally, all of the independent variables showed stronger effects on the results from sales when the control variables were added to the model.

The unrealised value has a positive relationship with firm size, auditor, ROA and ROE, thereby when one of those, besides auditor, increases the unrealised value will increase. It also means that the value on average will be higher with an auditor that works for one of the big four audit firms. The negative relationships that will lead to a decrease in the unrealised value are WACC and external valuation. Thus, increasing cost of capital leads to lower unrealised values and if the companies do not use an external valuator the unrealised value is increased. The coefficients that are especially interesting when it comes to the unrealised value are the auditor, external valuation, ROA and ROE, since they are significant. If the auditor is from a big four firm then the unrealised value will be 2.096 per cent higher and with an external valuation the unrealised value will on average be lower by 2.178 per cent than with an internal valuation. An increase in ROA will lead to an increase in the unrealised value by 0.210 per cent and in ROE the increase will lead to a 0.153 per cent increase in unrealised values.

## **4.5 Summary**

In this section we have performed statistical tests to see what we could observe in the collected data. What could be seen from the descriptive statistics is that there is a difference between the book value and the selling price of investment property, where the mean of the results from sales was 13.6 per cent. The spread is however not large, so most companies get the same per cent results of sales. The unrealised changes are not a large per cent of the total book value of investment property, the mean is 1.8 per cent and that the spread for the unrealised value is even smaller, which means that the data is close to the mean. Looking at the descriptive statistics for the independent variables it is clear the real estate companies tend to favour a debt financed capital structure. The interest coverage ratio gives no indication that the companies will not be able to pay the debt and thereby the financing is sustainable. Furthermore we can see that the sample is evenly divided when it comes to ownership structure and bonus plans. We then moved on to perform correlation test to see if there were any correlations that could affect the regression and we found that there were no significant correlations, that might affect our regressions and therefore no variables were removed.

For the regression models we observed some interesting relationships. Firstly, the  $R^2$  in Regression 1 is low for the results from sales with only 0.6 per cent explanation, which can be connected to the fact that no values for this variable are of significance. Consequently one can assume that there are more factors that explain the result from sales than the chosen independent variables. An interesting observation is however that there is a positive relationship between all variables except bonus plans. For the unrealised value, the  $R^2$  is higher with 18.6 per cent, and in this regression the interest coverage is of significance. Also here are the relationships positive for all variables except one, which is leverage. In Regression 2, where focus is on ownership structure it is clear that there are differences between the ownership structures, and they mostly have opposite relationships. It is also evident that the ownership structure impacts the valuation as explanatory power increased. Moving on to the third regression where year was added as variable, it is clear that there are strong relationships with the variances in both results from sales and unrealised values. One interesting coefficient is for the year 2009 when both the results from sales and unrealised values are lower than most other years. Furthermore the coefficients in unrealised values are significant. In the last regression (4), the explanatory power is higher than before, with 18.5 per cent for the results from sales and 83.9 per cent for the unrealised values. It is clear that the performer of the valuation is significant for both the results from sales and unrealised value in regression 4, furthermore for the unrealised value the auditor is significant and for the results from sales ROA. Thus what is clear from the different regressions is that the independent variables of capital structure, ownership structure and management incentives are not enough to explain the variances of the results from sales and the unrealised values. Other factors like valuator, year or the auditor need consideration as well.

## 5. Study 2

For the second study, we have interviewed four professionals; two bank employees that work towards the real estate industry and two external investment property appraisers. These two professions have been chosen to represent the practice, as users and creators of financial information. The banks and external appraisers will be presented separately.

### 5.1 Banks

Company	About the company	Respondent
<b>Danske Bank</b>	Danske Bank is one of the largest financial institutions in the Nordics and is currently ranked as Sweden's fifth largest bank with operations in retail, corporate markets and corporates & institutions. Large Real Estate is the department in Sweden that provides capital to real estate firms with at least one billion in debt (Danske Bank, 2015).	Fredrik Linderborg has more than 20 years of experiences from the real estate business and has been deputy head of the large real estate department since 2006. He is daily working with the largest real estate firms in Sweden.
<b>SEB</b>	SEB is one of the largest retail and merchant banks in Sweden. The bank has operations in the whole Nordic and has a keen focus on being a business bank. Under the bank's merchant banking is the large real estate finance department that provides capital to real estate firms with at least one billion in market value (SEB, 2015).	Jerry Carlsson has been working in the SEB for 40 years and in the large real estate department since 1995. As a client executive manager for the Gothenburg area he has contacts with the largest listed and non-listed companies in western Sweden.

Table 5.1. Overview of the banks and the respondents

#### 5.1.1. Reliability

Overall both banks relies on the information provided by the real estate firms as most lenders are present clients, or has “made a name” in the real estate business. Since the clients continuously provide annual reports, quarterly reports, internal- and external valuations are the banks getting the latest financial information from them and can use this information in the crediting process. Carlsson points out that SEB have a property valuation team and may conduct an additional valuation if they are not satisfied with the values that the real estate firms have provided. Danske Bank does on the other hand not have any in-house real estate valutors in Sweden but may if necessary ask for assistance in a valuation from their colleagues in other branches or property teams in Danske Bank in Denmark. Linderborg underlines that Danske Bank does however always compare their own estimated value with the values from external appraisers and then choose the lowest of these values.

Both respondents have different opinions when commenting on our identified undervaluation of investment property. Carlsson argues that most companies are conservative in the valuation whereas Linderborg state that it may differ between firms. Carlsson continues by stating that all firms want to make a profit when they sell a property and that firms paying over the booked value likely have a well-aware strategy and are most likely larger real estate firms. Linderborg are on the other hand on a different approach, he believes that from a conspiratorial perspective may real estate firms sell properties at a higher value in order to positively signal to the market that the rest of their properties are undervalued. Linderborg continues by stating that during the financial

crises did the unrealised value changes differ quite a lot between the property firms and thus is the nature of the different values depending on the company. Linderborg adds that Danske Bank overall trust that the internal valuations from the companies are reliable but one may argue that if the valuation were performed a while ago may it affect the reliability. Moreover, none of the respondents believe or have discovered that any firm boost their values in case of a new debt agreement. Linderborg explains that it is common that the real estate firms have a recent valuation with them when they seek a new debt or are about to renegotiate a present debt. Carlsson states that SEB have clauses that the lenders are not allowed to break. Finally, concerning the capital structure are both banks comfortable with lending 60 - 70 per cent on the value of the property. The rest of the investment in the property is thus equity states Linderborg. He continues by arguing that listed property firms naturally prefers debt capital in front of share capital as debt capital is cheaper than equity capital.

### **5.1.2. Ownership structure**

Both interviewees stress that the lending process requires an overview of the customer, and the banks therefore look at various information. Besides the necessary information presented above are SEB and Danske Bank looking at the major owners behind the companies. For example the banks are looking if the major owners are “legitimate” or have they been involved in any unethical actions. Carlsson argues that SEB performs deeper investigations for new customers since the reputation of the customer may affect the bank's reputation as well. Neither Danske Bank nor SEB take much consideration if the ownership is concentrated or dispersed. Linderborg does however add that a company with a dispersed ownership may be seen as “weaker” compared to a company with well-known owners. Moreover, they emphasize that the major owners have to be legitimate and by that are persons that the bank wants to do business with. Linderborg also underline that Danske Bank is a relationship bank and they want to create and establish long lasting relationships with the customer. He also point out that the bank is cautious with fund structures as it may be difficult to identify the underlying owners as funds are usually less transparent.

### **5.1.3. Valuation method**

Through the interviews, both respondents underline the importance of the location of the investment property. Generally a real estate is rated on an A to D location scale. A-rated locations are properties in the city centre, which naturally provide good opportunities for rental. C or D locations are less attractive properties located in a suburb or on the countryside. Those properties may be difficult to rent out and consequently carries a higher risk. As the vacancy risk increases (the risk of not getting the property rented out) is the possibility to get debt capital affected. Carlsson and Linderborg also argue that the tenant(s) and the number of tenants affect the risk. They explain that a single tenant in one property carries a greater risk compared to several tenants. However, the risk may be lowered with tenancy agreements with different length of terms. Both banks also perform a background check of the tenants in order to see the tenant's possibility to pay the rent as the rental payment affect the cash flow.

### 5.1.4. Valuation and influence on the valuation

When it comes to the valuation method the banks are using the cash flow method for their internal valuations. However, Carlsson argues that the cash flow is affected by the net-operating income and thus the rental income. Consequently A-rated properties are generating higher incomes as they rarely have vacancies. Moreover, Carlsson adds that due to the present low interest rate is the required rate of return lowered. Both respondents also state that external factors, such as the conjuncture affects the valuation and that the banks use macroeconomic forecasts in the crediting process. Linderborg argues that macroeconomics and the real estate business is well connected and if the economy is doing performing well are the real estate business generally following the same progress.

Carlsson and Linderborg argue that none of the banks pay much attention to bonus or incentive plans in the credit granting. Nevertheless, Carlsson adds that SEB investigates if there are any bonus systems but it does not have any impact on the crediting as long as incentives are not any large sums. Moreover, neither of the respondents believes that the audit firm is an important factor as almost all firms use one of the big four audit companies. Still, Linderborg claim that they would hypothetically be suspicious if a large company provide financial information prepared by a less known audit firm. Additionally, when it comes to external appraisers, both interviewees feel comfortable with external estimates as long as appraisers are known and authorized. Carlsson explains that SEB have a wide network and have good relations with several external valuers and if they do not feel comfortable with the value may they ask for an additional external value by another firm.

## 5.2 External Valuators

Company	About the company	Respondent
NAI Svefa	NAI Svefa performs various real estate services such as property development, investment, analysis and valuation. The company's client list consists of large real estate companies, investors, banks, small local real estate actors as well as the public sector. NAI Svefa is the Swedish actor in the international network called NAI global (Naisvefa, 2015).	J Viktor Skult has worked with valuation of real estate at NAI Svefa since September 2013. He has been evaluating everything from undeveloped land, properties, commercial and operative apartments.
Newsec	Newsec is a <i>full service property house</i> (Newsec, 2015) and northern Europe's largest specialised commercial property company. The clients of Newsec are mostly the larger listed and non-listed actors on the real estate market. Moreover, Newsec carries out valuation for all commercial and non-commercial objects, except forest-, agriculture- and private housing valuations (Newsec, 2015).	Andreas Eckermann has been in the real estate industry for ten years and at Newsec for the last two years. Eckermann works with valuing small to larger properties in the Gothenburg area.

Table 5.2. Overview of the external valuation firms and respondents

### 5.2.1 Valuation process

Both firms use either the second (unobservable prices) and/or the third valuation (cash flow) method presented in the fair value hierarchy. NAI Svefa performs a combination of both the second and the third level method whereas Newsec is just performing the third level. Skult at NAI Svefa explains that if there is a difference in the values from the two methods, they will look over the unobservable prices valuation. The only situation where the cash flow method is used is

when there is no other property to compare with. Eckermann explains that Newsec only put emphasis on the cash flow model as the level three models is built on information from the level two methods. He continues by explaining that the required rate of return will be based on sales from similar property, since it will affect the whole calculation; therefore it has to be based on something that can explain the numbers. Both NAI Svefa and Newsec usually perform their cash flows on a ten-year basis. However, Eckermann argues that there are exceptions depending on the contract in place, if there is a longer lease then the cash flow analysis will be longer. Skult mentions that at NAI Svefa they put emphasis on the attributes of the property when performing the valuation, and therefore they want to inspect the property to see its condition. Newsec also wants to inspect the property, but they do not put as much emphasis on that, since according to Eckermann, attributes will already be represented in the rent and it should not be acknowledged twice. Both companies look at attributes like rental levels, risk of vacancy and the costs for operations and maintenance. Furthermore, Skult emphasise on the flexibility of the property, for example a large facility can be divided into two facilities and by that generate a better cash flow.

The busiest time of the year for both companies is during December and January, as both Skult and Eckermann explain, that is when most valuations for the annual reports need to be done. However, for clients with a large real estate portfolio, they divide the valuation of the property over the year. Eckermann also points out that there is not only valuations for the annual reports at this time, but companies also want the transactions to be in the right fiscal year. The timing of the sale will later affect the value, since the annual reports only present the value on that date and no other date (Eckermann). There can occur a lot in the time between the valuation and the sale that affect the value, Skult mentions the last couple of months as an example, where the negative interest has affected the value enormously. In the end, according to both Skult and Eckermann it is interesting to follow up and see if the value was correct. However, of the two firms, only Newsec looks at it and they have comprehensive registers with that kind of information. By following up, they get feedback according to Eckermann.

### **5.2.2. Clients**

The clients are not involved in either NAI Svefa's or Newsec's valuation, and none of the valuation companies considers the client's internal valuations. Skult mentions that the client only supplies them with some information, like rental agreements and beyond that the larger companies are not involved. Eckermann is of the same opinion and say that Newsec does not involve the clients at the initial valuation. However, if the client disagrees with the value, they discuss with them why there can be a disagreement. Eckermann explains that at Newsec it is essential that you listen to the client, you do not have to do what the client desires in the end, but as Newsec wishes to preserve its relations they put great effort in the appreciation. There is also a discussion at NAI Svefa when there is a disagreement with the client. Both valuers explain that the companies usually know their own property better than the evaluators, since as Eckermann explain, the larger companies usually have a valuation department that works with these processes. Neither Eckermann nor Skult can see that the ownership structure in listed companies affects the value. However, Skult mentions that the when concentrated ownership; if the owners

are not satisfied with the value they can change evaluator for the next year. Eckermann does not support this, as he states that it is hard to say that the change in valuator is only because of the lack of satisfaction of the value.

### **5.2.3. External factors**

There are external factors that can affect the value or the difference between the selling price and the carrying value. Both Skult and Eckermann argue that macroeconomic factors can affect the value, and both companies have departments that look into the economic cycle. Skult states that he considers the macroeconomic factors in the valuation process, while Eckermann on the other hand does not, since according to him, the economic situation will result in lower or higher yields. Moreover, both evaluators argue that the value is affected by interest rate. As an example Skult mentions that the rate of return has decreased a lot the last couple of months because of the low interest rate. This large decrease in a short time also makes it harder to use the level 2 valuation method, since it makes it difficult to find relevant objects that have been sold at similar levels.

### **5.3. Summary**

Interviewing professionals working with investment properties performed the second study. The interviews conducted were with two external valuers and two who work in banks with real estate businesses as clients. We founded that both banks rely on the information provided from the companies, however SEB also performs their own valuations while Danske Bank uses external valuers. However, none of the respondent from the banks believes that the companies try to boost their numbers, but the respondent from Danske Bank points out that during the financial crisis the unrealised values look different depending on the company. The external valuers on the other hand do not take much consideration to the internal information, and are only interested in information like rent agreements. Since they do involve the companies in the valuation process they do not look at the ownership structure. The banks do not either put focus on the ownership structure; instead they look at the owner's legitimacy. Neither bank looks at bonus plans nor other incentives the managers might have.

When it comes to the valuation, all respondents also emphasise the location of the property and the vacancy risk. The method that everyone use is the cash flow method, i.e. level 3, however to different extents. NAI Svefa is the only company that primarily use the level 2 method and only complement with level 3. However according to Eckermann the level 3 method will be based on level 2 factors as well. When it comes to the external factors like the economic situation, the only respondent that does not put emphasis on it is Eckermann, since as he explains, the economic situation will be reflected in the rent or interest rate. The other respondents considers essential macro-economic factors and also have a department that looks at these factors.



## **6. Discussion**

In this chapter we discuss the findings from both studies and compare them to the frame of reference to see if our findings are in line with previous research. We will start by having a discussion about the general findings in the subject. Then we move on to the discussion of the hypotheses, where we start by discussing management incentives and by that testing the first hypothesis. Then the ownership structure and second hypothesis will be discussed. The next step will be to discuss our findings for the capital structure and to test the third and last hypothesis. In the last section we will discuss the control variables and other factors that can affect the results from sale and the unrealised values.

### **6.1. General discussion**

In the quantitative study we found that there was an average difference between the selling price and the book value of 13.6 per cent and the unrealised value changes were on average 1.8 per cent. Consequently the fair value is not in line with the market value (Marton et al., 2013). The reason behind the differences may be both internal and external as will be discussed later. Carlsson at SEB provided a simple and straightforward explanation as he stated that all companies naturally wishes to make a profit on their sales. Linderborg at Danske Bank does on the other hand believe that one explanation could be that listed real estate firms sell properties above booked value in order to mirror that the rest of the firm's properties are undervalued. If Linderborgs argument is correct, this could be labelled as earnings management (Healy & Wahlen, 1999). One can also argue that the time of the valuation affects the value, as a valuation performed far from the selling point likely is less accurate, which is supported by Eckermann at Newsec. Several of the respondents also state that the low interest rate and higher demands on required rate of return makes the valuation difficult. Nevertheless, despite the underlying reason one may question the reliability of the valuation. Clearly, the reliability aspect is questionable, as the carrying values are not mirroring a true and fair view (IASB, 2012). Perhaps the undervaluation may be a norm in the industry as all firms wish to make a profit with their sales, it could also be related to the prudence principle under the reliability aspect as firms should be cautious in the valuation. This may also explain the smaller difference in unrealised value changes, compared to the larger difference in the selling price.

Despite the fluctuations, users of the financial information, the banks, rely on the values in the books. Investment property is after all a relatively safe investment and the banks do not provide more than 60 - 70 per cent of the underlying value. Similarly to Hermann et al (2006), Marton et al (2009), Landsman (2012) and Bengtsson's (2008) findings, one can argue that the relevance is higher under the fair value method since unrealised values follows macroeconomic factors to a greater extent than the cost method. This can be seen in the fourth regression, as it indicate that the value is dependent on the yearly conjuncture.

Even though the framework does allow valuations with the cost method, we see that no company has made this choice. One reason can be that almost all companies choose to hire external valuers, who tend to use the fair value method (Skult; Eckermann). Another option is naturally

that the fair value method reflects market values to a greater extent and is thus more reliable. The standard offers the choice between different levels of fair value (IAS 40, §32) and we observed that none of the companies in the first study or the respondents in the second study used the level 1 valuation (current prices on the same market). Some companies do use the level 2 valuation method (observable prices from similar properties), which after all is quite similar to level 1 valuation and when firms used the level 2 valuation method there is a negative relationship with the dependent variables. Thus, level 2 valuations will on average be lower than estimation with only a level 3 valuation (cash flow model). However Eckermann explains that even a cash flow calculation will be based on a comparison of previous sales of similar property, since you have to get the numbers from somewhere.

## **6.2. Management incentives**

The managers are left with the decisions of how to present the accounting information since the accounting standards leave wiggle room for how the chosen method is used (Penman, 2007). Lev (2003) states that one of the reasons behind manipulating earnings is the personal gain, which can occur when there is bonus plans in place. According to the agency theory there will be incentives, like bonus plans, in order to align the manager's (agent) and the owner's (principals) interests (Jensen & Meckling, 1976). In the first study we can see that 60.7 per cent had bonus plans in place and 39.9 per cent did not. We can also observe that bonus plans have a negative relationship with the result from the sale, which means that the results from sales will be lower when there is bonus plans in place. The negative relationship can be connected to the fact that management-controlled firms tend to smooth earnings more than other firms (Dempsey et al, 1993). However, these findings are contradictory to the theories of Healy (1985) and Watts & Zimmerman (1986) stating that managers will report earnings that will maximize their benefit. Still, Healy's (1985) and Watts & Zimmermans (1986) theories are supported by the findings of the relationship between the bonus plans and the unrealised value changes. The unrealised values were on an average 0.152 per cent higher when there was a bonus plan in place.

Both the results from sales and the unrealised value show that the managers choose to value their property higher when there is a bonus plan than if there was no bonus plan. This can be as Ashtana (2007) explain that managers tend to manage the earnings when there is a fear of not reaching the goals. The reason that the unrealised values have a positive relationship with the bonus plans and not the results from sales can be because it is easier to control for the manager. The profit on the other hand is determined by the demand on the market. Since there is a relationship between the two variables, one can assume that the creditors will pay attention to the fact if there is a bonus plan or not. However, the respondents from the banks claimed that bonus plans are not of any importance in the crediting process. SEB only consider incentive programs if the incentives are unusually large.

From these findings we can see that our first hypothesis; *bonus plans will affect the reliability of investment properties values*, can be accepted, since there is a relationship between the value in companies that have an bonus plan and the results from sales and the unrealised value.

### 6.3. Ownership structure

The observed real estate firms have a divided ownership structure, 59 per cent have a concentrated ownership and 41 per cent have a disperse ownership. Accounting choices are closely related to the ownership structure according to Dempsey et al (1993) since different structures will create different incentives to manage the earnings. Hunt and Holger (1990) further explain that the accounting information's content and form will be affected by the corporate ownership structure. However, the structure of the ownership is not important in either Danske Bank or SEB, as they put more emphasis on the legitimacy of the owners. The only aspect considering the structure is that a disperse ownership can be seen as "weaker" than one with a concentrated ownership according to Carlsson. Additionally, the external valuator put no emphasis on the ownerships structure (Skult; Eckermann), the only power a concentrated ownership structure could possibly have is to change the valuation firm for the next year (Skult). Furthermore, Niskanen et al (2011) state that larger stakeholders can use their voting power in order to obtain benefits the others will not get. However, the quantitative results show that the dependent variables will be explained by the independent variables to a larger extent when the ownership is dispersed than when it is concentrated. Also the relationship between the different capital variables and the results from sales will be different since it is positive when concentrated and negative when dispersed. This coincides with the theories that management-controlled firms tend to smooth their earnings (Dempsey et al, 1993; Hunt & Holger, 1990).

The unrealised values have opposite relationships depending on the ownership structure and the only variable that are positive in both a dispersed and concentrated ownership structure is interest coverage. The companies with dispersed ownership have positive relationships for the capital structure variables and thus they increase the unrealised value when the capital structure measurements increase. Management-controlled firms tend to smooth earnings more than ownership-controlled firms. This can be because the managers wish to display good results for the shareholders and to reach the goals and thereby receive the compensations (Dempsey et al., 1993). Our regression analysis finds that the results from sales have a stronger negative relationship with bonus plans when the ownership structure is concentrated. This means that the results from the sale will on average be lower with a dispersed ownership structure if there is a bonus plan. Furthermore, we can see that the unrealised value changes have an opposite relationship to the theory, where a concentrated ownership structure shows that the value will be higher when there is a bonus plan in place. The dispersed structure on the other hand has a lower unrealised value when there is a bonus plan in place.

The second hypothesis: *the ownership structure will affect the reliability of fair value in investment properties*, can based on our findings be accepted, since we can see that the dependent variables are affected in different ways with different ownership structures.

## 6.4. Capital Structure

The capital structure is measured by the variables of leverage, short-term solvency and interest coverage ratio. The descriptive statistics displayed that the real estate firms on average have 2.66 times more debt than equity. These findings are related to Myers & Majluf's (1984) pecking-order theory, stating that debt is preferred to equity and Miller and Modigliani (1958) proposition claiming that the debt financing should be as high as possible in order to maximize the value of the firm. Moreover, the preference of debt in front of equity in the real estate business is as well supported by (Morri & Cristanziani, 2009; Bond & Scott, 2006). The respondents from the banks provided a similar picture as they claim that real estate firms aims at maximizing the debt to the possible limit of 60–70 per cent of the underlying value. One may also argue that in times of extremely low interest rates may it be even more attractive with debt financing. Debt is as well preferable as the companies need to release less information (Miller, 2001; Scott & Bond, 2006). Additionally, the interest coverage ratio seems healthy for the companies as all of them showed a ratio above 1. Still some companies displayed extremely high values, which may indicate a low debt. However, the short-term solvency provided an interesting aspect, as the ratio on average was less than 1, which implies that the firms have low cash reserves. Nevertheless most real estate firms have a stable cash flow from various properties and they should thus not have an issue with paying its obligations. Findings from Fastighetsnytt (2012) also state that only three out of the listed real estate companies in Sweden are seen as solvent and thus may it be in the nature of the business.

Some of the results in the regression tests are however surprising. The regression 1 displayed that when leverage is increased with one per cent the average results from sales is increased with 0.8 per cent if all other variables are constant. The higher reported income from sales is related to Lee and Masulis (2008) and Nellesen and Zuelch (2010) findings, stating that companies boost their reported income to not break the debt agreement. Interestingly the relationship is opposite for the unrealised value changes, as the unrealised value decreases with leverage, i.e. real estate companies display negative unrealised value changes with higher debt. The findings in the unrealised values are not in line with other theories in capital structure, as those theories state that firms should maximize their debt to increase the value of the firm (Miller & Modigliani, 1958; Myers & Majluf, 1984; Brealey et al 2011). Naturally, there may be other factors that affect the values and by that disturb the results. For example, findings from the second study indicate that the value of a property is based on location, tenants and the length of the rental agreements. Consequently the underlying value may decrease despite an increase in debt. When it comes to short-term solvency, the relationship is positive for both dependent variables and thus is the results from sales and unrealised value changes higher with a higher short-term solvency ratio. Hence, the greater ability a company have to pay its liabilities with short-term assets, the greater is the results from sales and unrealised values. Naturally a good cash flow generates cash that can be used in paying the short-term obligations and a good cash flow also indicates profitable properties. All respondents in the second study argued that the cash flow is vital in valuation of properties. Moreover, the interest coverage ratio shows positive correlations on both the

dependent variables, i.e. an increase in the interest coverage ratio, will lead to an increase in both the results from sales and unrealised value gains.

The third hypothesis *the capital structure will affect the reliability of fair value in investment properties*; will be accepted, due to our findings above.

### **6.5. Control variables**

To see if other factors can explain the changes in the investment properties value, control variables were added. By including these variables to the regression, the model gets a higher explanatory power, and we can better explain the variances in the dependent variables. Two control variables that had interesting relationships with the dependents were the year aspect and if an external valuator was used. Both the creditors and external valuers in second study also stressed the importance of external factors, especially location and the economic situation. The latter one can be seen in the regression 3 where year is added, which shows a positive relationship for the years. Especially the year 2009 was interesting since it is the year prior to the latest financial crisis and this year the unrealised value was the lowest. The unrealised value differed during the crisis, depending on the company according to Linderborg. This can be connected to creative accounting, where organisations use the flexibility of the accounting regulations to improve the financial results (Naser, 1993).

Another factor that is important for the value of investment property is who performs the valuation. The regression model displayed that result from sales decreases with 11.294 per cent when an external valuator is used and thus may one argue that the reliability is higher when an external valuator is used. Furthermore, the reliability of an external valuation can be seen as higher since both Skult and Eckermann explain that they do not use or consider the company's internal information. This gives the manager less room for managing earnings, since they have no influence over the external appraisers (Landsman, 2007). The unrealised value is also lower on an average if the company uses external valuers, which can support the fact that managers try to show of good performance by increasing the earnings (DeGeorge et al, 1999). Furthermore neither bank questions the value to the same extent, when an external valuation has been conducted.

### **6.6. Summary**

The observed investment properties are on average sold at 13.6 per cent above the carrying value and the mean of unrealised value is 1.8 per cent of total invested capital on average. This is not in line with the definition of fair value, which should equal market value (Marton, 2013). Furthermore, by looking at bonus plans, it is clear that managers in firms with bonus plans tend to value the investment property higher than in firms with no bonus plans. This can according to Ashtana (2007) be because of fears of not reaching the goals and by that not get the bonus. Another variable that has a relationship with the results from sales and the unrealised value is the ownership structure, as can be seen, the correlation differs depending on if it is concentrated or diffused. This is in line with what Dempsey et al (1993) state, since different ownership

structures will lead to different accounting choices and also create different incentives for earnings management. When it comes to the capital structure it have a positive relationship with the results from sales and unrealised values, the only exception is the relationship between leverage and unrealised values, which is negative. This correlation means that higher debt leads to lower unrealised values and is not in line with the theories that a high debt-equity ratio will lead to higher values (Miller & Modigliani, 1958; Myers & Majluf, 1984; Brealey et al 2011). Finally, we can also see that there are other factors that affect the results from sales and the unrealised value. The result show us that the values will be lower when the company uses an external valuation than if valuations are only performed internally. This is supported by the fact that both SEB and Danske Bank rely more on the value when it comes from an external party. Another factor to consider is the macroeconomic situation, as we found the years to be relevant, which is also something that all four respondents mention. In our study, we could see that the values were lower in 2009, when there was a global crisis.

## 7. Conclusion

The focus in this chapter will be on presenting the conclusion and we will start by answering the research question. Then we will move on to explain the implications and contributions of the study as well as weaknesses. The chapter will be concluded with suggestions for future research.

### 7.1 Conclusion

We started this thesis with the question:

*How reliable is the fair value of investment property in Swedish listed real estate companies? To what extent do the factors of management incentives, ownership structure and capital structure affect the value?*

Looking at the first part of the question we can see that there is a difference between the fair value and market value, since the results from sales have a mean value of 13.6 per cent above book value. The unrealised values are less volatile on the other hand since the properties on average are increased with 1.8 per cent every year and also follow macroeconomic factors to a greater extent. These findings show that the values in the annual reports do not reflect a true and fair view, and thereby the investment property's value is not reliable. However we cannot determine if the deviations are due to earnings management, intended manipulation or if the companies simply have troubles in estimating the value of properties. The latter is likely since the respondents in study two states that low interest rates and macroeconomic factors makes the estimated values to lag behind. However, the IFRS regulation give room for subjectivity and users should be aware that it is possible to manipulate the values based on internal preferences.

The second part of the question investigates how the aspects of management incentives, ownership structure and capital structure affect the reliability of the value. Our first study discovered that these variables would have some effect on the reliability of the fair value. Firstly, management incentives affect the reliability as we found that the unrealised values increases when there is a bonus plan for the management and thus is the value of the firm increasing. Naturally, the businesses wishes to make a profit from their sale of property but the price cannot be affected by the management and it is thus difficult to make any connections between bonus plans and result from sales. Secondly, the ownership structure affects the reliability as a concentrated ownership has a positive relationship with results from sales and when the structure is diffused the relationship will be negative. Thirdly, the three variables in the capital structure have a positive correlation with result from sales and thereby will the selling price be higher when the capital structure increases. Thus, the reliability is affected capital structure affects the result from sales.

However, despite the findings above the explanatory power is quite low for the discovered correlations. By adding the control variables we observe that the explanatory power goes up for both dependent variables. Considering this, one can conclude that there are other factors that affect the value of investment property than the investigated independent variables in this study.

One of the variables that had a significant impact on both the results from sales and the unrealised values was if the companies used external valuers in the valuation process. Both results from sales and the unrealised value were lower with an external valuation than with only an internal valuation. Respondents in the second study also supported this, since both creditors considered the information more legitimate with external valuations. Still, one should be aware of drawing to strong conclusions based on the use of external valuers as 89 per cent of the observations used an external valuator and thus may the seem stronger than they are. Additionally, another interesting observation is that the unrealised value will be lower if the auditor is from one of the big four audit companies. Moreover, findings from the second study suggest that the location of the property clearly affect the cash flow and thus may it be reasonable to think that A-rated properties have less volatile values.

Finally, both studies indicate that the timing of the valuation affects the value significantly. The timing factor can be divided into two aspects, one is a year-specific event, like for instance the economic cycle, as can be seen during the financial crisis in 2008 - 2009. Our study showed that the fair values were lower this year than most other years. The other aspect of timing is when the sale is performed, which is not tested in this thesis. The fair value, represents only the value at the time of the valuation, the longer away the sale is from that date the more uncertain the value, and thereby less reliable. Eckermann supports this as well, as he believes that the timing of the sale will have the largest effect on the results from sales.

## **7.2. Contribution**

This thesis has mainly contributed to the users of financial information by highlighting the possible subjectivity with the IFRS framework. The conceptual framework states that the financial information in the annual reports should be reliable (IASB, 2012). This is not the case, as the findings show, since the fair value does not reflect the market value. Additionally, the users expect the values to be of a certain quality when IFRS is adopted, however the quality of the investment property's value can be questioned. The study also contributes to the debate of relevance versus reliability, as the thesis finds that the fair value is except the possible subjectivity also affected by the timing of the valuation. Naturally, the fair value method captures the current situation to a greater extent than the cost method but due to the time lag between the valuation and sell of property is their still and impact on the value.

## **7.3. Reflections**

As the major definition of reliability in this study is the difference between the market price and the fair value, we can conclude that the value of investment property is not reliable. However, as we observed, the explanation behind the reliability issue is difficult to define. One aspect that was proven to be important is the timing of the valuation, which has not been tested. One can argue that the reliability is good and that the gap is due to events occurred between the timing of the valuation and the date of the sale. An additional issue was the low significance in the statistical tests, and one can therefore question the contribution from study one and the possible deduction from it. However, the significance only looks at the possibility of generalising the samples



relationship to the population at large. In this thesis the whole population is included and thereby the low significance does not hinder our conclusions. Finally, the relatively few observations compared to the number of variables are a weakness but performing several regressions with different variables in each regression decreases the mathematical uncertainty.

The assumptions held on the results were seen to be correct to some extent. However, the relationship between the independent variables (capital structure, ownership structure and management incentives) and the results from sales and unrealised values were not as clear as expected. The belief was that one could clearly see how the results from sales would be affected by the different variables, for example that when debt was high, the value would also be high. By performing the second study we could see that external factors, like interest rate and location, affect the value to a great extent.

#### **7.4. Future research**

For future research, one suggestion could be to interview some of the companies in this study to get their point of view and by that an insight into their valuation process. By looking at the entire valuation process in a company, it would be easier to identify if there are possibilities for manipulation and if the values are boosted intentionally. For example could four companies be included, such as the two largest and the two smallest firms in our study. Another suggestion is to investigate how much the timing affects the value. As Eckermann explained, the fair value only reflects the value on the date of the annual report. Thereby it would be interesting to investigate how much the timing of the sale can affect the reliability of the value. The timing could be measured by investigating the sales presented in the quarterly reports. A final suggestion would be to look over a longer time period. Future research could include some years before the implementation of IAS 40 as well as the years included in this study. By performing this, one could measure if the implementation of IAS 40 has changed the reliability aspect.

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## **APPENDIX 1 – Included Companies and Number of Sales Observations in the Study**

<b>Company</b>	<b>Observations</b>
Atrium	
Ljungberg	8
Balder	7
Brinova	7
Castellum	9
Catena	7
Corem	6
Diös	7
Fabrege	9
FastPartner	6
Heba	5
Hufvudstaden	2
Dagon- Klövern	9
Kungsleden	9
Sagax	8
Wallenstam	9
Wihlborgs	9
	<b>117</b>

## APPENDIX 2 – Descriptive Statistics

Descriptive - Central tendencies	Minimum	Maximum	Mean	Std. deviation
Results from sales	64.30	427.30	113.6111	31.71065
Unrealised value	-9.90	18.20	2.4323	4.47505
Leverage	0.17	4.20	2.0662393	,75103460
Short-term Solvency	0.01	9.60	0.7024786	1.19397330
Interest coverage	-0.31	221.56	6.2373504	20.71624864
ROA	-13.87	31.75	8.2565812	5.07286207
ROE	-33.56	51.26	13.9752137	13.07232551
WACC	2.10	9.92	5.3689744	1.50882998
Firm Size	13.47	17.46	16.2983	0.85689

Descriptive – frequencies		Frequency	Per cent
Ownership votes	Less than 50 %	48	41,0
	More than 50 %	69	59.0
Bonus plan	No bonusplan	46	39.3
	Bonusplan	71	60.7
Level 1	No	117	100
	Yes	0	0
Level 2	No	106	90.6
	Yes	11	9.4
Level 3	No	1	0.9
	Yes	116	99.1
External valuation	No	12	10.3
	Yes	105	89.7

# APPENDIX 3 – Correlation Matrix

2013

2012

2011

2010

2009

2008

2007

2006

2005

WACC

ROE

ROA

Firm size

Big4

External Valuation

Level3

Level2

Bonus plan

Interest Coverage

Short-Term Solvency

Leverage

Voting Shares

Unrealised value

Return from sales

	Results from sales	Unrealised value	Voting Shares	Leverage	Short-Term Solvency	Interest Coverage	Bonus plan	Level2	Level3	External Valuation	Big4	Firm size	ROA	ROE	WACC	2005	2006	2007	2008	2009	2010	2011	2012	2013			
Pearson Correlation	1																										
Sig. (2-tailed)																											
Pearson Correlation	-0.003	1																									
Sig. (2-tailed)	0.971																										
Pearson Correlation	0.043	-0.04	1																								
Sig. (2-tailed)	0.647	0.673																									
Pearson Correlation	0.042	0.042	0.021	1																							
Sig. (2-tailed)	0.655	0.003	0.826																								
Pearson Correlation	0.033	0.062	0.051	0.216	1																						
Sig. (2-tailed)	0.73	0.516	0.595	0.022																							
Pearson Correlation	0.022	0.403	0.15	-0.292	-0.161	1																					
Sig. (2-tailed)	0.816	0	0.117	0.002	0.1																						
Pearson Correlation	-0.035	0.04	-0.310	0.089	0.147	-0.158	1																				
Sig. (2-tailed)	0.712	0.668	0.001	0.344	0.121	0.1																					
Pearson Correlation	-0.038	-0.037	-0.326	0	-0.018	-0.192	0.016	1																			
Sig. (2-tailed)	0.684	0.694	0	0.897	0.853	0.045	0.865																				
Pearson Correlation	-0.008	-0.12	-0.078	0.159	0.046	.	-0.074	-0.288	1																		
Sig. (2-tailed)	0.929	0.2	0.403	0.087	0.631	0	0.428	0.002																			
Pearson Correlation	-0.217	-0.185	-0.258	0.145	0.246	-0.145	0.071	0.099	-0.029	1																	
Sig. (2-tailed)	0.022	0.046	0.005	0.121	0.009	0.13	0.451	0.388	0.76																		
Pearson Correlation	-0.023	0.195	-0.285	-0.260	-0.325	0.025	-0.154	0.11	-0.032	-0.104	1																
Sig. (2-tailed)	0.803	0.036	0.002	0.005	0	0.798	0.098	0.24	0.736	0.265																	
Pearson Correlation	-0.035	0.038	-0.369	-0.074	-0.300	-0.245	0.07	0.237	-0.058	-0.238	0.265	1															
Sig. (2-tailed)	0.709	0.689	0	0.427	0.001	0.01	0.454	0.01	0.535	0.01	0.004																
Pearson Correlation	-0.108	0.704	0.062	-0.197	0.184	0.266	0.007	-0.058	-0.092	-0.026	0.051	-0.126	1														
Sig. (2-tailed)	0.253	0	0.513	0.036	0.053	0.005	0.939	0.538	0.33	0.786	0.591	0.183															
Pearson Correlation	0.017	0.699	0.065	-0.263	0.194	0.250	-0.067	-0.048	-0.046	-0.044	0.108	-0.171	0.613	1													
Sig. (2-tailed)	0.857	0	0.491	0.004	0.041	0.008	0.474	0.61	0.626	0.641	0.248	0.087	0														
Pearson Correlation	-0.056	0.470	-0.289	-0.386	0.139	0.280	0.203	0.082	-0.282	0.016	0.079	0.086	0.419	0.383	1												
Sig. (2-tailed)	0.551	0	0.002	0	0.144	0.003	0.028	0.379	0.002	0.866	0.398	0.356	0	0													
Pearson Correlation	0	0.235	-0.116	-0.027	0.028	0.133	-0.008	-0.099	0.029	-0.015	0.003	-0.11	0.317	0.233	0.173	1											
Sig. (2-tailed)	0.996	0.011	0.214	0.775	0.773	0.167	0.935	0.388	0.76	0.872	0.97	0.239	0.001	0.012	0.063												
Pearson Correlation	-0.024	0.391	-0.087	-0.128	0.161	0.119	0.137	-0.105	0.03	-0.005	0.013	-0.045	0.331	0.220	0.456	-0.099	1										
Sig. (2-tailed)	0.796	0	0.356	0.17	0.089	0.215	0.143	0.263	0.748	0.954	0.887	0.629	0	0.017	0	0.288											
Pearson Correlation	0.024	0.239	-0.059	-0.016	0.135	0.17	0.038	-0.11	0.052	-0.097	0.022	-0.015	0.121	0.245	0.234	-0.104	-0.11	1									
Sig. (2-tailed)	0.801	0.01	0.526	0.865	0.155	0.076	0.685	0.24	0.736	0.298	0.811	0.869	0.201	0.009	0.011	0.265	0.24										
Pearson Correlation	-0.094	-0.524	-0.034	0.291	-0.018	-0.148	0.002	-0.022	0.033	0.012	-0.059	-0.043	-0.494	0.610	-0.209	-0.109	0.115	-0.121	1								
Sig. (2-tailed)	0.314	0	0.714	0.002	0.851	0.122	0.979	0.817	0.724	0.9	0.531	0.646	0	0.024	0.244	0.219	0.197	0.126									
Pearson Correlation	0	-0.279	-0.034	0.143	0.081	-0.206	0.059	-0.022	0.033	0.012	-0.059	-0.017	-0.174	-0.132	-0.14	-0.109	0.115	-0.121	0.126	1							
Sig. (2-tailed)	0.998	0.002	0.714	0.126	0.394	0.031	0.533	0.817	0.724	0.9	0.531	0.633	0.064	0.137	0.135	0.244	0.219	0.197	0.177								
Pearson Correlation	-0.021	0.144	0.082	-0.106	-0.069	0.168	0.011	0.127	-0.233	0.034	-0.028	-0.018	0.13	0.169	0.62	-0.123	0.129	-0.136	0.142	-0.142	1						
Sig. (2-tailed)	0.823	0.123	0.38	0.26	0.469	0.079	0.91	0.176	0.012	0.719	0.763	0.848	0.167	0.07	0	0.189	0.166	0.146	0.128	0.128							
Pearson Correlation	0.039	0.024	0.096	-0.01	-0.084	-0.022	-0.085	0.061	0.035	0.02	-0.048	0.008	0.019	-0.081	-0.320	-0.114	-0.12	-0.126	0.132	-0.132	0.148	1					
Sig. (2-tailed)	0.68	0.795	0.304	0.916	0.376	0.817	0.363	0.517	0.713	0.835	0.609	0.934	0.843	0.388	0	0.224	0.2	0.178	0.159	0.159	0.112						
Pearson Correlation	0.053	-0.057	0.043	-0.111	-0.126	0.003	-0.031	0.061	0.035	0.02	0.039	0.052	-0.112	0.012	-0.305	-0.114	-0.12	-0.126	0.132	-0.132	0.148	0.137	1				
Sig. (2-tailed)	0.572	0.543	0.65	0.235	0.185	0.974	0.742	0.317	0.713	0.835	0.678	0.579	0.234	0.899	0.001	0.224	0.2	0.178	0.159	0.159	0.112	0.142					
Pearson Correlation	0.023	-0.124	0.077	-0.036	-0.083	-0.184	-0.11	0.072	0.033	0.012	0.121	0.174	-0.083	-0.018	-0.205	-0.109	0.115	-0.121	0.126	-0.126	0.142	0.132	0.132	1			
Sig. (2-tailed)	0.81	0.186	0.414	0.705	0.382	0.054	0.241	0.445	0.724	0.9	0.197	0.062	0.381	0.848	0.027	0.244	0.219	0.177	0.177	0.128	0.159	0.159					

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

a. Cannot be computed because at least one of the variables is constant.