Managing the fair value of investment property: Empirical evidence of earnings management in Swedish Real Estate

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ABSTRACT: This study poses two questions relating to earnings management with the intent to mislead the market for the firms equity and debt. A multiple regression model is used to test two hypotheses through 7 hypothesized determinants of discretionary accruals and 3 control variables. A sample of Swedish real estate firms, including only the years when the firms are both quoted and have disclosed discretionary revaluations of their real estate properties is analyzed. Evidence is found of earnings management with the intent of misleading the stock market but no such evidence is found of earnings management with the intent of misleading the market for corporate debt. The implications of the findings are discussed and the direct and indirect harm of earnings management is specified.

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Introduction

On the 1st of January, 2005, the Swedish national reporting standards for public companies were replaced with European Union’s International Financial Reporting Standards (IFRS). The new accounting paradigm brought many substantial changes, one of which has aroused both intense academic debate (Laux & Leuz, 2009) and practitioner worry about increased earnings volatility (Jermakowicz & Gornik-Tomaszewski, 2006), namely fair value accounting.

The increased usage of fair values threw wood on the fiery debate on rules versus principles-based accounting (e.g. Zeff, 2007, Benston et al., 2006, Carmona & Trombetta, 2008, Wüstemann & Wüstemann, 2010), and a main focus, perhaps at the expense of other research areas, has been IAS 39 and the fair value accounting for financial instruments. This paper is concerned with another, less explored implementation of the fair value concept – fair value accounting for investment property, and specifically for real estate assets.

Prior to the current IFRS paradigm, Swedish real estate firm’s balance sheets carried properties at historic cost, less depreciation and amortization. But with the implementation of IFRS, and specifically IAS 40, the same companies were compelled to instead account for those assets at fair value, and to include revaluations of investment property as an accrual in their income statements. And while fair value accounting on a conceptual level is superior to historic cost accounting it is plagued by a wide range of issues regarding implementation (Penman, 2007). Especially so in its weakest
form “the third level of fair value” which is the form used in real estate accounting.

The third level of fair value distinguishes itself from the first and second level by allowing “unobservable inputs” in valuation models. Whereas the first two levels are different ways of marking an assets price to identical or similar assets that are traded on the market, the third level allow firm’s discretion in valuing their own assets by making assumptions about unobservable inputs in valuation models. Examples of such unobservable inputs that relate to real estate are vacancies and future rental income.

Not surprisingly, the third level of fair value is widely debated, and its use has been called into question (Landsman, 2007). One reason being that giving the management of a firm discretion in valuing their own assets may incentivize opportunistic behavior (Ramanna & Watts, 2007), such as the management of earnings to meet stock market analysts’ expectations (Burgstahler & Eames, 2006).

Despite the potential for exploitation of fair value accounting, a range of empirical papers that will be covered in the literature review section supports its relevance. However, studies such as Ramanna & Watts (2007, 2012) complicates the relevance of fair values by finding that fair values are to some extent opportunistically exploited by managements in ways consistent with agency theory. Also, the popular opinion seems to be that fair values of investment property are not always unbiased, and some anecdotal evidence of opportunistic behavior in Swedish forestry companies has been advanced.1

Such opportunistic behavior has historically been studied as earnings management, a research area that expanded into an extensive body of research over the last few decades. The earnings management literature incorporates studies in areas such as analysis of how executive’s bonuses affect accounting decisions (Healy, 1985), examinations of discretionary accruals in financially distressed firms (Saleh & Ahmed, 2005) and many more. Findings in the literature on earnings management are mixed though, likely because of the difficulties with quantifying measures of abnormal earnings (c.f. Dechow et al., 1995).

The adoption of fair value accounting for investment property however offers the opportunity to completely bypass the difficulties with modeling and estimating discretionary accruals, as investment property revaluations are readily available in corporate income statements. Also, investment property revaluations are suitable for statistical analysis as the accrual is often of significant size both relative to a firm’s earnings and total assets.

In sum, the study of fair values in real estate investment property offers a rare opportunity to contribute to the literature on both earnings management and fair value accounting. Additionally, an analysis of investment property accounts in real estate will also contribute to professionals, such as financial analysts’ understanding of fair values, which in turn will hopefully lead to a more efficient allocation of society’s capital.

In this paper, earnings management in the Swedish real estate industry is analyzed with a multiple linear regression model and evidence of earnings smoothing2 is found. No evidence is found of balance sheet inflation resulting from earnings management with the intent of misleading equity markets. Also no evidence of earnings management with the intent of misleading the debt markets is found. The backbone of the paper is two hypotheses. The formulation of these hypotheses is followed by a literature review, a section for methodological considerations, empirical results, a discussion of the implications of the results and a conclusion. Throughout the text, key concepts are explained in footnotes as some readers may not be familiar with the subject matter. Also, a list of terminology is included in the appendix.

Research objectives and contribution

The purpose of this study is examine whether or not Swedish real estate firms are opportunistic in discretionary revaluations of their investment property and thus are engaging in earnings management, and also to discuss the academic and practical implications of the results. The following two hypothesizes are posed:

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2 Meaning that firms overstate earnings in particularly unprofitable years and understanding them in particularly profitable years
H1: Discretionary revaluation of investment property is used for earnings management, with the intent of misleading debt markets.

H2: Discretionary revaluation of investment property is used for earnings management, with the intent of misleading equity investors.

This study distinguishes itself from others in the area in two important ways. First, it targets a specific accrual and thus mitigates the problem of modeling non-discretionary and discretionary accruals, as presented in the literature review. Second, it predicts earnings management in all years, as opposed to in specific years. The second distinction will be covered in more depth in the methodology section. The findings in the analysis are important as earnings management in all forms creates false or asymmetric information, resulting in direct harm to investors and also as we will see, indirect harm to society as a whole.

Literature review

Literature on fair value accounting and earnings management related to the two hypotheses is reviewed, and issues in earnings management modeling is discussed.

Fair value accounting & IFRS

The recently implemented fair value measurements in IFRS are a part of the shift towards a more principles-based framework of accounting, of which there has been much debate (Zeff, 2007); and the reliability of fair values, especially at the third level, has been questioned (Landsman, 2007). Fair value accounting has in the case of real estate firms in Sweden replaced the historic cost accounting approach under which assets were valued at historic cost less depreciation and amortization on the balance sheet. Fair value, defined as “the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm’s length transaction” in (e.g. IAS 39 paragraph 9), instead allows firms themselves to value their own assets by using a model. Valuing assets by a model is categorized as a “level three fair value” which is the least objective form of fair value, allowing unobservable inputs to be estimated (Penman, 2007). In a review of the literature on fair value accounting Landsman (2007) concludes that disclosed fair value accounting information can be informative, but also that the informativeness depends on both the source of estimates and the measurement errors associated with each case of fair value accounting.

Surprisingly few empirical papers on the relevance of fair value estimates have gotten attention in Europe. A study in Spain however found that local comparability actually worsened with the new fair value estimates compared to the retired Spanish standards (Callao et al., 2007). Also, a study of investment property accounting in the UK concluded that external appraisers that consult on real estate property valuation are conservative, but that management when they have the chance chose aggressive models for fair values and try to smooth earnings (Richard Dietrich et al., 2000).

To find empirical work related to the topic of this paper, one can also look to other countries which have had an accounting system that resembles the current IFRS and has a similar definition of fair value. Easton et al. (1993) uses panel data and a sample of Australian firms, at the time being governed by a set of GAAP which allowed appreciation of tangible assets when appropriate, and mandated depreciation when appropriate. The authors find that relative to book value without revaluations, book value with revaluations is a better predictor of stock prices, implying that the revaluation mandate had a positive effect on the precision of balance sheet asset values. Also, Khurana & Kim (2003) examines the value relevance of fair value relative to historical cost accounting under US GAAP and finds no discernable difference in informativeness.

Earnings management

Despite the considerable research effort put into the area of earnings management, we still know relatively little about it (Healy & Wahlen, 1999). What we can be sure of though, is that it exists as it has been observed by several researchers (e.g. Burgstahler & Dichev, 1997, Burgstahler & Eames, 2006, Degeorge et al., 1999). Also, there is solid evidence that earnings management in this context is harmful to society, as capital markets are not effective in pricing discretionary accruals (Subramanyam, 1998). Before a review of the literature in the specific research area is presented, earnings management is defined and its motives, harmfulness and constraints discussed.
The definition of earnings management used here is drawn from Healy & Wahlen (1999). It is relatively broad but also precise in pointing out that earnings management should be tracable to management’s opportunity and will to mislead stakeholders.

Earnings management occurs when managers use judgement 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 the contractual outcomes that depend on the reported accounting numbers.

The definition however leaves out the motive for earnings management. An omission that is amended by the same authors, citing three main reasons for earnings management: capital markets reasons, contracting reasons and regulatory reasons. The two hypotheses posed here are mostly related to capital market reasons for earnings management, but will also touch upon contracting reasons as the market for corporate debt is often based on contracts of yields, obligations and covenants.

While there is a broad spectrum of motives for firms to manage earnings, the harmful effects of earnings management are more homogenous. Sloan (1996) shows that investors “fixate on earnings” and do not properly use the information in accruals when pricing securities. Also, Subramanyam (1996) finds that the market is inefficient in pricing discretionary accruals. Both these results imply that there is a direct and tangible harm caused to counterparties when discretionary accruals are managed, for example a bank has lent money to a failing real estate company with inflated asset values. Second, Myers & Majluf (1984), and many others, find that asymmetric information can cause deadweight losses to society. A practical example of this could be that if the real estate industry overstated its profits, society would likely allocate too much capital to it, drawing funds from other important sectors. It is worth noting however that earnings management need not be as severe as a systematic overstatement.

As earnings management is harmful and firms seem to be incentivized to manage their earnings, earnings management would likely get out of hand if it wasn’t somehow constrained. There are several explanations as to why firms are not running rampant in their management of earnings. First there is the hypothesized balance sheet constraint, meaning that firms that have previously overstated earnings cannot keep doing so as the overstatements will accumulate in the firm’s balance sheet (Barton & Simko, 2002). Second, there is the reputational cost for the managers in charge (Desai et al., 2006), and third there is outside scrutiny (Burgstahler et al., 2006).

Evidence of earnings management for equity market purposes

Studies of earnings management with the intent of misleading equity markets are mostly focused on profitability metrics. There is a relatively large body of research on the management of earnings in special situations, such as IPOs, and also a smaller one focused on earnings management of financial firms. Findings in the literature are mixed, probably because of the differences in research design, but there is solid evidence of earnings management with the intent to mislead equity markets.

Perry & Williams (1994) belongs to the larger body of specific event research and finds evidence of negative abnormal accruals in periods preceding a management buyout. On a neighboring topic, Teoh et al. (1998) finds evidence of positive abnormal accruals in periods preceding a seasoned stock issuance.

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3 A lending covenant is a condition constructed to protects lenders. One common example in the target sample being a solvency level of 20%. If the condition is broken the lenders have specific rights, such as seizing assets pledged as collateral.

4 An equity issuance by a company whose shares are already trading on the open market.
and also of a negative earnings drift post-issuance. Furthermore, Burgstahler & Eames (2006) finds evidence that public companies manage earnings to meet stock market analysts' expectations and Kasznik (1996) concludes that firms tend to manipulate earnings to match management guidance. In sum, there is plenty of evidence that firms manipulate overall earnings to meet their stakeholders' expectations.

Analysis of financial firms has become increasingly popular, most likely because financial firms have the same mandate as real estate companies, to make assumptions about the value of some of their own assets. Both Collins et al. (1995) and Beatty et al. (1995) find that banks exploit their mandated discretion to manage earnings and capital, and sometimes also tax. Also, Beaver et al. (2003) finds evidence that public property-casualty insurance firms try to avoid losses by managing loss reserves, whereas privates ones do not. Finally, when examining a specific accounting principle (FAS No. 109) which extends a firm's management the discretion to forecast tax benefits that will not be used, Miller & Skinner (1998) finds "little evidence" of earnings management.

Evidence of earnings management for debt market purposes

Studies of earnings management with the intent of misleading the debt market take on a wide array of approaches and evidence of such earnings management is not as conclusive as that of earnings management with the intent of misleading equity markets.

Healy & Palepu (1990) and DeAngelo et al. (1994) find no evidence of earnings management with the intent of misleading debt markets. Healy & Palepu (1990) examines whether firms with financial metrics close to lending covenants that would restrict dividends use accounting to manage earnings, but finds no evidence of such accounting gimmickry. The authors conclude that accounting based lending covenants are effective. DeAngelo et al. (1994) examines whether firms that are financially troubled use accounting to falsely inflate earnings, but finds that the accounting decisions in their sample of 76 firms can best be explained by prevailing financial hardships.

DeFond & Jiambalvo (1994) examines abnormal earnings in years when firms break their loan covenants and finds significant indications of earnings management. Firms that disclose covenant breakage in their annuals reports are shown to accelerate earnings in the year of the covenant breakage. However, Sweeney (1994), in a similarly study shows that firms accelerate earnings after, not before or in the same years as they break covenants. The study also concludes that firms are rarely successful in delaying default by changing accounting treatments.

Finally, Saleh & Ahmed (2005) examines abnormal discretionary accruals in financially distressed firms that are in the process of renegotiation their terms of lending. The authors find that as firms enter into negotiations on lending terms, they have negative abnormal discretionary accruals, supposedly to seem weak and negotiate relatively generous terms with creditors. In a similar analysis Jaggi & Lee (2002) finds that firms are likely to have positive abnormal accruals in cases when debt covenants are waived, and negative when debt covenants are not waived.

Modeling earnings management

General models

Dechow et al. (1995) reviews the body of research on earnings manipulation from a technical perspective. The authors propose the following model as a fair generalization of the model used in most research on earnings management.

\[
DA_t = \alpha + \beta PART_t + \sum_{K=1}^{K} \gamma_k X_{kt} + \varepsilon_t
\]

Where,

\(DA_t\) = discretionary accruals in any time \(t\)
\(\alpha\) = the intercept of the regression line
\(\beta\) = the coefficient of the dummy variable used for times \(t\) when earnings management is predicted.
\(PART_t\) = The dummy variable for times \(t\) when earnings management is predicted
\(\gamma_k\) = the coefficient of the control variable \(X_k\)
\(X_{kt}\) = the control variable \(k\), in time \(t\)
\(\varepsilon_t\) = the error term
Dechow et al. (1995) also concludes that the research in the area suffers from two technical weaknesses. The first is weaknesses in proxies for discretionary accruals. For instance, two rather simple and widely reused models are the Healy Model (Healy, 1985) and the DeAngelo model (DeAngelo, 1986) both of which assume that non-discretionary accruals are constant. Under the assumption that non-discretionary accruals are constant the models are then used to test for abnormal earnings in years when earnings management is expected. One example being the original Healy (1985) paper that examines earnings management in years that affects managements’ bonus contracts.

In more recent history perhaps the most used model is the Jones model (Jones, 1991) and the Modified Jones Model (Dechow et al., 1995). The Jones model is robust to changes in non-discretionary accruals as it projects non-discretionary accruals in a given year based assets, revenues and change in PPE over a two year period. The modified Jones model developed by Dechow et al. (1995) is similar to the original Jones model but also factors in net receivables.

What all these models have in common is that they grossly simplify a complex economic reality, and perhaps the most distinguishing characteristic of this paper is that it does not rely on one of these models. Instead it targets a specific accrual, namely discretionary revaluations of real estate property. The upside of targeting a specific accrual, which in this case is specified in all real estate companies’ income statements, is that the first weakness in the research area cited by Dechow et al. (1995), the weakness in of the proxy for discretionary accruals, is eliminated.

The second weakness however, remains. The second weakness is the issue with specifying the appropriate control variables \(X_k\) in a model of discretionary accruals. As one cannot realistically expect to specify a model that explains all of the variation in discretionary accruals, an error term \(e_t\) must be incorporated. If the error term is not distributed independently of the independent variables (PART) in the equation, that can cause the model to falsely reject or accept the null hypothesis of “no earnings management”. Last but not least, if important independent variables are omitted in the regression, the estimated standard error of the independent variables may be inflated, which in turn may cause the rejection of an unbiased and significant independent variable. These risks will be elaborated further on, and discussed, in the methodology and analysis sections.

Specific accruals models

McNichols (2001) alleges that future progress in the research area of earnings management is more likely to come from specific accruals models than aggregate accrual models, but also points out three potential weaknesses of specific accruals models. First, a specific accrual that management actually can manage must be identified. Second, specific accrual models often require more institutional knowledge and more data than aggregate models. Third, the specific accruals identified may be managed by a small number of firms, limiting the generalizability.

Method

Data, modeling and variables are presented and discussed.

Data set

Data set rationale

Based on McNichols (2001) three potential weaknesses of specific accrual models, it is the author’s position that real estate may well be an ideal industry for analysis of earnings management. It satisfies both the identification criteria as asset values can be managed and the quantity criteria, as it consists of several relatively homogenous companies.

Data set description

The data set consists of 16 Swedish real estate companies\(^5\) which is all but one\(^6\) of the Swedish real estate firms quoted on the Swedish section of the NASDAQ OMX NORDIC market. The included firm years are those between 2004 and 2012 for which each company was quoted on the stock exchange and disclosed discretionary revaluations of investment property. Also, pro-forma statements of asset revaluations for the year 2004 are included in the sample. The total

\(^5\) Sagax, Atrium Ljungberg, Castellum, Corem, Diöö, Fabege, Fast\_Partner, Balder, Klövern, Wallenstam, Wihborg, Catena, Brinova, Hufvudstaden, Heba and Dagon.

\(^6\) Kungsleden was excluded from the sample for comparability reasons.
number of complete observations is 123. The main source of firm data is the Retriever database. However, all data points in 2012 and all data on discretionary revaluation of assets was gathered manually from the firms’ annual reports. The data for the control variables STIBOR and REPO was gathered from the Swedish central bank (Riksbanken) database and the data for the control variable GDP was gathered from Statistics Sweden (SCB). No data points are considered as outliers or dropped and thus the original data is fully representative of the sample. Summary statistics for the variables are presented below.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAASSET</td>
<td>123</td>
<td>3%</td>
<td>5%</td>
<td>-11%</td>
<td>26%</td>
</tr>
<tr>
<td>LOWSOLIDAVG</td>
<td>123</td>
<td>52%</td>
<td>50%</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>SOLIDAVG</td>
<td>123</td>
<td>34%</td>
<td>12%</td>
<td>4%</td>
<td>55%</td>
</tr>
<tr>
<td>LOWSOLIDCOMP</td>
<td>123</td>
<td>41%</td>
<td>49%</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>EBITASSET</td>
<td>123</td>
<td>6%</td>
<td>4%</td>
<td>-4%</td>
<td>28%</td>
</tr>
<tr>
<td>ROAAVGCOMP</td>
<td>123</td>
<td>59%</td>
<td>2%</td>
<td>4%</td>
<td>10%</td>
</tr>
<tr>
<td>LOWROACOMP</td>
<td>123</td>
<td>58%</td>
<td>50%</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>LOWNETCOMP</td>
<td>123</td>
<td>46%</td>
<td>50%</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>LOWROAVG</td>
<td>123</td>
<td>66%</td>
<td>48%</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>STIBOR</td>
<td>123</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>5%</td>
</tr>
<tr>
<td>GDP</td>
<td>123</td>
<td>2%</td>
<td>3%</td>
<td>-5%</td>
<td>7%</td>
</tr>
<tr>
<td>REPO</td>
<td>123</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Summary statistics of regression variables

One weakness in the data set is that it has a survivorship bias, a bias common in the research area (Healy & Palepu, 1990). The survivorship bias originates primarily from underperforming firms defaulting, resulting in exemption from the data set. No sample firms have defaulted during the period 2004-2012 but the data set may still be biased as some firms will most likely have defaulted before the time period, meaning that the current set of real estate firms on the Swedish stock exchange in itself has a survivorship bias.

Regression modeling

An ordinary least squares (OLS) multiple regression model based on the generalized model for earnings management detection of Dechow et al. (1995) is specified. In the model the two hypotheses are operationalized as 7 independent variables and tested simultaneously. In line with previous literature in the area, the independent variables are assumed to have a linear effect on discretionary accruals. For each independent variable, a coefficient describing the variables effect on the dependent variable (discretionary accruals) and a T-score for that coefficient is estimated. The T-score is then converted to a p-value. The p-value is interpreted as the chance of the test returning the specified estimated coefficient, or a more extreme one, if the real coefficient is zero. For instance if, hypothetically, the variable Z would assume a positive coefficient X and a t-score of 1.96, corresponding to a p-value of ~5%, the prediction of the model is that variable Z has a positive effect on discretionary accruals, and that there is a 5% chance that a value equal to, or larger than x, would be returned if the actual variable coefficient is zero.

Naturally, the validity of the test is dependent on the underlying data set satisfying a certain set of assumptions. First the variables must be independently and identically distributed, i.e the sampling should be randomized and unbiased (Osborne & Waters, 2002). The sampling for this study is not randomized as all comparable Swedish real estate firms are analyzed. As the sample firms are not representative of any other population than Swedish real estate firms, replication of this analysis in other populations should precede extrapolation of the findings. Second, the error term must not be correlated with the independent variables (formally $E(e_i | HYP_{MT})=0$ in the regression model used). The second assumption cannot be tested but to minimize the correlation of the error term and the independent variables, control variables are introduced into the model. Third, outliers must be unlikely in the sample. Summary statistics of the variables have been presented and no observations are considered as outlying. Non-constant variance in the error term, heteroskedasticity, which is common in panel data (Petersen, 2009) is allowed as the regression model utilizes robust standard errors. The statistical software used is STATA 12.

Model

General model

As discussed, models used for detection of earnings management often employ an estimate of discretionary accruals as the dependent variable and dummy variables for years when earnings management is expected as independent variables. Also, the models control for other determinants of general firm performance, which are likely to be correlated with discretionary accruals and the periods when earnings management is predicted.
Analysis model

The model used in this analysis is based on the previously presented "generalized model" by Dechow et al. (1995). However, the generalized model is configured to incorporate more than one determinant of discretionary accruals. In general terms, the model used is defined as:

$$ DA_t = \alpha + \sum_{M=1}^{M} \beta_M HY P_{Mt} + \sum_{K=1}^{K} \gamma_K X_{kt} + \epsilon_t $$

Where,

- $DA_t$ = discretionary accruals in any time $t$
- $\alpha$ = the intercept of the regression line
- $\beta_M$ = the coefficient of hypothesized determinant of discretionary accruals $HY P_M$
- $HY P_{Mt}$ = the hypothesized determinant of discretionary accruals in time $t$
- $\gamma_K$ = the coefficient of the control variable $X_k$
- $X_{kt}$ = the control variable $k$, in time $t$
- $\epsilon_t$ = the error term

The model used here differs from the generalized model by incorporating more than one determinant of discretionary accruals. Models testing several hypotheses by using more than one determinant of discretionary revaluations is not common in research based on aggregate approximations of discretionary accruals but have previously been successfully employed in analysis of specific accruals (Beaver et al., 2003). They are also common in other fields of finance research, such as analysis of the determinants of leverage (e.g. Titman & Wessels, 1988, Hall et al., 2000, Michaelas et al., 1999). The obvious upside of using more than one determinant is that several hypotheses can be tested at once, and that if the variables are appropriately defined, less variation in the dependent variable (DA) is explained by the error term ($\epsilon$), which in turn implies a lower risk of omitted variable bias.

In explicit terms, the model used to test the hypotheses is:

$$ DA_t = \alpha + \beta_1 \text{LOWSOLIDPEER} + \beta_2 \text{SOLIDAVGFIRM} + \beta_3 \text{LOWAVGFIRM} + \beta_4 \text{ROAAVGFIRM} + \beta_5 \text{LOWROAFIRM} + \beta_6 \text{LOWNETTFIRM} + \beta_7 \text{LOWROAPEER} + \gamma_1 \text{EBITASSET} + \gamma_2 \text{STIBOR} + \gamma_3 \text{GDP} + \gamma_4 \text{REPO} + \epsilon_t $$

Variables

Variables based on solidity and profitability are used to test H1 and H2. Earnings management is predicted for all years and three constructions are used to determine the direction, positive or negative, of the earnings management in a specific year. The first construction is a firm’s average solidity or profitability which is hypothesized to be negative, implying that firms with low average profitability or solidity are on average associated with positive abnormal revaluations of investment property. The second and third constructions are dummy variables indicating whether a firm’s profitability or solidity falls below the firm and peer averages respectively in a given year. The hypothesized direction for these two constructions is positive, indicating that firms with below average solidity or profitability are more aggressive in investment property revaluation, and vice versa, resulting in an earnings smoothing effect.

Solidity related variables

A loan covenant is a condition, or term, of a loan agreement that is used to protect the party on the lending side of the transaction. Covenants can take on many forms but Citron (1992) finds that bank loan covenants are often based on valuation ratios and in Sweeney (1994), one of the most commonly broken covenants is the debt-equity ratio covenant. Solidity, which is a perfectly correlated rearrangement of the debt-equity ratio is used here as a proxy for bank covenants. The debt-equity ratio could have been used, and would have yielded the same
results, but solidity is the metric that is commonly used in the topical companies’ bond issuances. 

Three solidity related variables are used to examine whether the firms in the sample are attempting to mislead the market for their debt. The first variable is the firm’s average solidity for all years (SOLIDAVGFIRM). The variable is used to isolate any effect of a long-term weak financial position on discretionary accruals. In practical terms, this variable will indicate whether firms with a weak financial position systematically inflate their asset values. Two examples of firms with a relatively low solidity in the sample are Sagax and Corem, with 22% and 23% solidity respectively, well below the sample mean of 34%. The variable SOLIDAVGFIRM answer whether or not companies such as Sagax and Corem are more aggressive in their discretionary revaluations of asset values than firms with a higher solidity, which are assumed to not be as close to breaking their covenants as Sagax and Corem are.

The second and third variables used to examine whether the firms are attempting to mislead the debt markets are a lower solidity than company average (LOWSOLIDFIRM) and a lower solidity than peer average (LOWSOLIDPEER), both specified for individual years. Both variables are dummy variables indicating years when the firm’s solidity drops below the firm’s average solidity and the peer group’s average solidity respectively. LOWSOLIDFIRM is an operationalization of the notion that if a firm falls below historic solidity, it will also approach its debt covenant levels of solidity. LOWSOLIDPEER in turn incorporates into the model the notion that capital markets are competitive and that as the sample firms target the same capital market, falling below average financial solidity may incentivize firms to accelerate discretionary accruals.

Profitability related variables

The debate on what moves stock prices is perhaps one of the oldest in finance, and has not yet yielded conclusive results. However, solid evidence indicates that investors focus on earnings and fail to adjust for quantifiable features of accruals when pricing equity (Sloan, 1996). This opens up the option for firms to manage discretionary accruals, and as already discussed, there is a sizable body of evidence of such behavior.

The profitability related variables are constructed in the same way as the solidity related variables. Average return on assets for the company (ROAAVGFIRM) is used to isolate systematic revaluations by relatively unprofitable firms. Lower return on assets than company average (LOWROAFIRM) isolates firm years with lower than company average profitability and lower return than peer group average (LOWROAPEER) isolates years with lower than peer group average return on assets. Both variables are used to operationalize relatively poor business results effects on discretionary accruals. Also, lower net return on assets, less discretionary accruals (LOWNETFIRM) for the firm is included to incorporate financing and tax costs into the model.

Control variables

Control variables that can be expected to correlate with one or more of the independent variables and discretionary accruals are included in the regression model to mitigate omitted variable bias. Born & Pyhrr (1994) notes that real estate valuation is often based on a discounted cash flow and even though quite some time has passed since 1994, an inspection of the sample firms annual reports for 2012 shows that the DCF is still the most common valuation method.

The discounted cash flow model relies on inputs of variables such as vacancies, investments, rental income and borrowing costs, factors that are bound to vary with the economic environment. That in itself is not a threat to the model used, but it is a threat that some macroeconomic variables are probably correlated with the independent variables. For instance, in recession years, vacancies, and assumptions of future vacancies, will most likely increase, and in those same years companies are likely to drop below average profitability. Such an event would introduce bias into the model and would falsely ascribe the effect that a change in GDP has on asset revaluations to the effect a year with lower than average profitability has on asset revaluations, most likely biasing the coefficient of the variable LOWROAFIRM away

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7 Refer, for instance to, to Balder’s bond issuance 12/06/2012, Corem’s bond issuance 10/07/2011, Klövern’s bond issuance 11/05/2012 and Sagax bond issuance 06/18/2012. All firms have a 20% solidity covenant. Prospectuses available at request from Finansinspektionen. (Swedish SEC equivalent).

8 Refer to the last footnote. Both companies have loan covenants at 20% solidity.
from zero. To mitigate such biases, control variables are introduced. The first control variable is GDP growth. The second and third control variables are interest rate related. Interest rate variables are included both because they affect the borrowing cost of the firms and because they affect the discount rates used in discounted cash flow valuations. One is the three month Stockholm Interbank Offered Rate (STIBOR) and one is the Central Bank REPO rate (REPO). Two interest rates are included as corporate lending rates has historically been viewed as set at a premium above the risk-free rate (e.g. Merton, 1974), but lately bank’s lending rates have been decoupling from general interest rate levels such as the REPO rate. As a safety measure, both the STIBOR and REPO rates are included and as the two rates are strongly correlated, the statistical implications of using both rates are explored and discussed in the analysis.

The last control variable is the firms return on asset for an individual year (EBITASSET). The variable is used to isolate external economic factors that are not isolated by changes in GDP and interest rates, such as changes in regulation. Also EBITASSET is included as a proxy for the effect on valuation model cash flow assumptions that current profitability may have.

List of variables

**H1: Solidity related**

- SOLIDAVGFIRM: Average firm solidity. Defined as the arithmetic average solidity for the specific company, over all firm-years. Solidity calculated as equity/total assets.
- LOWSOLIDPEER: Lower than industry solidity, where the industry proxy is all of the sample firms. Defined as whether or not the solidity for a specific year is lower than that of the peer group’s arithmetic average. Solidity calculated as equity/total assets.
- LOWSOLIDFIRM: Lower than firm average solidity. Defined as whether or not solidity is lower than the company’s arithmetic average, for all firm years. Solidity calculated as equity/total assets.

**H2: Profitability related**

- ROAAVGFIRM: Average return on assets for the firm. Defined as the arithmetic average of return on assets for all of the specific company’s firm years. Return on assets calculated as EBIT/total assets.
- LOWROAFIRM: Lower than firm average return on assets. Defined as whether or not the return on assets for a specific year is lower than the company’s arithmetic average, for all firm years. Return on assets calculated as EBIT/total assets.
- LOWNETFIRM: Lower than firm average net return on assets. Describes whether or not the net return on assets for a specific year is lower than the company’s arithmetic average, for all firm years. Net return on assets calculated as (EBIT-Discretionary revaluations)/total assets.
- LOWNETFIRM: Lower than firm average net return on assets. Describes whether or not the net return on assets for a specific year is lower than the company’s arithmetic average, for all firm years. Net return on assets calculated as (EBIT-Discretionary revaluations)/total assets.
- LOWROAPEER: Lower than industry return on assets, where the industry proxy is all of the sample firms. Describes whether or not the return on assets for a specific year is lower than that of a peer group arithmetic average. Return on assets calculated as EBIT/total assets.

**Control variables**

- GDP: Gross Domestic Product Growth
- STIBOR: Stockholm Interbank Offered rate.
- REPO: Repo rate.
- EBITASSET: Firm year return on assets. Return on assets calculated as EBIT/total assets.

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9 Refer for instance to the Swedish central banks report on financial stability 2011:2 for a more elaborate discussion on the decoupling of STIBOR and REPO rates.
Results

Results for H1 and H2 are broken down on variable level and a complete regression table is presented on the next page. A summary is presented at the end of the section.

H1: Debt market

Overall, solidity does not seem to be a determinant of the firms’ discretionary revaluation of property assets. All three solidity variables are found to be insignificant and also take on signs opposite to the expected. A lower solidity than the peer average (LOWSOLIDPEER) is found to be negatively related to discretionary revaluations, but also to be insignificant with a p-value of 28%. The interpretation of the sign would be that in years a firm’s solidity drops below the peer average, management is more conservative in discretionary revaluations. A higher average solidity over the sample period (SOLIDAVGFIRM) is found to be positively related to discretionary revaluations, and insignificant with a p-value of 34%. The interpretation of the positive sign would be that financially stable firm are more aggressive in their discretionary revaluations of assets, and conversely that firms with a weak financial position would be more conservative. A lower solidity than average for the company (LOWSOLIDFIRM) is found to be negatively related to discretionary revaluations, and insignificant with a p-value of 35%. The interpretation of the sign would be that in years when a firm’s solidity drops below average, management is more conservative in discretionary revaluations.

In sum, no evidence of earnings management with the purpose of misleading debt investors and creditors is found.

H2: Equity Market

Overall, profitability seems to be a determinant of the discretionary revaluation of property assets. Three of the profitability related variables are significant and take on the expected sign. The fourth take on the expected sign but is not significant. The average return on assets for a company (ROAVGFIRM) is found to be negatively related to discretionary revaluations, but also to be insignificant with a p-value of 29%. The interpretation of the sign would be that as profitability increases, discretionary revaluations decrease, and conversely that as profitability decreases, discretionary revaluations increase.

A lower return on assets than company average (LOWROAFIRM) is found to be positively related to discretionary revaluations, and significant with a p-value of 2%. The interpretation of the sign is that in years when a firm’s return on assets drops below the firm average, management is more aggressive in discretionary revaluations. This result is in line with H1 and significant. The predicted coefficient is 1,9%, meaning that in years when a firm’s return on assets drop below the firm average, management will, on average, write up the value of the firm’s assets by 1,9%.

Lower than average net income, less discretionary accruals, by totals assets (LOWNETFIRM) is found to be positively related to discretionary revaluations, and significant with a p-value of 0,8%. The interpretation of the sign is that in years when a firm’s net income, less discretionary accruals, by total assets, drop below firm average, management is more aggressive in discretionary revaluations. The predicted coefficient is 1,7%, meaning that in years when a firm’s net income, less discretionary accruals, by total assets is below average, management will, on average, write up the value of the company’s assets by 1,7%.

Lower return on assets than peer average (LOWROAPEER) is found to be positively related to discretionary revaluations, and significant with a p-value of 5,7%. The interpretation of the sign is that in years when a firm’s return on assets falls below the peer average, management will be more aggressive in discretionary revaluations. The predicted coefficient is 2,2%, meaning that in years when a company’s return on assets falls below the peer average, management will on average write up the value of the company’s assets by 2,2%.

Control Variables

All control variables are found to be significant and three out of four take on the expected sign. Return on assets is found to be positively related to discretionary revaluations and significant with a p-value of 0,9%. The interpretation of the sign is that as a company’s return on assets (EBITASSET) increases, managements is more aggressive in discretionary revaluations. The estimated coefficient is 0,9% meaning that in years when return on assets increases by 1%,
management will, on average, write up the value of the company's assets by 0.9%. The Stockholm Interbank Offered Rate (STIBOR) is found to be negatively related to discretionary revaluations, and significant with a p-value of 0.9%. The interpretation of the sign is that as STIBOR increases, management is less aggressive in discretionary revaluations. The estimated coefficient is 4.4%, meaning that in years the Stibor increases by 1% (percentage point), management will, on average, write down the value of the company's assets by 4.4%. Gross Domestic Product (GDP) is found to be to be positively related to discretionary revaluations, and significant with a p-value of 0.0%. The interpretation of the sign is that as GDP increases, management is more aggressive in discretionary revaluations. The estimated coefficient is 0.4%, meaning that in years when GDP increases by 1% (percentage point), management will, on average, write up the value of the company's assets by 0.4%. The repo rate (REPO) is found to be positively related to discretionary revaluations, and significant with a p-value of 1.4%. The interpretation of the sign is that as the repo rate increases, management is more aggressive in discretionary revaluations. The estimated coefficient is 4.4%, meaning that in years when the repo rate increases by 1% (percentage point), management will, on average, write up the value of the company's assets by 4.4%.

Empirical summary

No evidence of earnings management, with the intent of misleading debt investors and creditors is found. None of the variables related to solidity are statistically significant and also, all of the solidity related variables take on an unexpected sign. However, evidence is found of earnings management with the purpose of misleading equity investors. All earnings related variables take on the expected sign and three out of four are significant. All control variables except the REPO rate behave as expected and the deviation is addressed in the analysis.

Analysis

Findings related to H1 and H2 are analyzed and implications of the findings are discussed. Also, the internal and external validity of the overall analysis is elaborated on.

H1: Debt Markets

The three solidity related indicators are not significant as predictors of discretionary accruals and H1 is thus not supported. The insignificant variables are the firm’s average solidity and times when the firm drops below its own average solidity and the industry average solidity respectively. These results can indicate one of two things; the first being that the firms in the sample do not manage earnings to mislead debt investor and creditors, the second being statistical error.

Data set considerations

It should be stressed that these results are found in a data set including the year 2008/2009 when the Swedish economy was in recession. Thus, the results are not skewed because the firms did not see years of financial difficulty in the sample period.

It should also be noted that this study is distinguished from the previously presented

<table>
<thead>
<tr>
<th>Variable</th>
<th>T-score</th>
<th>P-value</th>
<th>Sign (Expected)</th>
<th>Sign (Actual)</th>
<th>Coefficient</th>
<th>Robust standard error</th>
<th>Confidence interval (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAASSET</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOWSOLIDPEER</td>
<td>-1.08</td>
<td>28.1%</td>
<td>Pos</td>
<td>Neg</td>
<td>1.1%</td>
<td>1.0%</td>
<td>-3.1% - 0.9%</td>
</tr>
<tr>
<td>SOLIDAVGFIRM</td>
<td>0.95</td>
<td>34.2%</td>
<td>Neg</td>
<td>Pos</td>
<td>3.9%</td>
<td>4.1%</td>
<td>-4.2% - 12.1%</td>
</tr>
<tr>
<td>LOWSOLIDFIRM</td>
<td>-0.93</td>
<td>35.2%</td>
<td>Pos</td>
<td>Neg</td>
<td>0.6%</td>
<td>0.6%</td>
<td>-1.8% - 0.7%</td>
</tr>
<tr>
<td>ROAAVGFIRM</td>
<td>-1.07</td>
<td>28.8%</td>
<td>Neg</td>
<td>Neg</td>
<td>0.3%</td>
<td>0.3%</td>
<td>-0.9% - 0.3%</td>
</tr>
<tr>
<td>LOWROAFIRM</td>
<td>2.32</td>
<td>2.2%</td>
<td>Pos</td>
<td>Pos</td>
<td>1.9%</td>
<td>0.8%</td>
<td>0.3% - 3.4%</td>
</tr>
<tr>
<td>LOWNETFIRM</td>
<td>2.69</td>
<td>0.8%</td>
<td>Pos</td>
<td>Pos</td>
<td>1.7%</td>
<td>0.6%</td>
<td>0.5% - 3.0%</td>
</tr>
<tr>
<td>LOWROAPEER</td>
<td>1.92</td>
<td>5.7%</td>
<td>Pos</td>
<td>Pos</td>
<td>2.2%</td>
<td>1.1%</td>
<td>-0.1% - 4.4%</td>
</tr>
<tr>
<td>EBITASSET</td>
<td>6.11</td>
<td>0.0%</td>
<td>Pos</td>
<td>Pos</td>
<td>0.9%</td>
<td>0.2%</td>
<td>0.6% - 1.2%</td>
</tr>
<tr>
<td>STIBOR</td>
<td>-2.65</td>
<td>0.9%</td>
<td>Neg</td>
<td>Neg</td>
<td>4.4%</td>
<td>1.7%</td>
<td>-7.7% - 1.1%</td>
</tr>
<tr>
<td>GDP</td>
<td>4.63</td>
<td>0.0%</td>
<td>Pos</td>
<td>Pos</td>
<td>0.4%</td>
<td>0.1%</td>
<td>0.3% - 0.6%</td>
</tr>
<tr>
<td>REPO</td>
<td>2.51</td>
<td>1.4%</td>
<td>Neg</td>
<td>Pos</td>
<td>4.4%</td>
<td>1.8%</td>
<td>0.9% - 7.9%</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.41</td>
<td>16.2%</td>
<td>-</td>
<td>Neg</td>
<td>3.8%</td>
<td>2.7%</td>
<td>-9.3% - 1.6%</td>
</tr>
</tbody>
</table>
research by predicting earnings management in all analyzed firm years. Previously, DeAngelo et al. (1994), DeFond & Jiambalvo (1994), Sweeney (1994), Saleh & Ahmed (2005), Jaggi & Lee (2002), DeAngelo et al. (1994) and Healy & Palepu (1990) have used specific events, such as years when loan covenants are broken, to predict when earnings are managed. The previously used qualitative method of predicting earnings management is likely to be more sensitive than the method used here, but also yields more restricted information. Whereas previous research has answered questions about years when covenants are broken, this analysis answers questions about the firm’s long term behavior. With that in mind, it should be noted that some specific short-term tendencies towards earnings management may not be observable in this analysis.

The earnings management perspective

Statistical issues aside, the findings in this study are in line with papers such as Healy & Palepu (1990), finding that accounting based loan covenants are effective, and with DeAngelo et al. (1994) finding that financially distressed firms do not accelerate their discretionary accruals. The study however contradicts the studies that have found evidence of earnings management in years of financial distress (i.e. DeFond & Jiambalvo, 1994; Saleh & Ahmed, 2005; Jaggi & Lee, 2002; DeAngelo et al., 1994) which further complicates the mixed evidence in the research area of earnings management and debt markets. The findings here also contradicts the conclusion of Sweeney (1994), that earnings are managed after covenant breakage and that a lagging behavior best describes earnings management with the intent of misleading debt markets. Such behavior would have been properly isolated by the model as the year following a year when a solidity related covenant is broken is likely to be a year with low firm solidity, unless the firm has issued new equity and thus has less of a need to manage earnings upwards.

Fair value accounting perspective

In the context of fair value accounting relevance, the lack of evidence of firms exploiting discretionary mandates to mislead debt markets strengthens the case for a principles-based accounting paradigm in the timeless debate of rules vs principles (c.f Zeff, 2007). The study does not directly interact with those examining the relevance of fair values (e.g. Callao et al., 2007) but touches on their periphery, offering evidence that fair values are not manipulated for solidity purposes. The conclusions that can be drawn from this is that while fair values may or may not be relevant as value metrics, they at least seem to be of constant relevance or irrelevance in times of financial distress.

Practitioners perspective

What the findings presented indicates from a creditors perspective is that creditors can keep relying on accounting based information both to judge the creditworthiness, and to restrict the behavior, of debtors. Also seeing things from a regulators perspective, the shift towards a more principles-based accounting seems to have been successful when considering only the more subjective accounting paradigms effect on covenants.

Statistical considerations

Two possible threats to the internal validity of the results are related to the error terms in the regression. If the error term correlates with one of the independent variables and has a coefficient with an opposite sign, the coefficient of the solidity related variables is biased towards zero. Also, if important control variables are left out of the regression, this can inflate the the standard errors of the solidity related variables casuing their coefficients to be falsely rejected.

H2: Equity markets

Evidence of earnings management with the intent of misleading equity markets is found. The three dummy variables indicating a low point in firm profitability are all significant and take on a positive coefficient for firm years with a relatively low profitability. The firms’ average return on assets is not a significant determinant of discretionary accruals.

The interpretation of the positively correlated variable “lower than peer group average solidity” is relatively straight-forward. When the firms operating profitability lags behind that of its peers, the company will accelerate discretionary accruals. This result is perhaps unsurprising to some readers but to the author’s best knowledge, no previous evidence of such competitive accounting behavior has previously been advanced in the field.

Both a lower return on assets than firm average and lower net income less discretionary accruals
than firm average are significant in the regression and take on positive coefficients. What this means is that firms compensate for weak years not only in operations but also in finance and tax. Whether firms compensate for weak years from a tax perspective and/or a finance perspective, this paper cannot answer, as the variable representing net income incorporates variation in both.

The insignificance of the variable average return on assets can be interpreted as evidence that real estate firms with poor operating performance, on average are not inflating their earnings and balance sheets with positive discretionary accruals. If the variable coefficient is significant, and for instance negative, that would mean that poorly performing companies have consistently been more aggressive in their revaluation, which in turn would lead to inflated asset values in poorly performing companies and vice versa. The result is somewhat reassuring as inflation in the firms’ asset values would most likely end up being costly both for individual investors and for society overall, because of tax and resource allocation effects.

In sum, evidence of earnings management in years with poor performance relative to company and peer average is found. However, no evidence of systematic balance sheet inflation by relatively unprofitable firms is found. So what we have observed in concrete terms is that real estate firms manage earnings by conservative discretionary revaluations in relatively profitable years and aggressive discretionary revaluations in relatively unprofitable years.

Earnings management perspective

Evidence in this study aligns with the relatively large body of research where earnings management has been observed\(^\text{10}\) and paints a picture of discretionary accruals as a tool for income smoothing. Previous studies have often focused on high-powered tests focusing on specific firm years when, for instance, management bonuses are being decided (i.e. Healy, 1985) and found such evidence. What this study contributes to the earnings management literature is evidence of a not so aggressive, but consistent, form of earnings management, namely earnings smoothing. The study also to some extent contradicts Miller & Skinner (1998) that did not find any evidence of earnings management when examining a specific FASB accrual (FAS No. 109) and found that management did not use their discretionary mandate to manage earnings.

The study also aligns with previous findings of negative abnormal accruals cancelling out positive ones (e.g. Teoh et al., 1998). This raises the questions about why earnings management seems to cancel out and have neutral effects over time. Potential explanations include the previously studied reporting incentives (Burgstahler & Eames, 2006), reputational costs for management (Desai et al., 2006), balance sheet constraints (Barton & Simko, 2002), and may be a fruitful area for further research.

Fair value accounting perspective

From the perspective of fair value relevance research, the evidence in this paper confirms some of the concerns researchers such as Penman (2007) have had about the third level of fair value. Allowing firms to mark their own asset values to their own models does indeed seem to tempt management to exploit its discretionary mandate to dress up the firms financial performance. Such a result does however not refute the claim of Landsman (2007) that fair values, relative to historic cost accounting, are informative. Instead, what the result indicates is that the discretionary mandates associated with the third level of fair values is a weakness that affects the integrity of financials statements. Whether fair values are preferable to historic cost accounting or not, cannot be discussed further based on the findings in this paper.

Practitioners perspective

In practical terms, the evidence here indicates that there is good reason to be sceptical about the discretionary revaluations of the average real estate firm that prepares its balance sheets in accordance with IFRS. In fact, it may be sensible to be more sceptical in relatively unprofitable years, and less sceptical in relatively profitable ones. Over a longer period of time however, no evidence of balance sheet inflation is found, indicating that the reliability of balance sheet asset values of real estate firms, under IFRS, are not compromised by the firm’s discretionary asset revaluation mandates. From a standard setters point of view, results here imply that it is important to consider opportunistic behavior when designing principles-based accounting frameworks.

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\(^{10}\) E.g. Perry & Williams, 1994; Teoh et al., 1998; Burgstahler & Eames; Kasznik, 1996; Collins et al., 1995; Beatty et al., 1995; Beaver et al., 2003 (presented in the literature review)
**Statistical considerations**

The possible statistical issue that must be addressed here is if the error term is correlated with one of more of the independent profitability related variables, and also has a positive effect on discretionary accruals. That could bias the coefficients of one or more of the profitability related variables away from zero, and in turn generate false, or at least overstate, evidence of earnings management. One example of that could be an effect of the general economic environment is not properly isolated by the control variables GDP and EBITASSET and instead correlates with both one or more of the profitability related dummies and discretionary revaluations.

**Validity of the analysis**

**Internal validity**

As pointed out in the literature review section, a substantial threat to internal validity is the misspecification of control variables. We can tell from the regressions R² of 60% that all possible control variables have not been specified, but to perfectly specify 100% of the variation in discretionary accruals is not a reasonable ambition. Also, specifying all control variables is not necessary as long as the left out variables do not correlate with any of the independent variables used. As it will never be certain which control variables are left of the models, there is and always will be a potential for bias in regression models. What is certain and can be studied however is how the used control variables behave with respect to other variables and to reasonable expectations.

Both GDP and EBITASSET behave as expected, taking on positive and significant coefficient. These results are straight-forward and predict write-ups of the real estate company’s asset values in years with high firm profitability and favorable macroeconomic development. The interest rate variables however behave in an unexpected way. STIBOR takes on a negative sign whereas REPO takes on a positive one. Also, a Variance Inflation Test \(^{11}\) returns values way above accepted levels for both of the variables. Such multicollinearity can compromise the whole regression model but after further testing \(^{12}\) the threat is ruled out and the model is used in its original form. The unexpected sign of the REPO rate indicates write-ups of asset values when interest rates increase, but this effect is offset by a larger negative effect when STIBOR increases and the sum of the coefficients is in line with reasonable expectations.

**External validity**

Granted that the results presented here are internally valid, the analysis should also to some extent have external validity. On the grounds that the studied accounting framework is applied in more than one country, and that real estate is a relatively homogenous industry, it is the author’s expectation that the results will be replicable primarily in other countries, and possibly also in other industries with substantial investment property accounts.

**Summary & Conclusion**

The evidence presented here indicates that real estate firms exploit their discretionary mandates in asset revaluations to smooth earnings, making the firm’s operations seem less volatile than they actually are. Such earnings management may mislead the stereotypic risk averse investor, leading to direct harm for the investor and to an inefficient allocation of society’s resources. What would be even more alarming than short term earnings smoothing would be a systematic inflation of the asset values of poorly performing real estate companies, but no evidence of such behavior is found. Also, no evidence of earnings management with the intent of misleading the debt market is found.

**Further study**

A first step for further research is to attempt to replicate and reconfirm the results of this analysis in other countries and sectors. Given that replications are successful, a number of questions are actualized.

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\(^{11}\) Refer to appendix for full test statistics

\(^{12}\) In a regression model where the REPO variable is replaced with a variable defined as the difference between STIBOR and REPO, similar results to the ones presented in this paper are found in a model where all variables are below the generally accepted VIF-level of 3. The original model is kept intact as it may hold some information about how the interaction of the REPO and STIBOR rates affect corporate interest rate levels. (Please refer to the appendix for specifications of both models)
Balance sheet inflation

What is stopping balance sheet inflation? The case that management is incentivized to systematically inflate real estate firms’ asset values can clearly be made but no evidence of such behavior is found. Several explanations such as balance sheet constraints (Barton & Simko, 2002) and reputational costs (Desai et al., 2006) have been advanced, but the area is still relatively unexplored.

Survivorship bias

What is the effect of survivorship bias? As noted, the data in this analysis and many others like it has a survivorship bias because it does not properly include firms that have gone out of business before the sampling period. Nothing can be said about these companies based on this study, but there is a possibility that the defaulted firms would have been either more or less aggressive in earnings management. Also, it may be that these firms managed their discretionary accruals to mislead the debt markets before a default, as previous studies have indicated.

Prohibiting earnings management

As we seem to be progressing into a world where accounting is more principled based, what can we do prohibit earnings management? Even if earnings are not managed to systematically inflate balance sheet accounts, but just too smooth earnings, earnings management is still harmful. But what can we do about it, and do we need more rules?

Effects of earnings management

How harmful is earnings smoothening? Theory predicts that if a firm uses accounting measures to smooth its earnings, the firms will be mispriced and capital will be allocated to the firm in an inefficient way, but there are no models quantifying the harm. What is the cost of earnings management?

Final words

I would like to thank you for taking an interest in my research. I expect that both the literature and knowledge in the fields of fair value accounting relevance and earnings management will keep expanding, and I hope that this analysis will entice more research on the management of specific accruals. I would also like to thank my
Bibliography


Appendix

Correlation matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>STIBOR</td>
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</tr>
<tr>
<td>REPO</td>
<td>59.16</td>
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</tr>
<tr>
<td>EBITASSET</td>
<td>2.91</td>
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</tr>
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<td>LOWROAPEER</td>
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<tr>
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</tr>
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<td>LOWNETFIRM</td>
<td>1.26</td>
<td>0.791988</td>
</tr>
<tr>
<td>BNP</td>
<td>1.24</td>
<td>0.803591</td>
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</table>
Regression model used

Stata print from the used regression model

Linear regression

|            | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|------------|-------|-----------|-------|------|----------------------|
| DAASSET    |       |           |       |      |                      |
| LOWSOLIDPEER | -0.0109969 | 0.0101566 | -1.08 | 0.281 | -0.0311229 - 0.0091292 |
| SOLIDFIRM  | 0.0392251 | 0.041055  | 0.95  | 0.342 | -0.022281 - 0.1007084 |
| LOWSOLIDFIRM | -0.0058791 | 0.0062916 | -0.93 | 0.352 | -0.0183464 - 0.0065882 |
| EBITASSET  | 0.9393754 | 0.1537852 | 6.11  | 0.000 | 0.6346397 - 1.244111  |
| ROAAVG FIRM| -0.3009349 | 0.2816949 | -1.07 | 0.288 | -0.8591323 - 0.2572624 |
| LOWROAFIRM | 0.0174549 | 0.0080095 | 2.19  | 0.032 | 0.0046007 - 0.0303091 |
| LOWNETFIRM | 0.0021514 | 0.0021173 | 1.00  | 0.315 | 0.0006742 - 0.0067023 |
| STIBOR     | -4.415835 | 1.665085  | -2.65 | 0.009 | -7.15312 - 1.116359  |
| BNP        | 0.4433159 | 0.0956667 | 4.63  | 0.000 | 0.2537459 - 0.6328859 |
| REPO       | 4.388488  | 1.251744  | 3.50  | 0.000 | 0.9172897 - 7.859687  |
| _cons      | -0.0384182 | 0.0273068 | -1.41 | 0.159 | -0.0925284 - 0.015692 |

Stata print from the used regression model without control variable REPO

Linear regression

|            | Coef. | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|------------|-------|-----------|-------|------|----------------------|
| DAASSET    |       |           |       |      |                      |
| LOWSOLIDPEER | -0.0124431 | 0.0104223 | -1.19 | 0.235 | -0.0330936 - 0.0082075 |
| SOLIDFIRM  | 0.0421424 | 0.0434253 | 0.97  | 0.334 | -0.0438993 - 0.1281841 |
| LOWSOLIDFIRM | -0.0040699 | 0.0064533 | -0.63 | 0.530 | -0.0168562 - 0.0087164 |
| EBITASSET  | 0.9405069 | 0.1358234 | 6.96  | 0.000 | 0.6759704 - 1.214203  |
| ROAAVG FIRM| -0.3271562 | 0.2945815 | -1.11 | 0.269 | -0.8108317 - 0.2565192 |
| LOWROAFIRM | 0.0146605 | 0.0080983 | 1.81  | 0.073 | 0.0013852 - 0.0307062 |
| LOWNETFIRM | 0.0157252 | 0.0063753 | 2.39  | 0.018 | 0.0026971 - 0.0287532 |
| LOWROAPEER | 0.020721 | 0.0113625 | 1.82  | 0.071 | 0.0017924 - 0.0432344 |
| STIBOR     | -0.3018861 | 0.2983907 | -1.01 | 0.314 | -0.8931091 - 0.2893369 |
| BNP        | 0.4199129 | 0.0931086 | 4.51  | 0.000 | 0.2354301 - 0.6043957 |
| _cons      | -0.0459377 | 0.0271295 | -1.69 | 0.093 | -0.0996914 - 0.007816  |
Stata print from the used regression model without control variable REPO and with the variable DIFFSTIBORREPO defined as the difference between STIBOR and REPO.

Linear regression

|               | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|---------------|-------|-----------|------|-----|----------------------|
| LOWSOLIDPEER | -.0109969 | .0101566 | -1.08 | 0.281 | -.0311229, .0091292 |
| SOLIDFIRM     | .0392251 | .0411055 | 0.95 | 0.342 | -.0422281, .1206784 |
| LOWSOLIDFIRM  | -.0058791 | .0062916 | -0.93 | 0.352 | -.0183464, .0065882 |
| EBITASSET     | .9393754 | .1537852 | 6.11 | 0.000 | .6346397, 1.244111 |
| ROAAVGFIRM    | -.3009349 | .2816949 | -1.07 | 0.288 | -.8591323, .2572624 |
| LOWROAFIRM    | .018548 | .0080095 | 2.32 | 0.022 | .0267666, .034195 |
| LOWNETFIRM    | .0174549 | .0064869 | 2.69 | 0.008 | .0046007, .0303091 |
| LOWROAPREER   | .021514 | .0062916 | 1.92 | 0.057 | -.0006742, .0437023 |
| STIBOR        | -.027347 | .311838 | -0.09 | 0.930 | -.6452747, .5905808 |
| BNP           | .4433159 | .0956667 | 4.63 | 0.000 | .2537459, .6328859 |
| DIFFREPOSTIBOR| -4.388488 | 1.751744 | -2.51 | 0.014 | -.859687, -.172899 |
| _cons         | -.0384182 | .0273068 | -1.41 | 0.162 | -.0925284, .015692 |

VIF test of the used regression model without control variable REPO and with the variable DIFFSTIBORREPO defined as the difference between STIBOR and REPO.

<table>
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<th>Variable</th>
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<td>ROAAVGFIRM</td>
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<td>0.803591</td>
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</table>
Key concepts and terminology

A short list of concepts and terminology that any reader unfamiliar with the subject matter may want to return to at times.

**Accrual accounting:** The current accounting paradigm under which economic events are recognized based on the actual time of costs and revenues which is not necessarily the same as the time of the corresponding cash transaction. An example of an accrual account is Property, plant and equipment, as such items are not (most often) expended when purchased, but instead expended over their lifetime.

**Abnormal accrual:** A term describing the accruals that that deviate from expectations.

**Discretionary accrual:** An accrual that a firm has some level of discretionary influence of. The term is used here to describe the revaluation of the investment property account of the studied real estate firms.

**Fair value accounting:** The practice of attributing a balance sheet item a “fair market value”. Often contrasted with historic cost accounting where balance sheet items are carried at historic costs less depreciation and amortization. There are three levels of fair value and they are (somewhat simplistically) 1) marked to market, 2) marked to similar asset or liability, 3) marked to model. Marking to market means marking an asset or liability to the price of an identical asset or liability that is traded on a market. Marking to similar asset mean marking to the price of a similar asset or liability that is traded on the market and marking to model mean marking the asset or liability value a model. The real estate firms examined here generally mark their assets to a model (level three fair value).

**Lending covenant:** A condition constructed to protect lenders. One common example in the target sample being a solidity level of 20%. If the condition is broken the lenders have specific rights, such as seizing assets pledged as collateral.