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Accounting conservatism

~ listed versus non-listed companies ~
~ in the Netherlands ~

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Preface

Hereby I present you my Master's thesis. This thesis has been written as a final assignment of my study Business Economics at the Erasmus University Rotterdam. The past few months I have spend conducting this research on accounting conservatism. At this moment the time has come to conclude my research and to submit my thesis. I want to thank my family and friends for the support during my entire study at the Erasmus University Rotterdam. I also would like to thank dr. C.D. Knoops for his support and critical review of my paper during the Master's Seminar Advanced Financial Accounting and my thesis during the process of writing this thesis.

Rotterdam, June 26, 2010
Diana van den Hoek

Executive summary

The International Accounting Standards Board prescribes that the financial statements give a true and fair view of the underlying performance of the company. The Dutch Civil Code also prescribes the annual report to give a sound representation of the net worth and performance of the company. Accounting conservatism implies that losses are recognized in the financial statements in a more timely manner than gains. Applying accounting conservatism might jeopardize the true and fair view of the financial statements. Therefore, it is essential to have knowledge on the degree of accounting conservatism applied.

This thesis will examine 1) the existence of accounting conservatism in the Netherlands, 2) the development of accounting conservatism in the Netherlands, and 3) the difference in the level of accounting conservatism at Dutch listed and Dutch non-listed companies.

Accounting conservatism is expected to exist and to increase over time. This expectation is based on empirical research on accounting conservatism in the United States of America. Basu (1997) found that accounting conservatism exists at U.S. listed companies and that accounting conservatism has increased in the period from 1963 until 1990. Givoly and Hayn (2000) also have conducted research on accounting conservatism at U.S. listed companies. Their research showed that accounting conservatism exists and has increased during the period from 1950 till 1998.

The level of accounting conservatism is expected to be lower at non-listed companies compared to listed companies. Ball and Shivakumar (2005) studied the difference in reporting quality between listed and non-listed companies in the United Kingdom for the period of 1989 until 1999. They have used timely loss recognition as a proxy for reporting quality. Their research showed that non-listed companies incorporate losses in their reported income in a less timely manner than listed companies. These results can be interpreted as non-listed companies being less conservative than listed companies.

Two models are used to assess the existence and development of accounting conservatism. The first model examines the level of non-operating accruals. Negative non-operating accruals indicate that losses are incorporated in the reported income before the cash outflow occurs. The second model concerns the relation between cash flows and accruals. A negative relation between cash flows and accruals indicates that in periods of losses the cash flows are not affected. For cash outflow experiencing companies the relation between cash flows and accruals is expected to be positive indicating that the losses have already been incorporated in the financial statements.

Analysis of non-operating accruals showed that the non-operating accruals are negative during the entire research period. The level of non-operating accruals is rather steady. These results indicate that accounting conservatism exists and that the level of accounting conservatism has hardly changed during the research period. The relation between accruals and cash flows is negative during the entire research period except for the year 2005. For cash outflow experiencing companies the relation

between cash flows and accruals is positive for most of the research period. However, due to fluctuating relations between cash flows and accruals there cannot be determined a clear trend. These results show that accounting conservatism exists. However, a clear trend in the development of the level of accounting conservatism is not observable.

When comparing the level of non-operating accruals at listed and non-listed companies I found that non-listed companies are less conservative than listed companies in the period from 2001 until 2003 and during the year 2008. In the period from 2004 till 2007 the non-listed companies are more conservative than listed companies. When analyzing the relation between accruals and cash flows for listed and non-listed companies the results do not indicate that non-listed companies are less conservative than listed companies.

The results of this research show that Dutch companies apply conservative accounting methods. However, there is no clear trend observable in the level of accounting conservatism. Also, there is no indication that the degree of accounting conservatism is lower for non-listed companies compared to listed companies.

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I   Introduction

I.1   Introduction

Accounting conservatism implies that less verification is needed for expenses to be recognized in the financial statements compared to revenues. Therefore, the expenses are recognized in the financial statements in a more timely manner than revenues. In the existing body of research there is no univocal opinion whether accounting conservatism is a good thing or a bad thing. Accounting conservatism might be viewed as a positive phenomenon since it could be beneficial to the company. On the other hand, accounting conservatism can be viewed as a bad thing. Financial statements in which accounting conservatism is applied might not give a true and fair view of the underlying performance.

Due to conservative accounting methods uncertain future benefits are not taken into account in the financial statements. Management can only include those future benefits when the benefits are verifiable. The opportunistic behavior of management is constrained by these conservative accounting methods. As a result, management's reward cannot be maximized beyond the amount which is rational from the owner's perspective. Also, conservative accounting will prevent management from attracting excessive debt and paying excessive dividends. Therefore, applying some conservative accounting methods might be beneficial to all stakeholders of the firm.

The asymmetry in loss and gain recognition affects the view the financial statements create of the performance of the company. Losses will likely be recognized in the financial statements before the company experiences the losses as a result of conservative accounting. Gains might not be included in the financial statements due to the higher level of verification needed to incorporate gains in the financial statement. As a consequence, the financial statements might not give an accurate view of the performance of the company. Accounting standards prescribe the financial statements to give a true and fair view of the underlying performance of the company. The true and fair view might be jeopardized when accounting conservatism is applied. Therefore, it is essential to have knowledge on the degree of accounting conservatism applied.

In this Master's thesis accounting conservatism at Dutch companies will be examined. This research tries to find whether accounting conservatism exists at Dutch companies and how accounting conservatism has developed in the period from 2001 till 2008. A distinction will be made between Dutch companies that are listed on a stock exchange and Dutch companies that are not listed.

I.2   Research question

This thesis will address the following research question:

"Has accounting conservatism increased during the past decade, and are there any differences in the degree of accounting conservatism at listed and non-listed Dutch firms?"

I expect that accounting conservatism has increased during the past decade, with a strong increase in 2008 due to the financial crisis. Prior research shows that accounting conservatism has increased during the past decades (Basu 1997, Givoly and Hayn 2000). Although those studies have not been conducted on companies in the Netherlands I do not expect large differences. However, based on the research of Ball and Shivakumar (2005) the level of accounting conservatism is expected to be lower for non-listed companies than for listed companies.

I expect a strong increase in accounting conservatism in 2008 relative to previous years due to the financial crisis. The crisis caused a lot of uncertainty. Due to uncertainty the degree of verification needed to recognize gains in the financial statements will increase. Losses are still recognized in a timely manner. As a consequence, the asymmetry in timeliness of earnings is expected to increase. Also, the size of the revenue and expenses affects the level of accounting conservatism. When revenues decrease while the expenses remain the same amount, the level of accounting conservatism will increase. Due to the decrease of the revenue the recognition of gains will also be lower. The unchanged amount of expenses will not affect the recognition of losses. Therefore, the asymmetry in recognition of losses and gains will increase. This will indicate an increase in accounting conservatism.

The main research question cannot be answered without first taking a closer look at accounting conservatism and prior research on this topic. Therefore, to answer this main research question the following sub-questions will be used:

1.   What is meant by accounting conservatism?
2.   How can accounting conservatism be measured?
3.   What is the outcome of prior research on accounting conservatism?
4.   What is the relation between the results of this research and the expectations?
5.   What is the relation between the results of this research and the outcome of prior research?

I.3   Relevance

This research tries to give new insight in the area of accounting conservatism research. The objectives of this paper are (1) to create an overview of existing research on accounting conservatism, (2) to critically review the existing literature on accounting conservatism, (3) to identify whether the

level of accounting conservatism has changed during the past decade, (4) to identify any differences between the level of accounting conservatism at listed and non-listed Dutch firms, and (5) to identify opportunities to future research.

This research is relevant for standard setters, preparers and users of financial statements. This study assesses the extent to which financial reporting of Dutch firms is affected by an asymmetry in the recognition of gains and losses. Having knowledge of factors influencing the financial statements is essential when preparing and using financial statements. Especially for standard setters it is crucial to obtain knowledge about accounting conservatism since the degree of accounting conservatism could influence the effects of the applicable standards on the financial statements. When these effects are not anticipated the application of the standard might lead to unintentional outcomes. Therefore, it is necessary for standard setters to take into account the effect of accounting conservatism on financial statements to prevent any unintentional effects of applying the standards. Preparers and users of financial statements also need to gain knowledge about the degree of accounting conservatism applied in financial statements. Accounting conservatism might lead to understatement of net assets in the financial statements. When preparers and users are aware of these biases, they can take them into account when preparing or using the financial statements.

Another point of relevance can be found in the sample which is used for this research. Most of the existing research has been conducted on companies in the United States of America. Also, I have found very little research on accounting conservatism at non-listed firms. Since this study includes listed as well as non-listed companies it will extend the existing body of research.

I.4   Structure

The remainder of this Master's thesis is organized as follows. Chapter II provides a theoretical background on accounting conservatism. This chapter includes a definition of and explanations for accounting conservatism, models to measure accounting conservatism and prior research on the subject. The research design will be described in chapter III. This chapter will give insight in the hypotheses that will be tested, the sample selection process and the methodology that will be used for the research. Chapter IV 'Analysis' includes the comparison of the results with the expectations and the results of prior research. In chapter V the limitations of the research will be discussed. A summary and conclusion are provided in the final chapter of this Master's thesis.

# II	Literature review

## II.1	Introduction

In this chapter a theoretical background on the subject 'accounting conservatism' will be provided. The theoretical part of this Master's thesis will aid in understanding the research that will be conducted. In this literature review a definition of accounting conservatism is provided. Also, the four explanations of accounting conservatism and the applicability of these explanations are discussed. The different models to measure accounting conservatism will be explained. The models will be critically reviewed. To complete the required knowledge on accounting conservatism prior empirical research on accounting conservatism will be discussed. This theoretical chapter will create sufficient knowledge to understand the research that will be conducted.

This chapter will be organized as follows. First, accounting conservatism is defined. After that the explanations for the existence of accounting conservatism are discussed. Also, the different models to measure accounting conservatism will be explained and the criticism on the measures will be discussed. After that, a section on the existing body of research on accounting conservatism will be included. The chapter will be concluded with a short summary of the chapter.

## II.2	Theoretical background

### II.2.1	Accounting conservatism

Traditionally accounting conservatism is defined as 'anticipate no profit, but anticipate all losses'. However, accounting conservatism in this extreme form has been traded in for a less severe form. Nowadays, accounting conservatism is viewed as an asymmetry in the level of verification needed to recognize gains and assets on the one hand and losses and liabilities on the other. To recognize gains or assets a higher level of verification is required relative to the recognition of expenses or liabilities (Basu 1997, Watts 2003a). As a consequence of the asymmetry in the level of verification required, losses will be anticipated in a more timely manner relative to gains. Therefore, using conservative accounting methods profit will be understated. This type of accounting conservatism is also called earnings conservatism or conditional conservatism (Givoly et al. 2007). Conditional accounting conservatism is news dependent (Beaver and Ryan 2005). For example, when bad news comes available the book value of an asset is written down. However, when good news comes available the book value is not adjusted upwards.

Accounting conservatism could also be defined as the selection of conservative accounting methods (Givoly et al. 2007). Understatement of assets occurs due to higher depreciation costs, or due to expensing investments in certain assets instead of capitalizing them. This type of accounting conservatism is also known as balance sheet conservatism or unconditional conservatism.

Unconditional accounting conservatism is news independent (Beaver and Ryan 2005). The accounting method, which is chosen when the asset is first recorded, contains an expected degree of accounting conservatism, which is independent of any events occurring after that point in time.

The research conducted in this Master's thesis will focus on earnings accounting conservatism. However, in the following section explanations for both types of accounting conservatism will be discussed. Also, section II.3 includes models for both earnings and balance sheet conservatism.

In the remainder of this Master's thesis a commonly accepted definition of accounting conservatism will be used. Accounting conservatism is viewed as 'accountant's tendency to require a higher degree of verification for recognizing good news than bad news in financial statements' (Basu 1997).

II.2.2 Explanations

II.2.2.1 Introduction on explanations

There are several explanations for the existence of accounting conservatism. Basu (1997) mentions contracting considerations, taxation, litigation, political process and regulations to have influenced the level of accounting conservatism applied in financial reporting. Watts (2003a) has reviewed existing literature on accounting conservatism and came up with four commonly accepted explanations of accounting conservatism. Watts (2003b) also collects and structures evidence to support the explanations. In this section these explanations of accounting conservatism are discussed.

II.2.2.2 Contracting explanation

Conservatism is included in the contracts the firm enters into, because conservatism constrains management's opportunistic behavior (Watts 2003a). The understatement of net assets reduces the amount managers can pay themselves and the shareholders of the firm. Therefore, the market value of the firm increases which benefits all parties contracted with the firm. For example, debt holders are only concerned with the repayment of the loan. Therefore, they will include lower bound constraints in the debt contract. Management compensation contracts will also contain some conservative measures. To prevent managers from reporting future gains that cannot be verified the contract will include verification requirements for recognizing future gains. Empirical evidence is provided by Kwon et al. (2001), who find that accounting conservatism reduces the agency costs of distortions in the compensation contract.

Corporate governance also influences the use of conservative accounting methods (Watts 2003a). Managers have the incentive to hide losses to avoid penalties (e.g. being fired). Ahmed and Duellman

(2007) expect that strong boards will demand a higher level of accounting conservatism because conservatism can help directors in reducing agency costs, which arise due to the conflict of interest between management and the owners of the firm. Corporate governance is used to control and to monitor managers' behavior to prevent management from acting opportunistically. As a consequence, managers will have fewer opportunities to behave opportunistically. Therefore, the accounting methods applied will be more conservative. Empirical evidence is provided by Garcia Lara et al. (2009) and Ahmed and Duellman (2007). Garcia Lara et al. (2009) find that U.S. firms with stronger corporate governance show a high level of accounting conservatism. These findings are in accordance with research conducted by Ahmed and Duellman (2007), who find evidence of a negative relation between the percentage inside directors and the degree of accounting conservatism, and a positive relation between the percentage of shares held outside the firm and the degree of accounting conservatism.

II.2.2.3 Litigation explanation

Understatement of net assets is less likely to lead to litigation than systematical overstatement of net assets (Watts 2003a). When, for example, management of a company wants to expand her market share by acquiring another company, management will have no complaints when the assets are understated. In that case the acquiring party actually receives more value than initially estimated. However, when the net assets are overstated, the acquiring party receives less value than they initially bought. Therefore, the acquiring party is more likely to sue the management and the auditors of the acquired firm when the net assets are overstated. As a consequence, managers have incentives to use conservative accounting methods.

II.2.2.4 Taxation explanation

According to Watts (2003a) firms tend to use conservative accounting methods to defer their tax payments. When corporate income tax payments are dependent on net income reported in the income statement, implementing conservative accounting methods could reduce the tax payment of current fiscal year. However, in some countries tax payment depends on taxable income calculated in a different manner than net income.[1]

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[1] In the Netherlands the taxable amount is calculated in accordance with the Dutch Tax Act. The Dutch Tax Act requires different accounting measures than IFRS. As a consequence, the taxable amount is largely independent from reported net income. Therefore, the taxation explanation does not apply on Dutch companies.

II.2.2.5 Standard setter explanation

Systematical understatement of assets will less likely lead to criticism on standard setters than systematical overstatement of assets (Watts 2003a). Watts states that losses due to overstatement are more observable and usable in the political process than forgone gains due to understatement. As a consequence, systematical overstatement of net assets will lead to increased political costs. Therefore, standard setters are more likely to implement accounting standards that lead to an understatement of assets.

II.2.2.6 Applicability of the explanations

As discussed in section II.2.1 there are two types of accounting conservatism; balance sheet conservatism and earnings conservatism. Balance sheet conservatism concerns the understatement of net assets on the balance sheet. Earnings conservatism affects the net income reported in the income statement. The explanations which have been discussed above do not all apply to both balance sheet conservatism and earnings conservatism. Therefore, in this section the applicability of the explanations will be discussed briefly.

The contracting explanation applies to both balance sheet and earnings conservatism. Conservatism in debt contracts will lead to an understatement of both net assets and net income. The understatement of net assets constrains management's tendency to attract excessive debts. The understatement of net income prevents management to pay excessive dividend to shareholders.

The litigation explanation applies only to balance sheet conservatism. The litigation risk is originated in an overstatement of net assets. This is especially the case when the company is involved in a take-over. The acquiring party might file a lawsuit when the net assets turn out to be overstated since they will receive less than they have initially bought.

The taxation explanation applies only to earnings conservatism since taxes are determined based on the income generated in that year instead of the value of the assets owned by the company.

The standard setter explanation applies only to balance sheet conservatism. Criticism on standard setters is more likely to occur when net assets are overstated than when net income is overstated. Therefore, standard setters will implement accounting standards that lead to an understatement of assets. An understatement of assets indicates balance sheet conservatism.

II.3   Models to measure accounting conservatism

II.3.1   Market-based measure

II.3.1.1 Market-based accounting research

Market-based accounting research (hereafter: MBAR) focuses on the relation between accounting numbers and share prices (Deegan and Unerman 2006, pp. 377, 378). MBAR relies on the assumption that the capital market is efficient in its semi-strong form. In a semi-strong efficient market all publicly available information is incorporated in the share price.

Two perspectives exist within MBAR; the information perspective and the measurement perspective. According to the information perspective the issuance of new information leads to a change in share price. The measurement perspective concerns the value relevance of accounting information. Therefore, it focuses on the association between financial statement information (e.g. earnings) and capital market information (e.g. returns).

II.3.1.2 Basu's model

Basu's market-based model is designed based on the notion that share prices lead earnings (Basu 1997). Share prices reflect all information that is publicly available, not only the information in the financial statements. Due to conservatism earnings reflect all 'bad news', but do not reflect all 'good news'. 'Good news' is only included in the earnings when the required degree of verification is met. Therefore, 'bad news' is reflected earlier in earnings relative to 'good news'.

Basu (1997) has developed a model to determine whether (1) earnings are more timely or concurrently sensitive in reflecting publicly available 'bad news' than 'good news', (2) the concurrent earnings-return association is relatively stronger than the concurrent cash flow-return association for publicly available 'bad news' compared to 'good news', (3) unexpected earnings increases are more likely to be persistent and unexpected earnings decreases are more likely to be temporary, and (4) the abnormal return per dollar of unexpected earnings is smaller for 'bad earnings news' than 'good earnings news'.

Basu (1997) uses stock returns as a proxy for good and bad news: negative unexpected returns are a proxy for 'bad news' and positive unexpected returns are a proxy for 'good news'. Stock prices incorporate all publicly available information in a timely fashion, regardless of the source of the available information. Because of the fact that all information is incorporated in the share price, changes in the share price could be used to identify the availability of new information. Basu expects to find a higher association of earnings with negative returns than with positive returns as a result of the asymmetry in loss and gain recognition. In his model he regresses earnings (deflated on opening

price or opening book value of assets) on current annual returns. In the Basu model a dummy variable is included to make a distinction between companies experiencing 'good news' and 'bad news'. The dummy variable is 0 for companies experiencing 'good news'. 'Bad news' companies are assigned 1 as the value of the dummy variable. As a consequence, only the loss experiencing companies are included in determining β_0 and β_1.

Formula: $X_{it} / P_{it\,1} = x_o + x_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it}$

Where: $X_{it} / P_{it\,1}$ = opening price deflated earnings for firm i in fiscal year t

             R_{it} = returns for firm i in the period starting 9 months before the end of the fiscal year t and ending 3 months after fiscal year-end

             DR_{it} = dummy variable: 1 if $R_{it} < 0$, 0 if $R_{it} \geq 0$

Basu (1997) expects a higher R^2 for the 'bad news' firms than for the 'good news' firms, because earnings are more likely to reflect 'bad news' in a timely manner. Also, he expects the slope coefficient (β) to be greater for the 'bad news' companies, because earnings are predicted to reflect 'bad news' more quickly and completely than 'good news'.

Basu (1997) also compares earnings with cash flows to determine the level of accounting conservatism among U.S. listed firms. Due to the use of accruals earnings are more timely than cash flow measures. Current year's earnings are influenced by unrealized losses, while current year's cash flows are not affected by unrealized losses. Unrealized revenues do not have any influence on current year's cash flows nor earnings. As a consequence, earnings will be more conservative than cash flows. Therefore, Basu expects that earnings reflect 'bad news' in a more timely manner than cash flows reflect 'bad news', and that the timing difference is greater for 'bad news' than for 'good news'.

To test the abovementioned expectation Basu (1997) adjusts the original model. He regresses earnings before extraordinary items, cash flows from operations, and cash flows from operations and investments on returns.

Formula: $XE_{it} = x_o + x_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it}$

             $CFO_{it} = x_o + x_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it}$

             $CFOI_{it} = x_o + x_1 DR_{it} + \beta_0 R_{it} + \beta_1 R_{it} * DR_{it}$

Where: XE_{it} = per share earnings before extraordinary items and discontinued operations for firm i in fiscal year t, deflated by price per share at the beginning of the fiscal year

CFO_{it} = cash flow from operations for firm i in fiscal year t, deflated by price per share at the beginning of the fiscal year

$CFOI_{it}$ = cash flow from operations and investments for firm i in fiscal year t, deflated by price per share at the beginning of the fiscal year

R_{it} = returns for firm i in the period starting 9 months before the end of the fiscal year t and ending 3 months after fiscal year-end

DR_{it} = dummy variable: 1 if $R_{it} < 0$, 0 if $R_{it} \geq 0$

Basu (1997) also tests earnings persistence. Earnings persistence means that only part of the news, whether it is 'good news' or 'bad news', is included in current earnings, the news will be spread over future earnings as well. Earnings are predicted to be more timely with regard to reflecting 'bad news'. As a consequence, the full amount of 'bad news' is expected to be included in current earnings. Therefore, earnings are supposed to be less persistent for 'bad news'. 'Bad news' events are more likely to cause a one-time decrease of earnings, while 'good news' events are more likely to cause a persistent increase in earnings. To test the hypothesis that negative earnings changes are more likely to reverse in the following period than positive earnings changes, Basu again adjusts his original regression formula.

Formula: $\Delta X_{it} / P_{it-1} = x_{o} + x_{1}D + \beta_{0} X_{it-1}/P_{it-2} + \beta_{1}D*\Delta X_{it-1}/P_{it-2}$

Where: X_{it} = earnings for firm i in fiscal year t

ΔX_{it} = change in earnings for firm i in fiscal year t over fiscal year t-1

P_{it-n} = price per share at year-end of fiscal year t-n

R_{it} = returns for firm i in the period starting 9 months before the end of the fiscal year t and ending 3 months after fiscal year-end

D = dummy variable: 1 if $\Delta X_{it-1}/P_{it-2} < 0$, 0 if $\Delta X_{it-1}/P_{it-2} \geq 0$

Basu's (1997) final test is on the effect of accounting conservatism on the capital market. He uses the abnormal return per unit of unexpected earnings at the earnings announcement, also called earnings response coefficient (hereafter: ERC). Earnings changes proxy unexpected earnings. Persistent earnings changes surprises will lead to a higher ERC. Therefore, firms with positive changes in earnings are supposed to have a higher ERC than firms with negative changes in earnings. A

positive change in earnings is more likely to be persistent than a negative change. As a result, one euro positive unexpected earnings will be valued higher than one euro negative unexpected earnings.

To determine whether one euro positive unexpected earnings is valued higher than one euro negative unexpected earnings Basu (1997) regresses abnormal return on the change in earnings. Basu expects the slope to be higher on positive earnings changes than on negative earnings changes.

Formula: $\quad u = x_0 + x_1 DX_{it} + \beta_0 \Delta X_{it}/P_{it} + \beta_1 \Delta X_{it}/P_{it-1} * DX_{it}$

Where: $\quad X_{it}$ = earnings for firm i in fiscal year t

$\quad\quad\quad \Delta X_{it}$ = change in earnings for firm i in fiscal year t over fiscal year t-1

$\quad\quad\quad P_{it-1}$ = price per share at the beginning of fiscal year t

$\quad\quad\quad u_{it+n}$ = abnormal returns on firm i in month n after fiscal year-end

$\quad\quad\quad D$ = dummy variable: 1 if $\Delta X_{it}/P_{it-1} > 0$, 0 if $\Delta X_{it}/P_{it-1} \leq 0$

For each of the aforementioned regression formulas Basu (1997) measures the relative sensitivity of earnings by the ratio $(\beta_0 + \beta_1) / \beta_0$. When the measure is greater than one, earnings are relatively more sensitive to bad news than to good news. This means that bad news is reflected in the earnings sooner than good news. Therefore, it indicates the existence of accounting conservatism.

Also, the height of the measure indicates the level of accounting conservatism; the higher the measure the higher the level of accounting conservatism. Therefore, this measure can be used to assess the development of accounting conservatism over time.

II.3.1.3 Criticism on Basu's model

Despite the widespread use of the model, there are critics. Dietrich et al. (2007) argue that regressing earnings on returns leads to results that cannot be interpreted as indicating accounting conservatism. They find that the results are biased due to the statistical biases that are inherent for the regression used. Also, scaling the earnings and returns results in biases, because the deflator (market value of equity, book value of equity or total assets) is systematically lower for 'loss companies' than for 'profit companies'. The results of the model could indicate accounting conservatism, while in fact conservatism is not applied.

Also, relying on share price movements to determine 'good news' and 'bad news', is a limitation of the model (Givoly and Hayn 2000). Share prices are not solely influenced by economic performance of the company. Other factors might influence the share price as well. During a crisis share prices of

all companies that are listed on the stock exchange will decrease. When a distinction between 'good news' and 'bad news' firms is made based on share price movements, all companies will be viewed as experiencing a 'bad news' period. However, not all of these companies will actually experience a 'bad news' period. Some companies might still perform better than the market. In Basu's (1997) model all companies with negative share returns will be considered 'bad news' companies. Due to this flaw the results cannot be used to assess the existence and extent of accounting conservatism.

Ryan (2006) also states that returns cannot be used as a proxy for good and bad news since returns are not equivalent to non-earnings news. Givoly et al. (2007) found that there are factors, other than accounting conservatism, that influence the Basu (1997) measure. Their research shows that the nature of events occurring during the period and the firm's disclosure policy affect the measure. Also, differences in legal, political and regulatory environment could influence the measure. Research on accounting conservatism within an industry during a short period is less likely to suffer from the limitations than research on differences among countries.

According to Ryan (2006) bad news will not always be incorporated in income immediately due to 'accounting slacks'. Assets will be impaired when the book value exceeds the market value. Any increase in market value will not be incorporated in the book value. As a consequence, the market value will be higher than the book value. When the decrease of the market value will be lower than the difference between the market value and the book value, the book value will not be adjusted since the market value is still higher than the book value. This phenomenon is called 'accounting slack'. Due to 'accounting slack' bad news might not be reflected in income at the moment that the bad news occurs.

Another limitation of the Basu model is that it cannot be used for private companies since private companies do not have returns on shares since they are not listed. (Ball and Shivakumar 2005).

II.3.2   Accumulation of non-operating accruals

Givoly and Hayn (2000) expect that in the long run the cumulative amount of net income before depreciation and amortization will converge to cash flows from operations. Accruals are the difference between net income and cash flows. Therefore, the accumulated accruals could be used as a measure of accounting conservatism. Negative accruals would indicate accounting conservatism and the moderation of increase of negative accruals would indicate an increase in the level of accounting conservatism.

Givoly and Hayn (2000) accumulate total accruals before depreciation and amortization. Negative total accruals could indicate the existence of accounting conservatism.

To provide a better insight and to determine whether the negative total accruals are caused by accounting conservatism, Givoly and Hayn (2000) make a distinction between operating and non-

operating accruals. Operating accruals arise from normal day-to-day business activities. Non-operating accruals are all remaining accruals. To measure accounting conservatism accumulated non-operating accruals are plotted. When non-operating accruals are negative, it indicates the existence of accounting conservatism. When these accruals are becoming more negative over time, accounting conservatism will have increased over time.

$$NonopAcc_t = Acc_t - OpAcc_t$$

Where: Acc_t = total accruals for year t deflated by total assets at the beginning of year t

$NonopAcc_t$ = non-operating accruals for year t deflated by total assets at the beginning of year t

$OpAcc_t$ = non-operating accruals for year t deflated by total assets at the beginning of year t

The total accruals are determined by taking net income adjusted for depreciation and amortization and subtract the cash flows from operations. The non-operating accruals are the total accruals minus the operating accruals. The operating accruals consist of the change in trade debtors, the change in inventory, the change in prepaid expenses, the change in trade creditors, and the change in taxes payable. The accruals will be deflated by beginning of the year total assets.

II.3.3 Relation between accruals and cash flows

Under accounting conservatism gains and losses are recognized in an asymmetrical manner. Losses are recognized when they are reasonably expected, while gains are recognized when they are realized. To report earnings and gains before or after the cash flows occur, accruals are used. The asymmetry in recognizing gains and losses will thus lead to an asymmetry in accruals (Ball and Shivakumar 2005, Garcia Lara et al. 2009). Therefore, the relation between accruals and cash flows can be used to determine the extent of accounting conservatism.

Ball and Shivakumar (2005) use the relation between cash flows and accruals to compare the financial reporting quality between public and private U.K. firms. They use timely recognition of losses as a proxy for financial reporting quality. Ball and Shivakumar do not include the timely recognition of gains in their research. Their hypothesis states that negative accruals are more likely to occur in periods with negative cash flows. They use the following model to test their hypothesis.

Formula: $ACC_t = \beta_0 + \beta_1\, DCFO_t + \beta_2\, CFO_t + \beta_3\, DCFO_t * CFO_t + v_t$

Where: ACC_t = accruals which are calculated using the following formula: ΔInventory + ΔDebtors + ΔOther current assets - ΔCreditors - ΔOther current liabilities + Depreciation

CFO_t = cash flows from operations

$DCFO_t$ = dummy variable: 1 if $CFO_t < 0$, 0 if $CFO_t \geq 0$

The variables ACC_t and CFO_t are deflated by beginning of the period total assets.

Ball and Shivakumar (2005) expect and find β_2 to be negative, indicating that in periods of losses the cash flows will not be affected. They also expect and find β_3 to be positive, indicating that accrued losses are more likely in periods with cash outflows.

II.3.4 Market-to-book ratio

Market value is determined by multiplying the share price with the amount of outstanding shares. The share price is based on the present value of expected future cash flows. The book value of equity is obtained from the annual accounts. When conservative accounting is applied the book value will be lower than the market value. Therefore, a ratio higher than one indicates the existence of accounting conservatism. An increase of the ratio will indicate an increase of accounting conservatism.

However, there are some limitations to this measure. A change of the ratio could also be caused by changes in the growth expectations of the market (Givoly and Hayn 2000, García Lara and Mora 2004). Therefore, an increase of the market-to-book ratio might indicate accounting conservatism, while in fact the company does not apply conservative accounting methods.

Another limitation can be found in the economic situation. When there is an economic crisis the stock exchange might collapse. As a consequence, the market value of equity might fall below the book value of equity. The market-to-book ratio might indicate that the management has not applied conservative accounting methods. However, despite of conservative accounting the book value might be higher than the market value due to the low share prices. Therefore, the economic situation need to be taken into account before any conclusions are drawn from the market-to-book ratio.

II.3.5 Skewness and variability of the earnings distribution

II.3.5.1Skewness

Due to conservative accounting bad news is incorporated on a timely basis while good news is incorporated gradually over a longer period of time. As a consequence, the earnings distribution will be negatively skewed when conservative accounting methods are applied (Givoly and Hayn 2000).

The skewness of the earnings distribution is determined using the following formula.

Formula: Skew = $[E(x - \mu)^3]/\sigma^3$

Where: Skew = skewness of earnings distribution

             x = Net income / Total assets

             μ = mean of the x distribution

             σ = standard deviation of the x distribution

When the measure is negative, the earnings distribution is negatively skewed which indicates accounting conservatism. When the measure is becoming more negative over time, the earnings distribution is becoming more negatively skewed over time which indicates an increase of the level of accounting conservatism. To assure that the skewness is not caused by the cash flows, the measure is also determine using cash flows from operations deflated by total assets instead of net income deflated by total assets (Givoly and Hayn 2000).

II.3.5.2Variability

An increase of accounting conservatism causes losses to be recognized immediately instead of more gradually. Also, expected losses are recognized in a more timely fashion. Therefore, an increased level of accounting conservatism will coincide with an increase of the variability of earnings (Givoly and Hayn 2000).

The standard deviation of net income deflated by total assets is used as a measure of the variability of the earnings distribution. When the standard deviation is high, the earnings distribution is variable. An increase of the standard deviation indicated an increase of the degree of accounting conservatism.

A limitation of this measure is that it cannot be used to determine the existence of accounting conservatism. Variability of the earnings distribution can only be used to assess the movement of accounting conservatism.

II.3.6 Overall remark

At this moment I want to stress that relying on a single model comes with difficulties and limitations, even if you use one of the models that have been discussed in the previous sections. According to Givoly et al. (2007) relying on one single measure to determine the degree of accounting conservatism is more likely to lead to a wrong interpretation of the results. Therefore, when conducting research on accounting conservatism multiple measures should be used in order to improve the strength of the conclusions drawn from the research.

II.4   Prior research

II.4.1 Introduction

Research on accounting conservatism can focus on different aspects. The first distinction that could be made is between earnings conservatism and balance sheets conservatism. Research could be conducted on the explanations for accounting conservatism. Also, some research has been conducted on the differences in conservatism among different countries. Another type of research focuses on the change in the degree of accounting conservatism during a specific research period. Besides the aforementioned, research on accounting conservatism could also include research on the relation between accounting conservatism and earnings management or corporate governance.

Some studies have already been discussed in previous sections. In section II.2 some research concerning the explanations has already been discussed. In section II.3 the models which are developed to measure accounting conservatism have already been discussed. Therefore, these studies will not be discussed in this section extensively.

In this section empirical research in the field of accounting conservatism will be discussed. The focus will be on studies concerning the development of accounting conservatism over time, studies which compare the level of accounting conservatism among countries, and studies that regard the comparison between the level of accounting conservatism at listed and non-listed firms. A concise overview in the form of a table is included in Appendix A.

II.4.2 Development of accounting conservatism over time

Basu (1997) has conducted research to find the development of accounting conservatism over time. Basu's study focuses on listed firms in the U.S. in the period from 1963 till 1990. Basu has used the Basu model which is discussed in section II.3.1. Basu found that accounting conservatism has increased over time. A possible explanation of the increase can be found in the increased legal liability of accountants.

Givoly and Hayn (2000) have also examined the existence and extent of accounting conservatism over time. Their research sample also consists of listed firms in the United States of America. However, the time span of the research is larger. Givoly and Hayn studied the period from 1950 until 1998. The model that they have used is discussed in section II.3.2. Givoly and Hayn find that accounting conservatism exists and has increased over the past decades. Their findings are consistent with Basu's findings.

II.4.3   Comparison of accounting conservatism at listed and non-listed firms

Ball and Shivakumar (2005) have studied the difference in quality of financial statements of listed and non-listed firms in the United Kingdom. As a proxy of quality the timeliness of loss recognition is used. Since timeliness of loss recognition is a characteristic of accounting conservatism, the results of this study can also be interpreted in the sense that they regard accounting conservatism. Ball and Shivakumar conducted their research on listed and non-listed firms in the U.K. for the period from 1989 till 1999. The model they have used is discussed in section II.3.3. For the listed companies Ball and Shivakumar have also used the Basu (1997) measure. They found that the non-listed firms incorporate losses in their income in a less timely manner relative to listed companies. These results can be interpreted as non-listed firms being less conservative in their reporting than listed firms.

II.4.4   Differences in the level of accounting conservatism between countries

Ball et al. (2000) conducted research on the difference in timeliness and accounting conservatism between common law and code law countries. Their sample consists of companies from Australia, Canada, France, Germany, Japan, United Kingdom and the United States of America. Australia, Canada, United Kingdom and the United States of America are classified as common law countries. The code law countries are France, Germany and Japan. In common law countries the accounting standards are developed mainly in the private sector. Accounting standards in code law countries are developed and enforced by the government. Since there is a separation between owners and management of the firm in common law countries high agency costs arise. According to the contracting explanation these agency costs will be reduced by entering into contracts which contain conservative accounting measures. Code law countries, on the other hand, have a closer contact between the shareholders and the managers of the firm. As a consequence the agency costs will be lower, leaving less incentives for conservative accounting. Therefore, the level of accounting conservatism is expected to be higher in common law countries than in code law countries. Ball et al. used regression analysis based on the Basu (1997) model to examine firms from code law and common law countries for the period from 1985 until 1995 and found that accounting income in common law countries is more conservative than in code law countries.

García Lara and Mora (2004) studied the level of accounting conservatism across European countries for the period from 1987 till 2000. Their sample consists of eight European countries; Belgium, France, Germany, Italy, the Netherlands, Spain, Switzerland, and the United Kingdom. Belgium, France, Germany, Italy, Spain and Switzerland are classified as code law countries. The United Kingdom and the Netherlands are classified as common law countries. Their research makes a distinction between balance sheet and earnings conservatism. García Lara and Mora use regression analysis of adjusted book value on market value of equity as a measure of accounting conservatism.

They expect that balance sheet conservatism will be higher for code law countries than for common law countries. In code law countries companies are dependent on banks to provide them financing. Based on the contracting explanation banks will include conservative measures and constraints in the contracts with the firms. As a consequence equity will be understated. In common law countries financing will be obtained from equity providers on the capital market. Equity providers want to receive high dividends. The management of the firm has incentives to increase reported net income to obtain more financing from the capital market. Therefore, common law countries are expected to have a lower degree of balance sheet conservatism than code law countries. The results of the study are consistent with the expectations.

García Lara and Mora (2004) also compared the level of earning conservatism. They expected that differences in the legal and institutional environment would lead to differences in the level of earnings conservatism. Earnings conservatism is expected to be higher at common law countries relative to code law countries. They find that only when comparing the United Kingdom (extreme common law) with Germany (extreme code law) this difference is significant. According to García Lara and Mora the insignificance of the difference is probably caused by the fact that the differences in corporate ownership are smaller than presumed.

Ball et al. (2000) found that the degree of accounting conservatism is higher in common law countries than in code law countries. García Lara and Mora (2004) find that the degree of balance sheet conservatism is lower at common law countries than at code law countries and that the differenced in earnings conservatism are insignificant. These results seem to be contradicting. The contradiction can be caused by the difference in the sample. Ball et al. (2000) have included three European countries and four other countries, while García Lara and Mora (2004) have studied only European countries. Also, the research period is different. As a consequence the development of accounting conservatism over time might have influenced the results of the studies making the studies less comparable. The final explanation might be found in the models used to measure accounting conservatism. Ball et al. (2000) used regression analysis based on the model of Basu (1997). García Lara and Mora (2004) made use of an advanced market-to-book model. One of the model might be more accurate than the other.

II.5   Conclusion

Accounting conservatism can be defined by 'accountant's tendency to require a higher degree of verification for recognizing good news than bad news in financial statements' (Basu 1997). There are four explanations for accounting conservatism: conservatism is employed in the contracts the firm enters into; an understatement of net assets reduces expected litigation costs; conservative accounting methods could defer tax payment; standard setters will prefer accounting standards which lead to an understatement of net assets to prevent criticism.

Research on accounting conservatism can be conducted from several perspectives. In this chapter the different methods which are used to detect and determine the extent of accounting conservatism have been discussed. The market-based models use the relation between earnings and returns to determine the extent of accounting conservatism. Other measures that have been discussed include the accumulation of non-operating accruals, the relation between cash flows and accruals, the market-to-book ratio, and the skewness and variability of the earnings distribution. Prior research, that has been discussed in this chapter, indicates that accounting conservatism exists and has increased during the past decades. Prior research also showed that the level of accounting conservatism differs for common law and code law countries. Within a country accounting conservatism is showed to be lower for non-listed companies than for listed companies.

The remainder of this Master's thesis will focus on accounting conservatism at Dutch companies. The degree and the change in degree of accounting conservatism during the past decade will be examined. Also, a distinction between listed and non-listed companies will be made. In the next chapter the research design of the study will be discussed.

III Research design

III.1 Introduction

In this chapter the research design will be discussed. First, the hypotheses will be formulated and the expectations will be discussed. After that, I will explain the sample selection process. The statistical analysis and results will be included in the fourth section. Also, a robustness check on the results will be provided. This chapter will be concluded with a short summary and conclusion.

III.2 Hypotheses

To investigate whether accounting conservatism has indeed increased in the period from 2001 till 2008 I want to make use of Givoly and Hayn's (2000) model in which accounting conservatism is measured using the relation between cash flows and net income. I also want to use the Ball and Shivakumar's (2005) model, which looks at the relation between cash flows and accruals. In this section the hypotheses will be developed which will be used to determine the existence and extent of accounting conservatism.

Givoly and Hayn (2000) found that negative accumulated non-operating accruals indicate accounting conservatism. Due to accounting conservatism bad news is recognized in income in a more timely manner than good news. If news is recognized on a different moment in time than the cash flow occurs, accruals are used. Negative accruals are caused by the recognition of bad news before the cash outflow takes place. Therefore, negative accruals indicate a timely recognition of losses. Timely loss recognition is a characteristic of accounting conservatism.

Only non-operating accruals are used, because operating accruals are caused mainly by business operations (Givoly and Hayn 2000). Therefore, operating accruals will not be available for management to influence the timeliness of loss and gain recognition. Non-operating accruals on the other hand can be used by management to influence the reported income of the firm and the timeliness of loss and gain recognition. Some examples of non-operating accruals are bad debt provisions, restructuring charges and gains and losses on the sale of assets.

A characteristic of accruals is that they will be reversed in a subsequent period. For example, when the firm has sold goods to a customer, the revenue will be recognized on the moment that the invoice is send to the customer. At that moment in time the customer has not paid for the goods yet. Therefore, the profit in that period is higher than the cash flow. In the next period the cash inflow will occur. However, there will be no revenue recognition since the revenue has already been included in the company's result of the previous accounting period. This accounting period's profit will be lower than

the cash flow. Due to this reversion accounting income is expected to converge to economic income[2] over the firm's life span. During the life span, however, the accounting income will differ from the economic income since the period over which the reversals take place will be longer than one accounting period. The existence of negative accruals will indicate that losses are recognized before the cash outflow occurs. A consistent presence of negative accruals indicates that loss recognition occurs in a timely manner. Since timely loss recognition is a characteristic of accounting conservatism, negative accruals are an indication of accounting conservatism. An increase in negative accruals will indicate that the degree of accounting conservatism has increased.

I expect the accumulated non-operating accruals to be negative, indicating that management of companies choose conservative accounting methods. Also, I expect the accumulated non-operating accruals to become more negative over time, which indicates that accounting conservatism has increased over time. These expectations are based on the research performed by Basu (1997) and Givoly and Hayn (2000). Basu (1997) has conducted research on accounting conservatism at listed firms in the United States for the period from 1963 till 1990. He found that accounting conservatism exists and has increased over time. Givoly and Hayn's (2000) research included U.S. listed firms for the period from 1950 till 1998. Their conclusion states that accounting conservatism exists and has increased over the research period.

I expect to find a strong increase in the decline of the non-operating accruals in the year 2008 due to the economic crisis. Companies are expected to foresee losses in the near future. Applying the prudence principle[3] they will recognize these losses in their financial statements. This will lead to an increase of the use of negative accruals.

Hypothesis 1a   The non-operating accruals are negative.

Hypothesis 1b   The non-operating accruals are declining over time.

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[2] Economic income of a company could be defined as 'the amount by which its net worth has increased during the period, due allowance being made for any new capital contributed by its owners or for any distributions made by the business to its owners' (Solomons 1961). When assessing the increase of the net worth of the company, any expected future cash flows need to be discounted and taken into account. Also, the changes in the value of assets need to be taken into account regardless whether the changes are realized or unrealized.

[3] The prudence principle implies that when estimations need to be made under conditions of uncertainty, the preparer of the financial statements has to assure that assets or income are not overstated and liabilities or expenses are not understated (Framework for the Preparation and Presentation of Financial Statements, paragraph 37)

Ball and Shivakumar (2005) indicate that the relation between cash flows and accruals can be used as a measure of accounting conservatism. Accruals are used to recognize gains and losses on a different moment in time than the cash flow takes place. In general losses are recognized when they are expected, not when they occur. When the expectation of a loss arises accruals will be used to recognize the loss. The cash flow will be affected by the expected loss when the actual decrease of cash flow occurs. Therefore, at the moment that a loss occurs the accruals will be negatively affected while the cash flow will not be influenced. Due to this asymmetry the relation between cash flows and accruals is a measure of timely loss recognition. Timely loss recognition is a characteristic of accounting conservatism. Therefore, the relation between cash flows and accruals can be used as an indicator of accounting conservatism.

Ball and Shivakumar (2005) expect a negative relationship between cash flows and accruals. Loss experiencing firms will use negative accruals to incorporate the loss in the financial statements. The cash flows of loss experiencing firms will not yet be affected by the expected loss. Therefore, a negative relation between cash flows and accruals is expected. This negative relation will indicate timely loss recognition, which is one of the characteristics of accounting conservatism. In addition to this negative association, Ball and Shivakumar expect a positive relation between cash flows and accruals for companies faced with a cash outflow. This relation indicates that in periods of cash outflows the losses have already been incorporated in the financial statement and, thus, that losses are recognized in a timely manner.

I expect to find a negative relation between cash flows and accruals. This would indicate that conservative accounting methods are applied. This relation is expected to become more negative, indicating that the level of accounting conservatism increases over time. Also, I expect to find a positive relation between accruals and cash flows when only companies experiencing cash outflows are taken into account. This relation is expected to increase during the research period. An increase would indicate an increase in timeliness of loss recognition. These expectations are based on the research performed by Basu (1997) and Givoly and Hayn (2000). The overall conclusions of both studies state that accounting conservatism exists and has increased over time.

I expect a positive relation between cash flows and accruals in the year 2008 due to the dramatic change in the business environment. In 2008 a worldwide economic crisis has started. As a consequence, the profitability of many companies has decreased. I expect firms to be faced with a net cash outflow. Also, companies will expect losses in the near future. These losses will be incorporated in the financial statements based on the prudence principle. To recognize these losses negative accruals will be used. I expect companies to experience the loss of the year 2008 and to take into account the expected losses of 2009 and even 2010. As a consequence, companies will be faced with cash outflows and negative accruals.

Hypothesis 2a   The relation between cash flows and accruals is negative for all firms and positive for firms experiencing cash outflows.

Hypothesis 2b   Over time the relation between cash flows and accruals is becoming more negative for all firms and more positive for firms experiencing cash outflows.

Ball and Shivakumar (2005) found that in the U.K. the timeliness of loss recognition is lower for non-listed companies compared to listed companies. Timely loss recognition is one of the characteristics of accounting conservatism. Therefore, the research of Ball and Shivakumar can be used as a basis of expectations about accounting conservatism.

Although the research of Ball and Shivakumar has been conducted on companies in the United Kingdom I do not expect differences with their results. The situation in the Netherlands is quite similar to the situation in the United Kingdom. Both in the U.K. and in the Netherlands all private and public companies are required to file annual financial statements[4]. In the U.K. the accounting standards are the same for listed and non-listed companies. However, due to the implementation of the International Financial Reporting Standards (hereafter: IFRS) listed companies have to apply different accounting standards than non-listed companies. Before the year 2005 all Dutch firms had to apply the same legislation. From 2005 there are different accounting standards for listed and non-listed companies in the Netherlands. The companies that are listed at a European stock exchange are required to apply IFRS. Non-listed companies have to apply the legislation which is included in the Dutch Civil Code. However, non-listed companies are allowed to apply IFRS as well (section 2:362 paragraph 8 Dutch Civil Code). Also, in both countries the filed annual financial statements need to be audited.[5] In both countries both listed and non-listed companies have to apply to the same tax laws. Therefore, I expect the results of Ball and Shivakumar's research to be applicable for the Dutch situation as well.

Based on the contracting explanation (which is discussed in section II.2.2.2 on page 10, 11) the opposite might be expected. According to the contracting explanation conservatism is included in the contracts the firm enters into, because conservatism constrains opportunistic behavior (Watts 2003a). Non-listed firms are highly dependent on banks for their financing relative to non-listed firms. Listed firms can also attract financing from other sources more easily, e.g. by issuing additional shares. In the contracts the debt holders will include some conservative measures which have to be employed by the

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[4] In the Netherlands there are some exceptions on this rule. However, all companies that will be included in the research are required to file their financial statements annually at the Dutch Chamber of Commerce.

[5] In the Netherlands the financial statements of each company need to be audited (section 2:393 Dutch Civil Code). However, an exception is included for small companies (section 2:396 Dutch Civil Code). When the company's financial statements are not audited, an explanation should be included why the financial statements are not audited (section 2:392 Dutch Civil Code).

company to assure the company's ability to repay the debt. Because of these constraints the degree of accounting conservatism is expected to be higher at non-listed than at listed companies.

However, the contracting explanation also indicates that accounting conservatism is expected to be higher when there is a separation between the owners and management of the firm. A separation between ownership and management leads to information asymmetry and goal incongruence. To align the interest of the managers with the interests of the owners, contracts might be put into place. These contracts will include some conservative measures to constrain management's opportunistic behavior. At listed firms there generally is a clear distinction between management and ownership of the firm. This distinction is less at non-listed firms. Generally at non-listed firms the owners and the managers are the same people or are belonging to the same family. As a consequence, there will be little information asymmetry (if any) and there will be little goal incongruence. Therefore, the agency problems will be lower at non-listed firms compared to listed firms. This could indicate that there is less incentive in non-listed firms to enter into contracts with management and to apply conservative accounting methods.

The hypotheses mentioned below are based on the expectation that the degree of accounting conservatism will be lower for non-listed companies compared to listed companies.

Hypothesis 3a   The non-operating accruals are higher for non-listed firms relative to listed firms.

Hypothesis 3b   The relation between cash flows and accruals is less negative for non-listed firms relative to listed firms and less positive for non-listed companies experiencing cash outflows compared to listed companies experiencing cash outflows.

III.3   Sample

I will conduct my research on Dutch listed and non-listed companies. My sample consists of 64 large Dutch listed and 41 large non-listed companies. The data of these companies is only partly available in a database. Therefore, I will also have to hand collect the data I need for my research. For the non-listed companies I have gathered the necessary data from the website Company.info[6]. The

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[6] The website is accessible via the following link: http://www.company.info
  This website contains among others annual reports and other financial information.

necessary data of the listed companies have been gathered from the database Reach[7]. Any blanks have been filled by gathering the data from the annual accounts which have been obtained from the website Company.info. In Appendix B an overview is provided of the companies included in the sample.

From the entire population I will select the largest companies. To select the largest companies I will determine the size of the company based on sales revenue and the amount of full-time employees. Instead of selecting the companies myself I have used the sample which is used for the 'Transparantiebenchmark 2009'[8]. The 'Transparantiebenchmark' is a study by PricewaterhouseCoopers performed under the authority of the Dutch Ministry of Economic Affairs. The study concerns the level of corporate social responsibility reporting at Dutch companies. For the research of the 'Transparantiebenchmark 2009' the 84 largest listed Dutch companies, the 85 largest non-listed Dutch companies and 14 Dutch universities have been selected. The size of the company is determined based on the sales revenue of the company and the amount of full-time employees. I have used their sample to select my own sample, because the 'Transparantiebenchmark' is a study performed by an authoritative organization in order of the Dutch Ministry of Economic Affairs.

Based on the sample of the 'Transparantiebenchmark' I have selected 64 Dutch listed companies and 41 Dutch non-listed companies. These companies are the largest listed and largest non-listed companies of which the necessary data is available, that meet the criteria which will be discussed in the following paragraph.

In my sample I have excluded financial institutions and subsidiaries. Excluding financial institutions is quite common in studies on accounting conservatism since financial institutions tend to recognize unrealized earnings in their financial statements. I have also excluded subsidiaries since they serve a specific purpose within the group structure. For example, the entity could serve as a financing company or a holding company. Therefore, most of the time they are not fully fletched companies. Including these companies could lead to a bias in the results caused by the differences among the entities. I have also excluded the 14 Dutch universities.

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[7] The database Reach contains financial statement information and other information of Dutch organisations. The database is accessible via the following website: https://reach.bvdep.com
[8] This report is accessible via the following link:
http://www.ez.nl/pv_obj_cache/pv_obj_id_E579CF89C308AE22FEE6B17419444551652D0700

	Listed companies	Non-listed companies
Sample of the 'Transparantiebenchmark 2009'	84	85
Companies excluded because of:		
Financial or similar institutions	7	9
IPO's and delistings	1	2
Incorporated after 01-01-2000	2	8
Missing balance sheet or income statement data	10	25
Remaining sample	64	41

The total sample consist of 105 companies of which 64 Dutch listed companies and 41 Dutch non-listed companies. I have chosen to perform my research on the period from 2001 till 2008. This period is sufficiently large to identify a trend in the degree of accounting conservatism and to be able to compare the degree of accounting conservatism at listed and not-listed companies.

The following tables provide descriptive statistics on total accruals (Table 1) and cash flows from operations (Table 2) on the period from 2001 until 2008. The accruals and cash flows are divided by beginning of the year total assets to improve comparability between years.

Table 1 contains the descriptive statistics of total accruals. A distinction is made between the sample of both listed and non-listed companies, and the listed and non-listed companies separately. As can be observed, for the complete sample the mean has increased in the period from 2001 until 2004. The mean for 2005 is lower compared to the mean for 2004. The mean remains constant during the period from 2005 till 2007 and shows a strong decrease in 2008. The strong decrease of accruals in the year 2008 might be caused by the economic crisis. The median remains almost at the same level during the period, except for the years 2001, 2007 and 2008. During these years the mean of the accruals is more negative compared to the other years in the research period.

The accruals of the listed companies show a similar development. During the period from 2001 until 2004 the mean increased. The mean for 2005 is lower compared to 2004. However, during the period from 2005 till 2007 the mean remains almost at the same level. A strong decrease can be observed for the year 2008. The median has increased during the period from 2001 till 2005. In 2006 a decrease can be observed. The mean remained at the same level during 2007 and showed a strong decrease in 2008.

As can be observed, the mean has increased during the period from 2001 until 2004 for the non-listed companies. A decrease can be observed for the period from 2005 till 2007. The mean has increased during 2008. The median remained almost at the same level during the research period. The only exception can be found in 2002 and 2003. In those years the mean is higher compared to the entire research period.

Table 2 shows the descriptive statistics of the cash flow from operations for the entire sample and the listed and non-listed companies separately. As can be noted from table 2, the mean of the cash flow from operations for the entire sample is increasing over almost the entire research period. In 2001 the mean is higher compared with the mean for the year 2002. The mean is increasing over the period from 2002 till 2007. The means shows a strong decrease in the year 2008. The strong decrease of cash flows from operations in the year 2008 might be caused by the economic crisis. The median shows the same development as the median.

When viewing the descriptive statistics of the listed companies it can be noted that the mean is lower in 2002 compared to 2001. The mean is increasing during the period from 2002 till 2006. A slight decrease can be observed in 2007 and a strong decrease can be found in the year 2008. The median shows a different view. The median remained constant during the years 2001, 2002 and 2003. In the years 2004 and 2005 the median increased. Thereafter the median remained constant until 2007. In 2008 a strong decrease can be observed.

The mean for non-listed companies remained almost the same except for the years 2003 and 2006, which show a higher cash flow from operations. The median shows an increased from 2001 until 2005. A decrease can be observed in the period from 2006 till 2008.

Table 1

	Accruals-to-total assets								
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2001-2008**
Complete sample									
Mean	-0,079	-0,058	-0,034	-0,012	-0,031	-0,031	-0,034	-0,075	-0,045
Median	-0,050	-0,035	-0,037	-0,036	-0,032	-0,029	-0,044	-0,056	-0,039
Std. Deviation	0,149	0,182	0,135	0,230	0,105	0,115	0,119	0,122	0,151
Minimum	-0,948	-1,218	-0,279	-0,249	-0,390	-0,702	-0,276	-0,639	-1,218
Maximum	0,280	0,454	0,98	2,144	0,349	0,353	0,548	0,130	2,144
Listed companies									
Mean	-0,092	-0,063	-0,053	0,005	-0,019	-0,023	-0,018	-0,101	-0,046
Median	-0,054	-0,036	-0,050	-0,028	-0,009	-0,022	-0,022	-0,070	-0,033
Std. Deviation	0,170	0,205	0,088	0,289	0,119	0,137	0,135	0,139	0,173
Minimum	-0,948	-1,218	-0,279	-0,249	-0,390	-0,702	-0,276	-0,639	-1,218
Maximum	0,213	0,454	0,179	2,144	0,349	0,353	0,548	0,113	2,144
Non-listed companies									
Mean	-0,060	-0,052	-0,005	0,039	-0,05	-0,044	-0,059	-0,034	-0,043
Median	-0,050	-0,034	-0,030	-0,049	-0,047	-0,051	-0,055	-0,051	-0,045
Std. Deviation	0,110	0,141	0,183	0,069	0,074	0,067	0,083	0,072	0,107
Minimum	-0,337	-0,741	-0,257	-0,180	-0,237	-0,233	-0,238	0,168	-0,741
Maximum	0,280	0,231	0,980	0,093	0,230	0,136	0,100	0,130	0,980

Table 2

	Cash flow from operations-to-total assets								
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2001-2008**
Complete sample									
Mean	0,100	0,089	0,091	0,092	0,103	0,114	0,122	0,085	0,100
Median	0,088	0,092	0,097	0,104	0,110	0,117	0,106	0,085	0,101
Std. Deviation	0,115	0,106	0,117	0,137	0,098	0,122	0,131	0,120	0,119
Minimum	-0,181	-0,295	-0,606	-0,96	-0,445	-0,500	-0,433	-0,293	-0,960
Maximum	0,723	0,649	0,660	0,682	0,578	0,748	0,765	0,880	0,880
Listed companies									
Mean	0,101	0,079	0,075	0,082	0,104	0,109	0,103	0,077	0,095
Median	0,097	0,097	0,098	0,105	0,123	0,123	0,122	0,093	0,108
Std. Deviation	0,098	0,093	0,114	0,149	0,095	0,124	0,139	0,102	0,117
Minimum	-0,139	-0,295	-0,606	-0,960	-0,445	-0,500	-0,433	-0,293	-0,960
Maximum	0,351	0,256	0,254	0,232	0,316	0,415	0,765	0,309	0,765
Non-listed companies									
Mean	0,100	0,105	0,117	0,108	0,102	0,121	0,109	0,097	0,107
Median	0,082	0,077	0,096	0,099	0,101	0,098	0,084	0,080	0,089
Std. Deviation	0,139	0,122	0,117	0,116	0,104	0,120	0,117	0,144	0,122
Minimum	-0,182	-0,056	-0,059	-0,146	-0,148	-0,013	-0,103	-0,163	-0,182
Maximum	0,723	0,649	0,660	0,682	0,578	0,748	0,665	0,880	0,880

III.4   Results

III.4.1 Introduction

In the following sections the statistical analysis and results will be discussed. First, the statistical analyses will be discussed. The models that will be used in the research will be explained. In the next section the results of the analyses will be included. After that, a robustness check will be conducted.

III.4.2 Statistical analysis

To test hypotheses 1a, 1b and 3a I will use graphical analysis. I will use the annual accounts of the companies to determine the non-operating accruals.

Formula: $NonOpAcc_t = TotAcc_t - OpAcc_t$

Where: $NonOpAcc_t$ = non-operating accruals for year t

$TotAcc_t$ = total accruals for year t

$OpAcc_t$ = operating accruals for year t

The total accruals are determined by the following formula: ΔInventory + ΔDebtors + ΔOther current assets - ΔCreditors - ΔOther current liabilities - ΔProvisions - Depreciation + Appreciation. Depreciation and appreciation include all value decreases and value increases which have an impact on the income statement. The non-operating accruals are the total accruals minus the operating accruals. The operating accruals consist of the change in trade debtors, the change in inventory, the change in prepaid expenses, the change in trade creditors, and the change in taxes payable. All accruals will be deflated by beginning of the year total assets.

I have decided to determine the accruals in a different manner than Givoly and Hayn (2000). Givoly and Hayn calculate the total accruals by taking net income adjusted for depreciation and amortization and deduct the cash flow from operations. For the research conducted for this Master's thesis the total accruals are determined by the aforementioned formula. This way the change in working capital, the change in provisions and any value changes that have impacted the income statement are included in the total accruals. The operating accruals are determined in accordance with the Givoly and Hayn model. The non-operating accruals are calculated by taking the total accruals and subtracting the operating accruals.

Givoly and Hayn (2000) have excluded the depreciation and amortization from their measure. Depreciation, depletion and amortization are included in this research, because these accounts can be influenced by management's discretion. Management is responsible for estimating the expected

economic lifespan of long-lived assets. These estimations impact the amount of depreciation expenses that have to be incorporated in the income statement.

To determine the development in accounting conservatism the non-operating accruals will be inserted in a graph. The graph will contain the average non-operating accruals of the sample for each year. Negative non-operating accruals indicate the existence of accounting conservatism. If the accruals are declining (and thus are becoming more negative), the level of accounting conservatism has increased over time. An increase in non-operating accruals would indicate that the level of accounting conservatism has decreased.

To test hypotheses 2a, 2b and 3b I will use regression analysis. I will use the following formula based on the formula which Ball and Shivakumar (2005) used in their regression analysis:

$$ACC_t = \beta_0 + \beta_1\,CFO_t + \beta_2\,DCFO_t + \beta_3\,DCFO_t * CFO_t + v_t$$

Where: ACC_t = accruals which are calculated using the following formula: ΔInventory + ΔDebtors + ΔOther current assets - ΔCreditors - ΔOther current liabilities - ΔProvisions - Depreciation + Appreciation

CFO_t = cash flows from operations

$DCFO_t$ = dummy variable: 1 if $CFO_t < 0$, 0 if $CFO_t \geq 0$

The variable 'depreciation' also includes impairment and other value reduction which have an impact on the income statement. The variable 'appreciation' includes increases of the value of assets. However, these value increases will only be taken into account when they have an impact on the income statement. The variables ACC_t and CFO_t are deflated by beginning of the period total assets.

The accruals are determined in a different way than in the Ball and Shivakumar (2005) model. I have chosen to include the mutations of the provisions and value increases. Provisions can be used to influence the timing of expenses since forming and increasing the provision is quite subjective. A provision is formed when management knows that they have an obligation to pay a certain amount in the future. However, the exact amount or the date of payment are not certain yet (section 2:374 Dutch Civil Code). Therefore, the moment of forming a provision and the height of the provision are influenced by management. Forming a provision to spread costs over several financial years is also allowed when the costs originate before year-ending (section 2:374 Dutch Civil Code). Management could use this kind of provisions to spread the costs over several financial years. Determining the manner in which these costs will be spread is quite subjective. The aforementioned only applies to Dutch non-listed companies. Section 2:374 Dutch Civil Code does not apply to Dutch listed companies (section 2:362 Dutch Civil Code). Dutch listed companies need to comply with the IFRS's.

As a consequence, Dutch listed companies will recognize a provision if the company has an obligation to pay a certain amount which can be estimated reliably, when the obligation is a result of a past event and when payment is probable (IAS 37[9]). Management of Dutch listed companies has less discretion in creating provisions than managers of non-listed companies in the Netherlands. However, management can still influence the provisions by adjusting their estimates of the probability of payment and the amount to be paid. Therefore, including the mutations of the provisions would increase the adequacy of the measure. Excluding value increases while value decreases are included would lead to a bias in the results. Therefore, I have chosen to treat them equally; depreciations, amortizations and impairments on the one hand, and appreciation and revaluation on the other hand will all be included in the measure.

I will use this formula for hypothesis 2a, 2b and 3b. Ball and Shivakumar (2005) expect and find β_1 to be negative, indicating that in periods of losses the cash flows will not be affected. They also expect and find β_3 to be positive, indicating that accrued losses are more likely in periods with cash outflows. My expectations are in line with the expectations and findings of Ball and Shivakumar.

III.4.3 Testing the hypotheses

III.4.3.1 Introduction

In this section the results of the statistical analyses will be discussed. First the results of the analysis of non-operating accruals based on the Givoly and Hayn (2000) model will be discussed. After that, the results of the regression analysis based on the Ball and Shivakumar (2005) model will be included. Finally, a distinction between listed and non-listed companies will be made.

III.4.3.2 Non-operating accruals

In this section the hypotheses 1a and 1b will be tested. These hypotheses stated that the non-operating accruals are negative and declining over time during the period from 2001 until 2008. To test these hypotheses the yearly average non-operating accruals of the entire sample will be analyzed. An overview of the non-operating accruals is included in table 1. When the non-operating accruals are negative, this indicates the existence of accounting conservatism. A decrease of the non-operating accruals indicates an increase in accounting conservatism.

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[9] Accessed via http://www.iasplus.com/standard/ias37.htm

Table 3 Non-operating accruals

	Year							
	2001	2002	2003	2004	2005	2006	2007	2008
Non-operating accruals **Complete sample**	-0,08515	-0,06335	-0,02143	-0,03119	-0,03780	-0,03879	-0,05141	-0,08267

As can be observed in table 3 the non-operating accruals are negative over the entire research period. Therefore, the first hypothesis is accepted. This indicates that Dutch companies apply conservative accounting methods. When looking at the change in average non-operating accruals, the development of accounting conservatism can be determined. In the period from 2001 till 2003 the average non-operating accruals of the entire sample are slightly increasing. This indicates a decrease in the level of accounting conservatism. From 2003 a decrease of non-operating accruals can be observed. This decrease indicates an increase in accounting conservatism. However, on balance the level of accounting conservatism has hardly changed when comparing the non-operating accruals of the year 2001 with the non-operating accruals of the year 2008. When reviewing the period from 2001 till 2008 we can observe that the level of non-operating accruals is rather steady. A trend of declining non-operating accruals cannot be observed. Therefore, hypothesis 1b is rejected.

Based on the analysis of non-operating accruals, accounting conservatism does exist at Dutch companies. However, accounting conservatism is not increasing during the research period. The level of accounting conservatism is slightly decreasing in the period 2001 till 2003 and slightly increasing in the period from 2003 until 2008.

III.4.3.3 Relation between accruals and cash flows

In this section hypothesis 2a and 2b will be tested. These hypotheses state that the association between accruals and cash flows is negative and is declining over time during the research period. Also, the relation between accruals and cash flows is expected to be positive and rising for companies faced with a cash outflow. The following regression model will be used in testing these hypotheses:

$$ACC_t = \beta_0 + \beta_1\, CFO_t + \beta_2\, DCFO_t + \beta_3\, DCFO_t * CFO_t + v_t$$

In the regression model β_1 and β_3 incorporate the association between accruals and cash flows. The first coefficient, β_1, concerns the association between accruals and cash flows for the entire sample. This coefficient is expected to be negative, indicating that in periods of losses the loss will not affect the cash flows. The other coefficient, β_3, concerns the association between cash flows and accruals for the loss experiencing firms in the sample. This coefficient is expected to be positive, indicating that accrued losses are more likely in years with cash outflows.

In performing the statistical analyses the outliers have been eliminated. To assess the existence of outliers I have made use of the case-wise diagnostics option in SPSS. All observations with a standard residual that is higher than 2.0 or lower than -2.0 have been excluded from the analysis.

In this section the focus will be on the sign and development of the coefficients β_1 and β_3. The results of the regression analysis are presented in table 2. The output from the statistical program SPSS is included in Appendix C. The results of the regression analysis cannot be relied on when the assumptions of regression analysis are not met. The assessment of the assumptions is also included in Appendix C.

Table 4 Results of regression analysis

$$ACC_t = \beta_0 + \beta_1\ CFO_t + \beta_2\ DCFO_t + \beta_3\ DCFO_t * CFO_t$$

	Coefficient (t-statistic)							
	2001	2002	2003	2004	2005	2006	2007	2008
Variable								
Constant	-0,036	0,006	0,000	-0,014	-0,034	-0,013	-0,024	-0,037
	-3,515***	0,713	0,001	-1,386	-3,896***	-1,687*	-2,063**	-4,671***
CFO	-0,128	-0,381	-0,329	-0,213	0,064	-0,120	-0,171	-0,099
	-1,872*	-6,666***	-4,217***	-2,849***	1,024	-2,59**	-2,065**	-1,962
D	-0,015	-0,071	-0,051	-0,311	0,012	0,008	-0,070	0,030
	-0,455	-3,611***	-2,121**	-8,512***	0,483	0,283	-2,055**	1,097
DCFO	0,269	0,966	0,716	-2,359	0,368	-0,616	-0,646	1,574
	0,857	6,020***	5,499***	-22,805***	2,939***	-6,067***	-3,644***	8,566***

*** significant at 0,01 level, two-tailed

** significant at 0,05 level, two-tailed

* significant at 0,10 level, two-tailed

Variable definitions:

ACC = accruals scaled on beginning of the year total assets

CFO = cash flow from operations scaled on beginning of the year total assets

D = dummy variable: 1 if CFO < 0, 0 if CFO ≥ 0

DCFO = CFO multiplied with D

Hypothesis 2a states that "the relation between cash flows and accruals is negative for all firms and positive for firms experiencing cash outflows". As can be observed in table 4, the association between accruals and cash flows (CFO in table 2) is negative during almost the entire research period. The only exception can be found in the year 2005. The association between accruals and cash flows association

is positive in the year 2005. However, the association is not statistically significant in the year 2005. Without taking the year 2005 into account, the association in negative during the entire research period, indicating that accounting conservatism exists.

The association between accruals and cash flows for companies that experience cash outflows (DCFO in table 4) is expected to be positive. However, as shown in table 4, the association fluctuates during the research period. In the years 2001 till 2003 the association is positive, indicating that in periods of cash outflows accrued losses exist, because the accruals have been incorporated in the financial statements in previous years. In 2004 the association between accruals and cash flows is negative. In 2005 the association is positive. A negative association can be found in the years 2006 and 2007. The relation between accruals and cash flows is positive in the year 2008.

The association between accruals and cash flows is negative during almost the entire research period. This indicates the existence of accounting conservatism. However, in the years 2004, 2006 and 2007 the association between accruals and cash flows for companies faced with a cash outflow is negative, while a positive relation indicates the existence of accounting conservatism. Due to the fluctuations in the coefficient β_3 hypotheses 2a is rejected.

Hypothesis 2b states that "over time the relation between cash flows and accruals is becoming more negative for all firms and more positive for firms experiencing cash outflows". As shown in table 4, the association is not decreasing during the entire period from 2001 till 2008. In 2002 the association has decreased compared to the year 2001. An increase of the association between accruals and cash flows is shown for the period from 2002 until 2005. Indicating that during this period the level of accounting conservatism has decreased. In the year 2006 an decrease is observed when compared to the year 2005. The association between accruals and cash flows has decreased in the year 2007. In 2008 an increase of the association can be observed. When reviewing the entire research period, an increase of the association between accruals and cash flows is shown.

The relation between accruals and cash flows for cash outflow experiencing companies is expected to increase over time. As shown in table 2, the association is not increasing during the entire research period. In 2002 the relation between accruals and cash flows is increasing when compared to the year 2001. In 2003 and 2004 the association between accruals and cash flows is decreasing for companies faced with a cash outflow. An increase of the relation can be observed for the year 2005. The association between cash flows and accruals has decreased in the years 2006 and 2007. In 2008 an increase of the relation between cash flows and accruals can be observed.

A clear trend of a declining relation between cash flows and accruals cannot be observed. Also, a trend of an increasing association between cash flows and accruals for cash outflow experiencing companies cannot be determined. Therefore, the hypothesis cannot be accepted. These results do not indicate that the level of accounting conservatism has increased over time.

III.4.3.4 Listed versus non-listed companies

In previous sections the analyses have been performed on the entire sample. In this section a distinction between listed and non-listed companies will be made. First, the analysis of non-operating accruals will be performed. Also, the regression analysis will be performed for both the listed and the non-listed companies. In performing these analyses the hypotheses 3a and 3b will be tested.

The analysis of non-operating accruals is used to test the following hypothesis: 'The non-operating accruals are higher for non-listed firms relative to listed firms'. Table 5 shows the yearly average non-operating accruals for the entire sample, the sample of listed companies, and the sample of non-listed companies. The higher the non-operating accruals are, the lower the level of accounting conservatism is. When the non-operating accruals of non-listed companies are higher than the non-operating accruals of listed companies, the level of accounting conservatism is lower at non-listed companies compared to listed companies. When the non-operating accruals are lower for non-listed companies compared to listed companies, the level of accounting conservatism is higher at non-listed firms than at listed firms.

Table 5 Non-operating accruals

| | *Year* | | | | | | | |
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Non-operating accruals								
Complete sample	-0,08515	-0,06335	-0,02143	-0,03119	-0,03780	-0,03879	-0,05141	-0,08267
Listed companies	-0,10217	-0,07275	-0,03626	-0,01342	-0,02146	-0,03147	-0,02739	-0,10950
Non-listed companies	-0,05860	-0,04867	0,001726	-0,05893	-0,06331	-0,05023	-0,08892	-0,04079

Table 5 shows that for the period from 2001 until 2003 the non-operating accruals of non-listed companies are higher than the non-operating accruals of listed companies. This indicates that non-listed companies are less conservative than listed companies. In the period from 2004 till 2007 the non-operating accruals are lower for non-listed companies compared to listed companies. This indicates that the non-listed companies are more conservative than listed companies. In 2008 the non-operating accruals of non-listed companies are higher than the non-operating accruals of listed companies indicating that the non-listed companies are less conservative. When reviewing the entire research period, the non-operating accruals of the non-listed companies are not higher than the non-operating accruals of the listed companies. Therefore, hypothesis 3a is rejected.

Regression analysis is used to test hypothesis 3b, which states that "the relation between cash flows and accruals is less negative for non-listed firms relative to listed firms and less positive for non-listed companies experiencing cash outflows compared to listed companies experiencing cash outflows".

Table 6 contains the results of the regression analysis for Dutch listed and Dutch non-listed companies separately. The association between accruals and cash flows is expected to be less negative for non-listed companies compared to listed companies. For loss experiencing companies the association between accruals and cash flows is expected to be lower for non-listed companies than for listed companies.

As shown in table 6 the association between accruals and cash flows (CFO in table 6) is lower for non-listed companies compared to listed companies in the years 2001 and 2002. This would indicate that non-listed companies apply more conservative accounting methods compared to listed companies. In the period from 2003 until 2005 the association between accruals and cash flows is less negative for non-listed companies compared to listed companies. This indicates that non-listed companies are less conservative than listed companies. In 2006 the association between cash flows and accruals is lower for non-listed than for listed companies. In 2007 and 2008 the association is less negative for non-listed companies compared to listed companies. When reviewing the entire research period, many fluctuations are visible. Also, several results are not statistically significant. The coefficient for the listed companies is not statistically significant in the years 2001, 2002, 2004 and 2006. For non-listed companies the coefficient is not statistically significant in the year 2005. When reviewing only the significant coefficients the relation between accruals and cash flows is less negative for non-listed companies compared to listed companies.

The difference in the association between cash flows and accruals for companies that experience a cash outflow (DCFO in Table 6) is also analyzed. Table 6 shows that in the period from 2001 until 2003 the association between accruals and cash flows is higher for cash outflow experiencing listed companies compared to non-listed companies. This would indicate that listed companies apply more conservative accounting methods compared to non-listed companies. In the year 2004 the association is higher for non-listed companies experiencing losses compared to listed companies experiencing losses. This would indicate that non-listed companies are more conservative than listed companies. In 2005 and 2006 the association is higher for listed companies than non-listed companies. The association between accruals and cash flows is higher for listed companies compared to non-listed companies in 2007. In 2008 the opposite occurs. When reviewing the entire research period, the association between accruals and cash flows is in most cases higher for cash outflow experiencing listed companies compared to non-listed companies that are faced with a cash outflow. The only exceptions are the years 2004 and 2007. However, the association is not statistically significant for non-listed companies in 2001 and in the period from 2004 till 2008 and for listed companies in the years 2001 and 2002. When reviewing only the significant coefficients the association is less positive for non-listed companies compared to listed companies.

A clear trend of non-listed companies being less conservative than listed companies cannot be determined. Therefore, the hypothesis 3b cannot be accepted.

Table 6 Results of regression analysis

$$ACC_t = \beta_0 + \beta_1\,CFO_t + \beta_2\,DCFO_t + \beta_3\,DCFO_t * CFO_t$$

	Coefficient (t-statistic)							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Listed								
Variable								
Constant	-0,039	-0,063	0,015	0,005	0,047	-0,017	-0,002	-0,019
	-2,136**	-2,221**	0,776	0,210	1,982*	-1,382	-0,143	-1,187
CFO	-0,161	0,239	-0,500	-0,200	-0,473	-0,031	-0,266	-0,229
	-1,246	1,023	-3,028***	-1,101	-2,622**	-0,387	-2,516**	-1,825*
D	-0,014	-0,002	-0,083	-0,522	-0,064	0,013	-0,157	0,012
	0,272	-0,038	-2,712***	-11,096***	-0,827	0,393	-3,828***	0,374
DCFO	0,742	0,301	0,857	-2,565	0,964	-0,701	-0,687	1,705
	1,256	0,741	4,377***	-12,788***	3,288***	-5,616***	-3,495***	7,466***
Non-listed								
Variable								
Constant	-0,021	0,005	0,000	-0,032	-0,052	-0,028	-0,027	-0,040
	-1,795*	0,356	-0,035	-2,216**	-6,137***	-2,231**	-1,772*	-4,683***
CFO	-0,182	-0,365	-0,289	-0,188	0,091	-0,143	-0,173	-0,077
	-2,704**	-2,842***	-3,042***	-2,076**	1,698	-2,017*	-1,877*	-1,705*
D	-0,043	-0,080	-0,130	0,026	-0,009	****	0,056	-0,108
	-1,007	-1,726*	-1,560	0,440	-0,355		0,438	-0,706
DCFO	0,101	-2,443	-4,642	-0,150	-0,391	-2,153	0,780	-0,754
	0,297	-2,171**	-2,597**	-0,267	-1,361	-0,511	0,497	-0,693

**** excluded due to multicollinearity

*** significant at 0,01 level, two-tailed

** significant at 0,05 level, two-tailed

* significant at 0,10 level, two-tailed

Variable definitions:

ACC = accruals scaled on beginning of the year total

assets

CFO = cash flow from operations scaled on

beginning of the year total assets

D = dummy variable: 1 if CFO < 0, 0 if CFO ≥ 0

DCFO = CFO multiplied with D

III.4.4 Robustness check

III.4.4.1 Introduction

In this section a robustness check will be included. As a robustness check the accruals and cash flows will also be scaled over sales revenue. Scaling the variables over sales revenue in addition to scaling over total assets will eliminate biases which are caused by changes in total assets. First, a robustness check on the non-operating accruals analysis will be conducted. Thereafter, the regression analysis will be checked on robustness.

III.4.4.2 Non-operating accruals

To check the robustness of the analysis of non-operating accruals two analysis will be conducted. The analysis of non-operating accruals will be performed using sales revenue as scaling variable. Also, the original Givoly and Hayn (2000) model will be applied to a limited sample of five companies.

First, the non-operating accruals will also be scaled on sales revenue and compared with the non-operating accruals scaled on total assets. The results of both analyses should be similar to assure that no biases are included caused by changes in the scaling variable. Any differences between both outcomes are the result of changes in total assets or sales revenue instead of changes in non-operating accruals. Therefore, the strength of the conclusions will decrease when differences are found between the results in a different scaling. Table 7 contains the analysis of non-operating accruals scaled on sales revenue and total assets for the complete sample and for both listed and non-listed companies separately.

Table 7 Robustness non-operating accruals (scaling variable)

	Year							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Non-operating accruals scaled on total assets								
Complete sample	-0,08515	-0,06335	-0,02143	-0,03119	-0,03780	-0,03879	-0,05141	-0,08267
Listed companies	-0,10217	-0,07275	-0,03626	-0,01342	-0,02146	-0,03147	-0,02739	-0,10950
Non-listed companies	-0,05860	-0,04867	0,001726	-0,05893	-0,06331	-0,05023	-0,08892	-0,04079
Non-operating accruals scaled on sales revenue								
Complete sample	-0,27118	-0,14749	-0,15496	0,409157	-0,21588	0,383098	0,203734	-0,54834
Listed companies	-0,41258	-0,21747	-0,25579	0,705299	-0,32207	0,652075	0,380352	-0,86400
Non-listed companies	-0,05046	-0,03824	0,002439	-0,05311	-0,05012	-0,03677	-0,07196	-0,05560

As can be observed in table 7 the average non-operating accruals for the entire sample is influenced by changes in the variable on which the non-operating accruals are scaled. Especially in the years 2004, 2006, 2007 and 2008 differences can be observed. The results for 2004, 2006 and 2007 show that the non-operating accruals are on average positive when the non-operating accruals are scaled on sales revenue. These results do not indicate that in the years 2004, 2006 and 2007 conservative accounting methods are applied. When the non-operating accruals are scaled on total assets, however, the results do indicate the existence of accounting conservatism. Further research is necessary to determine whether the development of the scaled non-operating accruals is caused by changes in non-operating accruals, changes in total assets or changes in sales revenue. In 2008 the difference between the results might be caused by the economic crisis. Due to the economic crisis the sales revenue is expected to be lower compared to previous years. Therefore, the non-operating accruals scaled on sales revenue are expected to be more negative.

When reviewing the analysis of non-operating accruals for the listed companies we can observe that the results are influenced by developments in the variable on which the non-operating accruals are scaled. In the year 2004 and in the period from 2006 till 2008 differences between both results can be seen. The non-operating accruals scaled on sales revenue do not indicate accounting conservatism in the years 2004, 2006 and 2007. Scaling the non-operating accruals on total assets indicates the existence of accounting conservatism. The difference between the results in 2008 is expected to be caused by the economic crisis. Further research is needed to determine whether accounting conservatism exists, and to determine the cause of the differences between the results when the non-operating accruals are scaled on sales revenue instead of total assets.

The robustness check of the non-operating accruals of non-listed firms is also included in table 7. Only small differences can be observed between the non-operating accruals scaled on total assets and the non-operating accruals scaled on sales revenue. Therefore, the conclusion could be drawn that the development of non-operating accruals of non-listed companies is not affected by changes in the scaling variable.

Also, the robustness is checked by applying the original Givoly and Hayn (2000) model, which is discussed in section II.3.2, to a limited sample of five companies. The limited sample consists of two non-listed and three listed companies. The results included in table 8 should be compared with the results included in Table 3.

Table 8 Robustness non-operating accruals (original model)

	Year							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Non-operating accruals **Limited sample**	-0,01571	0,01112	0,00601	0,00231	-0,03973	-0,01970	0,00645	0,01430

As can be observed from table 8, the level of accumulated non-operating accruals is almost zero during the entire research period. In the years 2001, 2005 and 2006 the accumulated non-operating accruals are negative, indicating the existence of accounting conservatism. In the period 2002 till 2004 and the years 2007 and 2008 the accumulated non-operating accruals are slightly above zero. These results indicate that the companies in the limited sample apply few conservative accounting methods. The results in table 3 indicate that accounting conservatism exists during the entire research period. However, since the original model is applied to a very small sample, the results of this analysis might not be applicable to the entire sample which is included in the analysis in section III.4.3.2. Therefore, conclusions drawn on this comparison might be biased.

III.4.4.3 Relation between accruals and cash flows

In this section a robustness check of the regression analysis is conducted by comparing the results of the regression based on accruals and cash flows that are scaled on total assets with the results based on accruals and cash flows scaled on sales revenue. The tables in this section contain the results of both regression analyses. The SPSS output for all regression analyses can be found in Appendix C.

Scaling the accruals and cash flows over a different variable should not influence the association between them. Therefore, only minor differences between the regression scaled on total assets and scaled on sales revenue are expected. However, in the year 2008 the robustness check might lead to a different outcome. Due to the economic crisis, the companies included in the sample are expected to experience a decrease in sales revenue. Total assets are not affected by the crisis since total assets at the beginning of the year are used to scale the variables. At the beginning of 2008 the economic situation did not indicate an economic crisis yet. Therefore, in the year 2008 the results of the robustness check are expected to be different than the results of the statistical analysis performed with the variables scaled on total assets.

Table 8 includes the results of the regression analysis of accruals and cash flows scaled on sales revenue instead of total assets. To perform the robustness check these coefficients should be compared with the coefficients included in table 4. As can be observed, there are only minor differences between the association between accruals and cash flows for the entire sample consisting of both listed and non-listed companies (CFO in table 4 and table 8). Only in the year 2008 the association between accruals and cash flows scaled on total assets deviates from the association based on variables scaled on sales revenue. Scaled on sales revenue the association is more negative than when the variables are scaled on total assets. The difference between these associations can be explained by the economic crisis. Due to a decrease of the sales revenue, the association between accruals and cash flows has become more negative.

Table 8 Results of regression analysis for the entire sample (scaled on sales revenue)

$$ACC_t = \beta_0 + \beta_1\, CFO_t + \beta_2\, DCFO_t + \beta_3\, DCFO_t * CFO_t$$

	Coefficient (t-statistic)							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Variable								
Constant	-0,015	0,013	-0,009	0,002	-0,007	-0,024	-0,011	-0,001
	-2,126**	3,291***	-1,968	0,579	-2,284**	-5,837***	-2,111**	-0,174
CFO	-0,199	-0,568	-0,222	-0,415	-0,088	****	-0,165	-0,402
	-2,691***	-14,821***	-6,388***	-9,354***	-5,627***		-3,524***	-7,952***
D	-0,009	-0,002	-0,003	-0,031	-0,008	0,025	-0,022	0,006
	-0,582	-0,212	-0,264	-2,474**	-0,780	1,347	-1,366	0,430
DCFO	1,087	1,846	0,682	-1,819	0,617	-0,705	-0,436	1,739
	14,638***	38,576***	19,613***	-40,962***	39,225***	-2037,487***	-9,335***	34,421***

**** excluded due to multicollinearity

*** significant at 0,01 level, two-tailed

** significant at 0,05 level, two-tailed

* significant at 0,10 level, two-tailed

Variable definitions:

ACC = accruals scaled on sales revenue

CFO = cash flow from operations scaled on sales revenue

D = dummy variable: 1 if CFO < 0, 0 if CFO ≥ 0

DCFO = CFO multiplied with D

When assessing the robustness of the association between cash flows and accruals for companies faced with a cash outflow the coefficient DCFO in table 8 should be compared with the coefficient DCFO in table 4. Scaling the variables on sales revenue instead of total assets leads to small differences between the association based on scaling the accruals and cash flows on total assets or on sales revenue. Only in 2001 a difference can be observed. However, the association of accruals and cash flows scaled on total assets at the beginning of the year is not statistically significant in the year 2001.

Table 9 Results of regression analysis for the listed companies (scaled on sales revenue)

$ACC_t = \beta_0 + \beta_1\,CFO_t + \beta_2\,DCFO_t + \beta_3\,DCFO_t * CFO_t$

	Coefficient (t-statistic)							
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Variable								
Constant	-0,018	-0,025	-0,004	0,013	-0,002	-0,031	-0,054	-0,014
	-1,348	-2,451**	-0,517	1,647	-0,296	-3,756***	-8,098***	-1,571***
CFO	-0,330	-0,069	-0,240	-0,428	0,057	****	0,357	-0,250
	-2,042**	-0,832	-2,684***	-4,362***	3,024***		20,956***	-3,328***
D	-0,018	0,030	-0,043	-0,304	****	0,033	-0,002	0,000
	-0,648	1,406	-2,246**	-10,628***		0,936	-0,054	-0,041
DCFO	1,216	0,985	0,698	-1,820	0,471	-0,705	-0,958	1,587
	7,502***	11,771***	7,818***	-18,558***	24,763***	-1207,967***	-56,179***	21,139***

**** excluded due to multicollinearity

*** significant at 0,01 level, two-tailed

** significant at 0,05 level, two-tailed

* significant at 0,10 level, two-tailed

Variable definitions:

ACC = accruals scaled on sales revenue

CFO = cash flow from operations scaled on sales revenue

D = dummy variable: 1 if CFO < 0, 0 if CFO ≥ 0

DCFO = CFO multiplied with D

To check the robustness of the results presented in section III.4.3 the regression analysis has also been performed on accruals and cash flows scaled on sales revenue instead of total assets. Table 9 contains the results of the regression analysis performed to assess the relation between accruals and cash flows scaled on sales revenue for Dutch listed companies. These results should be compared with the coefficients in table 5 to assess the robustness of the results. Difference between these associations can be observed in the years 2002, 2005 and 2007. In 2005 IFRS became mandatory for Dutch listed companies. This change in accounting standards might have influenced the value of the total assets. This could indicate that the change in the association between accruals and cash flows in 2005 is biased by changes in the value of the total assets. Future research could focus on explaining the differences between the association scaled on total assets and the association scaled on sales revenue.

Table 9 also contains the association between accruals and cash flows scaled on sales revenue for cash outflow experiencing listed companies (DCFO). The association based on variables scaled on sales revenue is included in table 5. Only small differences can be observed. The associations in the years 2001 and 2002 deviate.

The robustness check of the association between accruals and cash flows of non-listed companies will be performed by comparing the coefficients from table 8 with the coefficients included in table 5. The variable CFO in table 5 shows the association between accruals and cash flows when the variables are scaled on total assets. In table 10 CFO shows the same association when the accruals and cash flows are scaled on sales revenue. For the period from 2001 until 2003 the differences between both associations are small. From 2004 larger differences can be observed. The association between accruals and cash flows is more negative when the variables are scaled on sales revenue compared to the association between accruals and cash flows scaled on total assets.

Table 10 also shows the association between accruals and cash flows scaled on sales revenue for non-listed companies that are faced with cash outflows (DCFO). These coefficients should be compared with the coefficient of the variable DCFO in table 5 to assess the robustness of the results presented in section III.4.2. As discussed, the association should not be influenced by the choice of scaling variable. However, as can be observed, differences exist between the association scaled on sales revenue and the association scaled on total assets. When the variables are scaled on sales revenue, the association between accruals and cash flows is positive for the entire research period except in the year 2002 and 2005. These results would indicate the existence of accounting conservatism. When the variables are scaled on total assets, the association is negative for the entire research period except for the years 2001 and 2007. These results do not indicate the existence of accounting conservatism.

Table 10　　　　**Results of regression analysis for the non-listed companies (scaled on sales revenue)**

$$ACC_t = \beta_0 + \beta_1\, CFO_t + \beta_2\, DCFO_t + \beta_3\, DCFO_t * CFO_t$$

	Coefficient (t-statistic)							
	2001	2002	2003	2004	2005	2006	2007	2008
Variable								
Constant	-0,014	-0,003	-0,013	0,009	-0,010	0,002	-0,005	0,011
	-1,857*	-0,460	-2,107**	1,145	-1,409	0,264	-0,482	1,392
CFO	-0,165	-0,354	-0,209	-0,674	-0,317	-0,441	-0,367	-0,727
	-3,123***	-7,805***	-6,704***	-13,518***	-5,358***	-5,500***	-6,120***	-12,602***
D	-0,016	-0,086	0,146	-0,007	-0,008	****	0,007	0,000
	-0,756	-1,708*	2,185**	-0,180	-0,310		0,117	0,001
DCFO	0,425	-9,022	13,316	0,493	-0,101	1,952	0,799	1,666
	4,779***	-1,271	2,129**	0,253	-0,074	0,069	0,214	0,362

**** excluded due to multicollinearity

*** significant at 0,01 level, two-tailed

** significant at 0,05 level, two-tailed

* significant at 0,10 level, two-tailed

Variable definitions:

ACC = accruals scaled on sales revenue

CFO = cash flow from operations scaled on sales revenue

D = dummy variable: 1 if CFO < 0, 0 if CFO ≥ 0

DCFO = CFO multiplied with D

Scaling the variables on sales revenue instead of total assets affects the outcome of the regression analysis. This could indicate that the results are biased, because the chosen scaling variable influences the height of the association and therefore the degree of accounting conservatism. Further research could show which scaling variable should be used to create the most adequate measure of accounting conservatism.

III.5   Conclusion

To determine the existence and extent of accounting conservatism, two models have been used. The first model concerns the non-operating accruals. Non-operating accruals are expected to be negative indicating that expenses are recognized in the financial statements before the cash outflow occurs. Timely loss recognition is a characteristic of accounting conservatism. Therefore, non-operating accruals can be used as a measure of accounting conservatism. The second model uses the relation between accruals and cash flows as a measure of accounting conservatism. The relation between accruals and cash flows is expected to be negative indicating that losses do not affect the cash flows. The relation between accruals and cash flows for cash outflow experiencing companies is expected to be positive indicating that when the cash outflow occurs the loss have already been incorporated in the financial statements. Also, a distinction between listed and non-listed companies has been made. The abovementioned models have been used to determine whether non-listed firms are less conservative than listed firms.

The research has been conducted on a sample of 105 Dutch companies; 64 large Dutch listed companies and 41 large Dutch non-listed companies. The size of the companies is determined based on sales revenue and the amount of full-time employees. Financial institutions, subsidiaries and universities have been excluded. The research has been performed on the period from 2001 until 2008.

This study shows that the non-operating accruals are negative during the entire research period. However, the non-operating accruals are not becoming more negative over time. These results indicate that accounting conservatism exists at Dutch companies. However, the results do not indicate that the level of accounting conservatism is increasing.

The results of the regression analyses show that the relation between cash flows and accruals is negative for the entire research period except for the year 2005. The association between cash flows and accruals for cash outflow experiencing companies fluctuates during the research period. In the years 2004, 2006 and 2007 the association is negative. Therefore, the results do not indicate the existence of accounting conservatism. Due to the fluctuation in both associations there is no indication of a trend in the level of accounting conservatism.

When using the analysis of non-operating accruals to assess the level of accounting conservatism at listed companies and non-listed companies, the results show that non-listed companies are less conservative in the period from 2001 till 2003 and in 2008. In the period from 2004 until 2007 the non-operating accruals are less negative for listed companies compared to non-listed companies, indicating that listed companies are less conservative.

When using the analysis of the association between accruals and cash flows to determine whether non-listed companies are less conservative than listed companies, the results do not indicate a clear trend that non-listed companies are less conservative than listed companies.

A robustness check has also been conducted to determine whether the results are biased by changes in the scaling variable. Conducting the analysis of non-operating accruals scaled on sales revenue instead of total assets shows that the results for the listed companies are affected by the choice of scaling variable. The results of the non-listed companies are not influenced by changes in total assets or sales revenue. Also, the robustness of the regression analyses has been checked. When reviewing the analyses on the entire sample of both listed and non-listed companies, the results are independent of the chosen scaling variable. However, when a distinction is made between listed and non-listed companies, the robustness decreases indicating that the results might be influenced by the choice of scaling variable.

The table below includes an overview of the results of testing the hypotheses.

Hypothesis	Accepted or Rejected	Significant or Not significant
Hypothesis 1a	Accepted	Not applicable
Hypothesis 1b	Rejected	Not applicable
Hypothesis 2a	Rejected	Partly significant: results for 2001, 2005 and 2008 are not significant Significant results: Results for 2002 and 2003 are in line with the hypothesis Results for 2004, 2006 and 2007 are not in line with the hypothesis
Hypothesis 2b	Rejected	Partly significant: results for 2001, 2005 and 2008 are not significant Significant results: Results for 2002 are in line with the hypothesis Results for 2003, 2004, 2006 and 2007 are not in line with the hypothesis
Hypothesis 3a	Rejected	Not applicable
Hypothesis 3b	Rejected	Not significant

IV   Analysis

IV.1   Introduction

This chapter will contain an analysis of the results that are presented in the previous chapter. The results will be compared with the expectations and prior research. The chapter will be concluded with a short summary.

IV.2   Expectations

IV.2.1 Differences

In this section the differences between the expected results and the actual results are discussed. Probable explanations of the differences are provided. However, the explanations are not empirically tested. Testing the explanations could be incorporated in future research on the subject.

The first difference can be found in the development of non-operating accruals. As discussed in section III.2, hypothesis 1b states that "the non-operating accruals are declining over time". The average non-operating accruals for the entire sample were expected to decline, indicating that the level of accounting conservatism had increased during the research period. However, the results of this research show that the non-operating accruals remained almost at the same level during the entire research period (section III.4.3.2). The cause of this difference could be found in the research design. The research has been conducted on a relatively small sample. Therefore, outliers have great influence on the results of the analysis. Also, the research period is quite short. When including the development of the non-operating accruals in the period from 1980 until 2000, a different trend might be visible. Another cause of this difference might be found in the development of accounting standards. Changes in the applicable accounting standards might have lead to a decrease of the level of accounting conservatism applied at Dutch companies. For example, the introduction of IFRS in 2005 might have affected the level of accounting conservatism. IFRS includes fair value as a required valuation base for some types of assets. This tendency of applying fair value as valuation base for assets and liabilities might have affected the results of this study. Valuing assets at fair value implicates that the asset will be impaired instead of depreciated. Impairment will only occur occasionally, when the book value of the asset is lower than the recoverable amount[10] (IAS 36[11]), while depreciation will be accounted for each accounting period. Therefore, in general impairment will lead to lower costs than depreciation. However, during the economic crisis impairment losses will have to be recognized which are higher than the yearly depreciation expense. In times of economic prosperity the level of accounting

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[10] The recoverable amount is the higher of net selling price of the asset and the net present value of expected future cash flows generated by the asset (IAS 36).
[11] Accessed via http://www.iasplus.com/standard/ias36.htm

conservatism will be lower due to fair value accounting. When an economic crisis takes place the level of accounting conservatism will increase due to fair value accounting.

When comparing the results of the regression analysis with the expected results another difference can be found. The second difference is observed in the development of the association between accruals and cash flows. In conformity with hypothesis 2b, which is discussed in section III.2, the relation between cash flows and accruals is expected to be declining over time. However, the results in section III.4.3.3 show that the relation is fluctuating over time. In association is more negative in 2002 compared to the relation in 2001. Then, the relation becomes less negative until the year 2005. In 2006 and 2007 the association between cash flows and accruals becomes more negative. In 2008 the association rises again. The rise of the relation between cash flows and accruals in 2008 could be explained by the economic crisis which started in 2008. Due to the crisis companies might experience a cash outflow and at the same time they expect losses for the future years which need to be anticipated. Therefore, the companies are faced with a cash outflow and negative accruals. An explanation can also be found in the sample size and the research period. A small sample size increases the power of outliers on the results and the smaller the sample size, the more difficult it is to obtain statistically significant results. The relatively short research period makes it more difficult to observe a clear trend in the development of the relation between accruals and cash flows. As discussed earlier, another explanation might be found in changing accounting standards.

The third difference can also be found in the development of the association between accruals and cash flows. Hypothesis 2a states that the relation between accruals and cash flows is positive for companies faced with a cash outflow. In conformity with hypothesis 2b the relation between accruals and cash flows is expected to be increasing over time for companies experiencing a cash outflow. However, as discussed in section III.4.3.3 the results of regression analysis for the entire sample of both listed and non-listed companies show that this association is fluctuating over time. In the period from 2001 till 2003 and in the years 2005 and 2008 the relation is positive. In the years 2004, 2006 and 2007 the association between cash flows and accruals is negative. This difference might be explained by the sample size and the length of the research period. As discussed earlier a small sample size and relatively short research period could jeopardize the reliability of the conclusion drawn from the results of the research. Also, changes in the accounting standards might have influenced the degree of accounting conservatism applied.

In the comparison of the non-operating accruals of non-listed companies and the non-operating accruals of listed companies the fourth difference can be observed. Based on hypothesis 3a the non-operating accruals are expected to be less negative for non-listed companies compared to listed companies. The results of the analysis, which are discussed in section III.4.3.4, correspond only partly to this expectation. In the period from 2001 till 2003 and in the year 2008 the non-operating accruals of non-listed firms are less negative than the non-operating accruals of listed firms. This indicates that

during those years the degree of accounting conservatism is lower at non-listed firms compared to listed firms. However, for the period from 2004 until 2007 the non-operating accruals of the non-listed companies are more negative than the non-operating accruals of the listed companies, indicating that non-listed companies apply more conservative accounting methods than listed companies. An explanation of this difference could be found in the sample selection process. The sample used in this research consists only of the largest Dutch listed and Dutch non-listed companies. These selected companies might not be representative for the entire population of Dutch listed and Dutch non-listed firms. Therefore, the results might be biased. Also, the differences in accounting standards might have influenced the difference in the level of accounting conservatism at listed and non-listed companies. Before the year 2005 both Dutch listed and non-listed companies were required to apply the same accounting standards which are included in the Dutch Civil Code. However, from 2005 Dutch listed companies are required to comply with the IFRS, while the non-listed companies still have to apply the standards included in the Dutch Civil Code. Therefore, from 2005 the difference in the level of accounting conservatism might be influenced by the difference in applicable accounting standards. As discussed earlier, due to the fair value valuation included in IFRS the level of accounting conservatism at listed companies might have decreased. This could explain why non-listed companies are more conservative than listed companies in the period from 2005 until 2007. In 2008 the level of accounting conservatism at listed companies is higher relative to non-listed companies. An explanation could be found in the impairment losses recognized by listed companies due to the economic crisis. Differences in the industries in which the companies operate might also influence the difference in the level of accounting conservatism. For example, in the pharmaceutical industry accounting conservatism is expected to be higher due to the accounting standard which prescribes that any effort for research needs to be expensed immediately (IAS 38[12]). Companies that are active in the retail industry will be faced with different issues which affect the level of accounting conservatism. Non-listed companies might be active in industries in which the level of accounting conservatism is higher compared to the industries in which the listed companies operate. In that case, the difference in the level of accounting conservatism might be caused by the difference in industries in which the companies operate instead of the difference in being listed or not. Therefore, the industries in which the companies operate might have affected the comparability of listed and non-listed companies.

The fifth difference can be seen in the relation between accruals and cash flows of non-listed companies compared to the relation between accruals and cash flows of listed companies. In conformity with hypothesis 3b the relation between cash flows and accruals is expected to be less negative for non-listed companies compared to listed companies. The results of this research, which are discussed in section III.4.3.4, show that this expectation is only partly met. Results from the

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[12] Accessed via http://www.iasplus.com/standard/ias38.htm

regression analyses show that the relation is indeed higher for non-listed companies than for listed companies in the period from 2003 until 2005 and in the years 2007 and 2008. During the years 2001, 2002 and 2006 the relation between cash flows and accruals is higher for listed than for non-listed companies. However, the results are only partly statistically significant. An explanation can be found in the size of the sample used in this study. Due to the small sample size the probability of statistically significant results is relatively low. As discussed earlier, this difference can also be caused by differences in accounting standards and differences in the industry in which the companies operate.

The final difference is also found in the comparison of the relation between accruals and cash flows at listed and non-listed companies. Hypothesis 3b also states that the relation between accruals and cash flows is expected to be less positive for non-listed firms experiencing cash outflows compared to listed firms faced with cash outflows. However, the results in section III.4.3.4 show that the association is less positive for non-listed firms than for listed firms only in the period from 2001 until 2003 and in the years 2005, 2006 and 2008. In the years 2004 and 2007 the relation between accruals and cash flows is higher for non-listed companies compared to listed companies. However, the results are only partly statistically significant. The size of the sample used in this study can be viewed as an explanation of this difference. As discussed earlier the sample size influences the probability of obtaining statistical significant results. Other explanations might be differences in accounting standards or differences in industries.

IV.2.2 Similarities

In this section the similarities between the expected results and the actual results are discussed.

The first similarity can be found in the sign of the non-operating accruals. Hypothesis 1a states that "the non-operating accruals are negative". The average non-operating accruals for the entire sample were expected to be negative, indicating that accounting conservatism exists. As discussed in section III.4.3.2, the results found in this research are in compliance with this expectation.

The second similarity can be observed in the sign of the relation between cash flows and accruals. Based on hypothesis 2a the relation between cash flows and accruals is expected to be negative when considering the entire sample, indicating that losses are incorporated in the financial statements before the cash outflow occurs. The results discussed in section III.4.3.3 showed that the relation between cash flows and accruals is negative for the entire research period except for the year 2005. However, since the result for the year 2005 is not statistically significant, the results show in general a negative relation between cash flows and accruals.

Both similarities can be explained by the prudence principle applied in preparing financial statements. The 'Framework for the Preparation and Presentation of Financial Statements' of the

IASB[13] prescribes that gains and expenses should be recognized when future economic benefits or losses have arisen that can be measured reliably (F. 92 and F.94)[14]. Uncertainties will inevitably affect the recognition of gains and expenses. The prudence principle is applied in order to mitigate these uncertainties. The prudence principle implies that when estimations need to be made under conditions of uncertainty, the preparer of the financial statements has to assure that assets or income are not overstated and liabilities or expenses are not understated (F. 37). Due to these accounting standards expenses will be recognized in a more timely manner than gains. The asymmetry in recognition of expenses and gains result in negative average non-operating accruals and a negative relation between cash flows and accruals.

IV.3 Prior research

IV.3.1 Differences

In this section the differences between the results of this study and the results of other empirical research are discussed. Prior research shows that the level of accounting conservatism has increased during the past decades (Basu 1997, Givoly and Hayn 2000). The results of this research show that companies in the Netherlands have not become more conservative in the period from 2001 until 2008.

Basu's (1997) research shows an increase of accounting conservatism during the period from 1963 till 1990 at listed companies in the United States of America. The research conducted for this Master's thesis has focused on accounting conservatism at Dutch companies in the period from 2001 until 2008. Differences between the results of these studies can be caused by differences in the measures used to assess the level of accounting conservatism, differences in the composition of the sample, differences in the country included in the study and differences in the research period. Whether the difference in the composition of the sample might have caused the difference in results cannot be determined since Basu has not included descriptive statistics in his study. Also, there is no univocal view in empirical research which can determine whether the difference in country studied might have affected the results. According to García Lara and Mora (2004) there are no significant differences in the level of earnings conservatism in common law and code law countries. Therefore, the difference in countries included in the research cannot explain the difference in the results. However, according to Ball et al. (2000) common law countries are more conservative than code law countries. Since the Dutch accounting law system contains aspects of both a common law and a code law country, the level of

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[13] The 'Framework for the Preparation and Presentation of Financial Statements' is accessed via
http://www.iasplus.com/standard/framewk.htm

[14] Dutch non-listed companies have to comply with the Dutch Civil Code. Therefore, this 'Framework' is not applicable to the non-listed companies. However, the applicable standards for non-listed companies contain the same criteria for the recognition of gains and expenses.

accounting conservatism at Dutch companies will be lower than in a true common law country such as the United Kingdom or the United States of America.

Research conducted by Givoly and Hayn (2000) showed an increase of accounting conservatism at listed companies in the U.S. in the period from 1950 till 1998. Differences between the results of Givoly and Hayn's research and the research conducted for this Master's thesis can be explained by differences in the country included in the research, differences in the research period, differences in the sample composition and partly by differences in the measures used to assess the extent of accounting conservatism. Whether differences in the sample composition might have affected the results can be assessed by comparing the descriptive statistics of both samples. Givoly and Hayn do not provide information on the level of accruals. Information on cash flow from operations scaled on total assets is included in their study. Therefore, I can only compare the level of cash flow from operations. As can be observed in section III.3, the mean of cash flow from operations for the entire sample is 0,100 for the period from 2001 till 2008. The mean of the cash flow from operations of Givoly and Hayn's sample amounts to 0,088 for the period from 1991 until 1998. The median of cash flow from operations of the entire sample of this research amounts to 0,101 for the entire research period. The median of cash flow from operations of the sample that Givoly and Hayn used is 0,089 for the period from 2001 till 2008. In conformity with the sample of Givoly and Hayn, the mean and median are almost equal for the sample used for this research. However, the mean and median of the sample used for this research is higher than the mean an median of Givoly and Hayn's sample. Moreover, Givoly and Hayn have included only listed companies in their research while I have included both listed and non-listed companies in my research. Therefore, I will also compare the descriptive statistics of their sample with the descriptive statistics of my sample of the listed companies. As discussed earlier the mean and median cash flow from operations scaled on total assets amount to 0,088 and 0,089 respectively for the sample of Givoly and Hayn for the period from 1991 till 1998. The mean of cash flow from operations-to-total assets for the listed companies amounts to 0,095 for the period from 2001 until 2008. The median is 0,108 for the sample of listed companies used for this research. The difference between the means of both samples is lower compared to the situation that the entire sample was compared to the sample of Givoly and Hayn. However, the median of the Dutch listed companies is higher than the median of the companies included in the sample of Givoly and Hayn. This difference in the sample used could have lead to differences in the results.

Ball and Shivakumar (2005) found that loss recognition at non-listed companies in the United Kingdom is less timely compared to loss recognition at listed companies in the United Kingdom. This could be interpreted as U.K. non-listed companies being less conservative than U.K. listed companies. The results of the study conducted on the accounting conservatism at Dutch companies do not indicate that non-listed companies are less conservative than listed companies. Differences in the results of these studies could be caused by the differences in country studied, differences in the sample

composition and differences in the research period. Also, the composition of the sample can be viewed as an explanation of the difference. The Dutch non-listed companies included in this study are the largest non-listed companies. Therefore, they might not give a representative view of the population.

To determine whether the sample composition has indeed have an influence on the results of both studies the descriptive statistics of both samples will be compared. When the descriptive statistics show only minor differences the difference in the results cannot be explained by the sample composition. Ball and Shivakumar have included descriptive statistics of both variables included in their regression analysis; accruals scaled on total assets and cash flow from operations scaled on total assets. First, I will consider the descriptive statistics on accruals. As can be observed in section III.3, the mean of the accruals-to-total assets amounts to -0,045 for the listed companies for the entire research period from 2001 till 2008. The mean of Ball and Shivakumar's sample of listed companies amounts to -0,038 for the period from 1989 until 1999. The median amounts to -0,033 for the sample used in this research in the period from 2001 till 2008 and -0,034 for Ball and Shivakumar's sample of listed companies for the period from 1989 till 1999. The mean and median of accruals-to-total assets is almost similar for both samples. Both studies also include non-listed companies. The mean amounts to -0,043 for the non-listed companies included in this research for the period from 2001 till 2008. The sample of non-listed companies used by Ball and Shivakumar have a mean of 0,000 for the period from 1989 till 1999. The median of accruals-to-total assets is -0,045 for the sample of non-listed companies used in this research for the entire research period. The median of the sample of non-listed companies of Ball and Shivakumar amounts to 0,000 for the period between 1989 till 1999. The descriptive statistics on the accruals of the non-listed companies used for this study are quite different from those of the sample used by Ball and Shivakumar. This might have affected the comparability of the results of these studies.

The descriptive statistics on cash flow from operations have also been provided. As can be observed from table 1 in section III.3 the mean of the cash flow from operations-to-total assets amounts to 0,095 for the sample of listed companies for the period from 2001 until 2008. The mean amounts to 0,125 for the sample of listed companies used by Ball and Shivakumar (2005) for the period from 1989 till 1999. The mean of cash flow from operations scaled on total assets is lower for the sample used in this study compared to the sample used by Ball and Shivakumar. The median is 0,108 for the sample of listed companies during the period from 2001 until 2008. The median of cash flow from operations amounts to 0,124 for the sample of Ball and Shivakumar for the period from 1989 till 1999. The median is lower for the sample used in this study compared to the sample of Ball and Shivakumar. However, the differences between both samples of listed companies are only minor. The mean of cash flow from operations amounts to 0,107 for the non-listed companies included in this study for the period from 2001 till 2008. The mean is 0,109 for Ball and Shivakumar's sample of non-listed companies for the period from 1989 until 1999. The median is 0,089 for the sample of Dutch

listed companies in the period from 2001 till 2008. The median of cash flow from operations scaled on total assets amounts to 0,101 for the sample of non-listed companies used by Ball and Shivakumar for the period from 1989 till 1999. The descriptive statistics on cash flow from operations of the listed companies used for this study are different from those of the sample used by Ball and Shivakumar. Even though the differences are small, it might still have affected the comparability of the results of these studies.

IV.3.2 Similarities

In this section the similarities between the results of this research and the results of prior research are discussed. Analyzing non-operating accruals and the relation between accruals and cash flows this research concluded that accounting conservatism exists at Dutch companies. This is consistent with research conducted by García Lara and Mora (2004). García Lara and Mora have performed research on accounting conservatism in eight European countries including the Netherlands. They found that accounting conservatism exists. The study has been conducted on the research period of 1987 until 2000. The research period of the research of this Master's thesis started in 2001. This would indicate that accounting conservatism still exists in the Netherlands.

The results are also consistent with research on accounting conservatism in other countries that show that accounting conservatism exists (Basu 1997, Givoly and Hayn 2000, Ball and Shivakumar 2005). Basu (1997) has performed his research on listed companies in the United States of America for the period from 1963 until 1990. Givoly and Hayn (2000) have performed their study on listed firms from the U.S. in the period from 1950 till 1998. Ball and Shivakumar (2005) have studied timely loss recognition at listed and non-listed companies in the United Kingdom in the period from 1989 until 1999. All countries included in the abovementioned studies are conducted on common law countries. When only the accounting law is considered, the Netherlands is generally viewed as a common law country. Therefore, this similarity is expected. Also, according to García Lara and Mora (2004) there are no significant differences between common law and code law countries when the level of accounting conservatism is assessed. Therefore, even though the accounting laws of the Netherlands contain aspects of both common law and code law countries, no differences with prior research were expected.

IV.4   Conclusion

In this chapter the differences and similarities between the actual results on the one hand and the expected results and results of empirical research on the other hand have been discussed. The results of the research discussed in the previous chapter show that accounting conservatism exists in the Netherlands. These results are in compliance with expected results and with the results of prior research.

This study also showed that the degree of accounting conservatism is fluctuating over time. Based on prior research the degree of accounting conservatism is expected to decline. This difference between the expected results and empirical research on the one hand and the actual results on the other, might be explained by differences in the research period, differences in the sample composition, differences in the countries studied, and differences in the measures used to assess the extent of accounting conservatism.

Ball and Shivakumar (2005) found that in the U.K. non-listed firms are less conservative than listed firms. This Master's thesis shows that there is no indication that Dutch non-listed companies are less conservative than Dutch listed companies. This difference might be caused by differences in the research period, differences in the sample composition and differences in the country which has been included in the research. Non-listed companies were expected to be less conservative than listed companies. However, the actual results do not indicate that non-listed companies are less conservative compared to listed companies. This difference might be caused by the sample selection process.

# V	Limitations

## V.1	Introduction

As with every research, my research has several limitations. These limitations will be discussed in this chapter. First, two limitations regarding the sample are discussed. Thereafter, two limitations regarding the measures to be used are discussed. Also, some recommendations for future research will be discussed. This chapter will be concluded with a short summary and conclusion.

## V.2	Limitations regarding sample

The first limitation is the survivor bias due to the sample selection process. The companies have been selected based on their sales revenue and the amount of full-time employees in the financial year 2009. The companies with the highest sales revenue and amount of full-time employees have been selected. If I would have chosen to select the 50 companies with the largest sales revenue in 2001 my sample might consist of fewer companies at the end of the research period due to e.g. liquidation or mergers. Therefore, I have chosen to use companies that exist in 2008 to prevent my sample to reduce significantly during the research period. However, that leads to a survivor bias. The companies belong to the strongest companies and thus are not a reflection of the average company during the research period. This will limit the ability to generalize the results from the study.

Another limitation is the sample bias. Since I have selected the largest non-listed and the largest listed Dutch companies the results cannot be generalized. The conclusions might not apply to smaller companies, especially the smaller non-listed companies. The main reason for my expectation that the conclusions of this research are not valid for smaller companies has to do with the agency theory and the contracting explanation. The agency theory states that when management and ownership of the firm is separated management is more concerned with their own wealth than with the wealth of the owners. Management will act in their own interest, even when this might decrease the owner's wealth. According to the contracting explanation conservative accounting methods are used to constrain management's opportunistic behaviour. However, at smaller non-listed companies the manager of the firm will – in most cases – also be the owner of the firm. Therefore, the opportunistic behaviour of management does not need to be constrained to protect the owners of the company. As a consequence, less accounting conservatism is expected, which causes me to expect that the results of my study are not applicable to small non-listed companies.

The final limitation regarding the sample can be found in the sample size. The sample of this study consists of 64 listed companies and 41 non-listed companies. The regression analyses have been performed on the entire sample and on listed and non-listed companies separately. The reliability of a regression on a small sample is lower than when a larger sample is used. The minimum sample size

should be determined by taking the amount of independent variables and adding 104 (Field 2005). For this research the minimum sample size for each regression is 107 (104 + 3 independent variables). However, the sample used in this research is smaller. Therefore, the reliability of the regression analyses might be jeopardized.

V.3   Limitations regarding methodology

Givoly et al. (2007) found that to improve the strength of the conclusions research on accounting conservatism should be based on multiple measures. Since I only use two measures, which both use accruals, my conclusions might not be very solid. In my opinion this is a limitation to the research. However, I could not use Basu's (1997) measure since non-listed companies do not have returns nor share prices. Also, other measures that can be used for this study have not been found. Therefore, I have to accept this limitation.

Also, a major limitation of this research is the adequacy of the measures used to determine the existence and extent of accounting conservatism. The methods are influenced not only by accounting methods, but also by other factors. If accruals turn out to be an inadequate manner to assess accounting conservatism, my conclusion might not hold. Therefore, it is difficult to draw firm conclusions on the results of this study.

V.4   Opportunities for future research

In this section the opportunities for future research will be discussed. These will be based on eliminating limitations of the research conducted and on extending the existing body of research.

Studies on accounting conservatism in the Netherlands could be conducted using a larger sample. A larger sample would improve the explanatory power of the results and thus the strength of the conclusions drawn. The sample composition could also be changed in such a manner that the sample includes also smaller non-listed companies instead of only large non-listed companies. Including smaller non-listed companies would improve the representativeness of the sample of non-listed companies. Therefore, the conclusions of the research will become more reliable when the research will be conducted on a larger sample including also small non-listed companies.

In future research the research period could also be extended. Increasing the length of the research period would simplify observing a trend in the development of accounting conservatism. Fluctuations in the degree of accounting conservatism might seem large on a short period. However, when compared to the development of the degree during a period of several decades, these fluctuation might be viewed as minor changes in the level of accounting conservatism. Therefore, using a research

period of a few decades (e.g. 40 years) would improve the reliability of the conclusions drawn based on the results of the research.

The effect of the scaling variable on the measures used to determine the existence and degree of accounting conservatism could also be part of future research. The robustness check showed that the measures are influenced by the choice of scaling variable. The robustness of the results is tested by scaling the variables over sales revenue instead of total assets and comparing the results. In the case of the non-operating accruals of Dutch listed companies, scaling the accruals over sales revenue does not indicate the existence of accounting conservatism in the years 2004, 2006 and 2007 while scaling the accruals over total assets does indicate the existence of accounting conservatism. Further research could focus on the effect of the choice of scaling variable on the measures. Also, future research could show which scaling variable leads to the most reliable results.

Also, the adequacy of different measures to assess the level of accounting conservatism could be examined further in future research. In this research two measures are used; the analysis of non-operating accruals and the analysis of the relation between accruals and cash flows. The results of both measures showed the existence of accounting conservatism. However, the level of accounting conservatism found using each method differs. Further research is needed to determine which measure is more adequate than the other measure.

Future research could also extend the existing body of research by focusing on the reasons why the degree of accounting conservatism has changed. Results of the research conducted in chapter III show that the degree of accounting conservatism fluctuates over time. Analyzing the non-operating accruals, first a decrease and then an increase of the level of accounting conservatism can be observed. Analyzing the relation between accruals and cash flows, first an increase and then a decrease of the level of accounting conservatism is found. The economic crisis might have had an influence on the results of the year 2008. However, the explanations of the fluctuations have not been empirically tested in this thesis. Therefore, further research will be necessary to determine the underlying causes of the change in the level of accounting conservatism.

Which type of accruals are used in applying accounting conservatism could also be examined in future research. This could be of interest for standard setters, preparers and users of the financial statements. Gaining knowledge of factors influencing the financial statements is essential when preparing and using financial statements. Standard setters could use this knowledge in enhancing the effectiveness of new standards and in creating new standards to reduce the opportunity to use specific accruals in applying accounting conservatism, if desired. Prepares might also be interested in the accruals used in applying accounting conservatism, because it gives them the opportunity to also make use of those accruals and to improve the analysis of and comparison with financial statements of

competitors. Users will also be interested, because it will improve the analysis and comparison of financial statements, because the users know which biases they might have to take into account.

V.5   Conclusion

This research has several limitations. The limitations are divided in two subgroups: the limitations regarding the sample, and the limitations regarding the measures used to assess the level of accounting conservatism. The sample might be biased due to the manner in which the companies have been selected, because only large 'surviving' companies have been selected. The sample size might also have affected the results. Also, the methods to measure accounting conservatism might lead to biases in the results of the study. Only two measures are used, while using more measures would increase the reliability of the conclusions that are made based on the results of the study. Also, the measures used are influenced by other factors than only the accounting methods that are chosen.

Future research could include research on accounting conservatism in the Netherlands using a different sample or a different research period. The effect of the scaling variables on the measures should be examined more thoroughly. Also, the effect of different measures to determine the existence and extent of accounting conservatism might be incorporated in future research. Future studies could also focus on reasons why the degree of accounting conservatism fluctuates over time or on which accruals are used in applying accounting conservatism.

VI   Summary and conclusion

VI.1   Summary

Accounting conservatism is defined as 'accountant's tendency to require a higher degree of verification for recognizing good news than bad news in the financial statements' (Basu 1997). Four explanations of accounting conservatism have been formulated: conservatism is employed in the contracts the firm enters into; an understatement of net assets reduces expected litigation costs; conservative accounting methods could defer payment of taxes; standard setters will prefer accounting standards that lead to an understatement of net assets to prevent criticism. Several measures can be used to determine the extent and existence of accounting conservatism: the relation between earnings and returns; accumulation of non-operating accruals; the relation between accruals and cash flows; the market-to-book ratio; and the skewness and variability of the earnings distribution. Prior research showed that accounting conservatism exists and has increased during the past decades. Also, within the U.K. accounting conservatism is found to be lower for non-listed companies relative to listed companies.

This thesis examined the existence and development of accounting conservatism in the Netherlands. Also, a distinction between Dutch listed and non-listed companies has been made. Two models have been used to assess the level of accounting conservatism. The first model used is the analysis of non-operating accruals. The other model used concerns the relation between accruals and cash flows. The non-operating accruals are expected to be negative indicating that losses are recognized before the cash outflow occurs. The relation between accruals and cash flows is expected to be negative indicating that in periods of losses the cash flows are not affected. For firms faced with cash outflows, the relation is expected to be positive indicating that the losses have already been incorporated in the financial statements making use of negative accruals.

The research is conducted on a sample of 105 Dutch companies, of which 64 large listed companies and 41 large non-listed companies. The size of the companies is determined based on sales revenue and the amount of full-time employees. The research is performed on the period from 2001 until 2008.

Analysis of non-operating accruals showed that the non-operating accruals are negative during the entire research period. The non-operating accruals are rising in the period from 2001 till 2003. In the period from 2003 until 2008 the non-operating accruals are declining. On balance, the non-operating accruals have hardly changed. These results indicate that accounting conservatism exists. However, the results do not indicate that the degree of accounting conservatism has increased over time.

When reviewing the relation between accruals and cash flows, a negative relation can be observed for the entire research period except for 2005. The relation between accruals and cash flows is not significant in the year 2005. During the research period the relation between accruals and cash flows

fluctuates. In the year 2002 the relation is more negative compared to the relation in 2001. In the period from 2002 till 2005 the relation becomes less negative. From 2005 until 2007 the relation becomes more negative. In 2008 the relation becomes less negative. The relation between accruals and cash flows for companies that experience cash outflows is also fluctuating. In the years 2004, 2006 and 2007 the relation is negative. Therefore, the results indicate that accounting conservatism exists in the period 2001 until 2003 and in the year 2008. However, the results do not indicate that accounting conservatism increases during the research period.

The distinction between listed and non-listed companies is also examined. Reviewing the non-operating accruals non-listed companies are less conservative than listed companies in the period from 2001 until 2003 and in the year 2008. In the period from 2004 till 2007 the non-listed companies are more conservative than listed companies. When assessing the relation between cash flows and accruals, the results do not indicate a clear trend of non-listed being less conservative than listed firms.

A robustness check of the results showed that scaling the accruals and cash flows over sales revenue instead of total assets at the beginning of the year affects the results of the analyses. This especially applies to the analysis of the non-operating accruals of the listed companies. Also, the regression analyses of the relation between accruals and cash flows is affected by the choice of scaling variable when a distinction is made between listed and non-listed companies.

When comparing the actual results with the expected results and the results of prior research several differences and similarities can be found. A major similarity with the expected results and prior research is that this research shows that accounting conservatism exists. Differences can be found in the development of the degree of accounting conservatism and the comparison of the degree of accounting conservatism at listed and non-listed companies. These differences can be explained by differences in measures used to assess accounting conservatism, differences in the research period, differences in the sample size and composition, and differences in the countries included in the research.

This research has several limitations which concern the sample, the research period and the measures used to assess the degree of accounting conservatism. Further research might be conducted to eliminate these limitations. Also, the existing body of research might be extended by conducting research on the causes of the change in the degree of accounting conservatism and by examining which accruals are mostly used in applying accounting conservatism.

VI.2   Conclusion

In this section I will provide my main conclusion by answering the research question which was formulated in the first chapter. The research question addressed in this thesis is:

"Has accounting conservatism increased during the past decade, and are there any differences in the degree of accounting conservatism at listed and non-listed Dutch firms?"

The analysis of non-operating accruals and the relation between accruals and cash flows showed that accounting conservatism exists in the Netherlands. However, the research failed to show an increase in the level of accounting conservatism applied by Dutch companies. Analysis of non-operating accruals showed that accounting conservatism has slightly decreased in the period from 2001 until 2003. From 2004 the degree of accounting conservatism slightly increases. Reviewing the relation between accruals and cash flows, accounting conservatism is increasing in 2002 and decreasing in the period from 2003 till 2005. The relation between cash flows and accruals gives a mixed view of the years 2006 and 2007. The relation becomes more negative for the entire sample. The relation is also negative for companies faced with an cash outflow, while this should be a positive relation indicating that when a cash outflow occurs the losses have already been incorporated. In 2008 the results indicate the existence of accounting conservatism.

Comparing the degree of accounting conservatism at listed and non-listed companies by analyzing the non-operating accruals and the relation between accruals and cash flows leads to mixed results. The analysis of non-operating accruals indicates that non-listed companies are less conservative in the period from 2001 until 2003. From 2004 till 2007 non-listed companies are more conservative than listed companies. In the year 2008 non-listed companies are less conservative than listed companies. The relation between accruals and cash flows indicates that non-listed companies are less conservative in the years 2003, 2005 and 2008 compared to listed companies. For the other years included in the research period the analysis of the relation between accruals and cash flows provides mixed results.

In short, accounting conservatism exists in the Netherlands. However, an increase in accounting conservatism could not be found. Also, the results failed to find that non-listed companies are less conservative than listed companies.

References

Ahmed, A.S. and S. Duellman (2007), Accounting conservatism and board of director characteristics, *Journal of Accounting and Economics*, vol. 44, pp. 411-437

Ball, R.A., S.P. Kothari and A. Robin (2000), The effect of international institutional factors on properties of accounting earnings, *Journal of Accounting and Economics*, vol. 29, pp. 1-51

Ball, R. and L. Shivakumar (2005), Earnings quality in UK private firms: comparative loss recognition timeliness, *Journal of Accounting and Economics*, vol. 39, pp. 83-128

Ball, R. and L. Shivakumar (2006), The role of accruals in asymmetrically timely gain and loss recognition, *Journal of Accounting Research*, vol. 44, pp. 207-242

Basu, S. (1997), The conservatism principle and the asymmetric timeliness of earnings, *Journal of Accounting and Economics*, vol. 24, pp. 3-37

Beaver, W.H. and S.G. Ryan (2005), Conditional and unconditional conservatism: concepts and modeling, *Review of Accounting Studies*, vol. 10, pp. 269-309

Deegan, C. and J. Unerman (2006), *Financial accounting theory – european edition*, McGraw-Hill Education

Dietrich, J.R., K.A. Muller III and E.J. Riedl (2007), Asymmetric timeliness tests of accounting conservatism, *Review of Accounting Studies*, vol. 12, pp. 95-124

Field, A. (2005), *Discovering statistics using SPSS*, SAGE Publications

García Lara, J.M. and A. Mora (2004), Balance sheet versus earnings conservatism in Europe, *European Accounting Review*, vol. 13, pp. 261-292

García Lara, J.M., B. Garcia Osma and F. Penalva (2009), Accounting conservatism and corporate governance, *Review of Accounting Studies*, vol. 14, pp. 161-201

Givoly, D. and C.K. Hayn (2000), The changing time-series properties of earnings, cash flows and accruals: has financial reporting become more conservative?, *Journal of Accounting and Economics*, vol. 29, pp. 287-320

Givoly, D., C.K. Hayn and A. Natarajan (2007), Measuring reporting conservatism, *The Accounting Review*, vol. 82, pp. 65-106

Kahn, M. and R.L. Watts (2009), Estimation and empirical properties of a firm-year measure of accounting conservatism, *Journal of Accounting and Economics*, vol. 48, pp. 132-150

Kwon, Y.K, D.P. Newman and Y.S. Suh (2001), The demand for accounting conservatism for management control, *Review of Accounting Studies*, vol. 6, pp. 29-51

Pae, J. (2007), Unexpected accruals and conditional accounting conservatism, *Journal of Business Finance and Accounting*, vol. 34, pp. 681-704

Roychowdhury, S. and R.L. Watts (2007), Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting, *Journal of Accounting and Economics*, vol. 44, pp. 2-31

Ryan, S.G. (2006), Identifying conditional conservatism, *European Accounting Review*, vol. 15, pp. 511-525

Solomons, D. (1961), Economic and accounting concepts of income, *The Accounting Review*, vol. 36, pp. 374-383

Watts, R.L. (2003a), Conservatism in accounting part I: explanations and implications, *Accounting Horizons*, vol. 17, pp. 207-221

Watts, R.L. (2003b), Conservatism in accounting part II: evidence and research opportunities, *Accounting Horizons*, vol. 17, pp. 287-301

Appendix A

Author (year)	Object of study	Sample (sample size, country, research period)	Methodology	Outcome
Models to measure accounting conservatism				
Basu (1997)	Accounting conservatism	All firms with returns data on the CRSP NYSE/AMEX Monthly files and with accounting data on COMPUSTAT, United States of America, 1963-1990	Regression of earnings on returns	The level of accounting conservatism has increased over time.
Givoly and Hayn (2000)	Accounting conservatism; changing properties of earnings, cash flows and accruals	All firms in the 1999 COMPUSTAT database, United States of America, 1950-1998	Plotting the accumulation of non-operating accruals; Statistical analysis of the skewness and variability of earnings (standard deviation and average of ROA); Plotting the accumulation of market-to-book ratio; Regression of earnings on returns.	The level of accounting conservatism has increased over time.
Ball and Shivakumar (2005)	Financial reporting quality in public and private companies	Firms in the FAME database (in March 2000), United Kingdom, 1989-1999	Regression of earnings on prior year earnings; Accruals model: regression of accruals on cash flows	Loss recognition is less timely in private companies than in public companies. Therefore, the reporting quality of private companies is lower than the reporting quality of public firms.

Khan and Watts (2009)	Develop a firm-year measure of accounting conservatism	Firms with accounting data on COMPUSTAT Database and return data on CRSP Database excluding firms with share price below $1, United States of America, 1963-2005	Based on Basu's (1997) model a firm-year measure (also called C-score) is estimated, using: (1) Regression analysis; (2) Event studies	The result of the research is a firm-year measure of accounting conservatism, which proves to predict conservatism.
Criticism on existing models to measure accounting conservatism			
Ryan (2006)	Identify conditional accounting conservatism and comment existing measure	Not applicable	Reviewing existing literature	(1) Seven limitations of asymmetric timeliness as a measure for accounting conservatism (2) Four suggestions to improve the measure
Dietrich et al. (2007)	Reliability of regression of earnings on returns to assess accounting conservatism	All firms with returns data on the CRSP NYSE/AMEX Monthly files and with accounting data on COMPUSTAT, United States of America, 1963-1990 [actual and simulated], 1991-2001 [actual and simulated]	Using a general model of the relations among economic income, reporting earnings, non-earnings information and stock returns to determine simulated returns data. Performing the regression of earnings on returns for both actual and simulated data.	Regression of earnings on returns leads to biased results which cannot be used to determine the existence and degree of accounting conservatism.

Givoly et al. (2007)	Power and reliability of the Basu (1997) model	All firms in the 2001 COMPUSTAT database with sufficient returns data, United States of America, 1951-2001	Regression of earnings on returns for both actual and simulated conservative reporting data	The Basu (1997) measure is influenced by factors other than accounting conservatism. Therefore, do not rely on one single measure for accounting conservatism.
Theoretical model without empirical evidence			
Beaver and Ryan (2005)	Develop a general model of conditional and unconditional accounting conservatism	Not applicable	Developing a model based on existing literature	A general model of conditional and unconditional accounting conservatism which could be used for future research
Differences in accounting conservatism among countries			
Ball et al. (2000)	Accounting conservatism at common law and code law countries	Firms in Australia, Canada, France, Germany, Japan, U.K. and U.S., 1985 - 1995	Regression analysis based on the model developed by Basu (1997)	The level of accounting conservatism is higher in common law countries than in code law countries.
García Lara and Mora (2004)	Accounting conservatism across European countries	All available data in the Extel Company Analysis database (up to May 2000), Belgium, France, Germany, Italy, the Netherlands, Spain, Switzerland, and the U.K., 1987 - 2000	Regression analysis of adjusted book value on market value of equity	The level of balance sheet conservatism is lower in common law countries than in code law countries. The level of earnings conservatism is not significantly different between common law and code law countries.

Relationship between different aspects of accounting conservatism				
Ball and Shivakumar (2006)	The relationship between accruals and loss recognition	Firms with data on the CRSP and Compustat annual database excluding financial firms and firm-years in which acquisitions occurred, United States of America, 1987-2003	Regression analysis	Asymmetric loss and gain recognition is an important property of accrual accounting. Due to the asymmetry in loss and gain recognition there is no linear relation between cash flows and accruals. Standard accrual models can be enhanced by incorporating the asymmetry.
Roychowdhury and Watts (2006)	Relation between asymmetric timeliness of earnings and market-to-book ratio	Firms with accounting data on COMPUSTAT Database and return data on CRSP Database excluding firms with negative book values, United States of America, 1972-1999	Regression analysis	When asymmetric timeliness of earnings is measured cumulatively over a long period, it's relation with market-to-book ratio is positive. When asymmetric timeliness of earnings is measured over a short period, it's relation with market-to-book ratio is negative.
Relationship between accounting conservatism and other aspects				
Kwon et al. (2001)	Relationship between accounting conservatism and agency costs	Not applicable	Modeling agent effort and outcome of the effort using constraints in a limited liability setting	Accounting conservatism reduces agency costs caused by management compensation contracts.

Ahmed and Duellman (2007)	Relationship between accounting conservatism and corporate governance	306 firms out of the S&P 500, United States of America, 1999-2001	Regression analysis	An increase of the percentage inside directors leads to a decrease in accounting conservatism, and an increase of the percentage of shares held outside the firm leads to an increase of accounting conservatism.
Garcia Lara et al. (2009)	Relationship between accounting conservatism and corporate governance	Firms in the 2003 COMPUSTAT database with return data on CRSP and BoD and executive data on Execucomp (excluding firms with negative book value of equity and firms in the financial sector), United States of America, 1992-2003	(1) Regression of earnings on returns; (2) Regression of accruals on cash flows; (3) Accumulation of accruals	Firms with strong corporate governance are more likely to use conservative accounting methods.

Appendix B

Company	Listed
Aalberts Industries N.V.	Yes
Accell Group N.V.	Yes
AKZO Nobel N.V.	Yes
Alanheri N.V.	Yes
Amsterdam Commodities N.V.	Yes
ANWB B.V.	No
ARCADIS N.V.	Yes
Argos Groep B.V.	No
ASML Holding N.V.	Yes
Ballast Nedam N.V.	Yes
Batenburg Beheer N.V.	Yes
Bavaria N.V.	No
BE Semiconductor Industries N.V.	Yes
Beter Bed Holding N.V.	Yes
Blokker Holding B.V.	No
Brunel International N.V.	Yes
Connexxion Holding N.V.	No
Coöperatie Agrifirm U.A.	No
Coöperatie Cehave Landbouwbelang U.A.	No
Coöperatie INTRES U.A.	No
Coöperatie Koninklijke Cebeco Groep U.A.	No
Coöperatie The Greenery U.A.	No
Coöperatieve Levensmiddelengroothandel "Nederlands Sperwerverbond" U.A.	No
Copaco N.V.	No
Corus Staal B.V.	No
Crucell N.V.	Yes
CSM N.V.	Yes
DELTA N.V.	No
DHV Holding B.V.	No
Draka Holding N.V.	Yes
Dura Vermeer Groep N.V.	No
Eneco Holding N.V.	No
Energie Beheer Nederland B.V.	No
ERIKS N.V.	Yes
Essent N.V.	No
Exact Holding N.V.	Yes

Company	Listed
Fugro N.V.	Yes
Gamma Holding N.V.	Yes
Grontmij N.V.	Yes
Havenbedrijf Rotterdam N.V.	No
Heijmans N.V.	Yes
Heineken Holding N.V.	Yes
Hunter Douglas N.V.	Yes
Imtech N.V.	Yes
Intergamma B.V.	No
Janssen De Jong Groep B.V.	No
Jetix Europe N.V.	Yes
Kendrion N.V.	Yes
Koninklijke Ahold N.V.	Yes
Koninklijke BAM Groep N.V.	Yes
Koninklijke Boskalis Westminster N.V.	Yes
Koninklijke Coöperatie Cosun U.A.	No
Koninklijke Distilleerderij M. Dirkzwager B.V.	No
Koninklijke DSM N.V.	Yes
Koninklijke Haskoning Groep B.V.	No
Koninklijke KPN N.V.	Yes
Koninklijke Philips Electronics N.V.	Yes
Koninklijke Reesink N.V.	Yes
Koninklijke Swets & Zeitlinger Holding N.V.	No
Koninklijke Ten Cate N.V.	Yes
Koninklijke Vopak N.V.	Yes
Koninklijke Wegener NV	Yes
Koninklijke Wessanen N.V.	Yes
Lohomij B.V.	No
Macintosh Retail Group N.V.	Yes
MCB Nederland B.V.	No
Mediq N.V.	Yes
N.V. Crown Van Gelder	Yes
N.V. Luchthaven Schiphol	No
N.V. Nederlandsche Apparatenfabriek "Nedap"	Yes
N.V. Nederlandse Gasunie	No
N.V. Nederlandse Spoorwegen	No
N.V. Nuon	No

Company	Listed
N.V. Slibverwerking Noord-Brabant	No
Neways Electronics International N.V.	Yes
Nutreco Holding N.V.	Yes
Océ N.V.	Yes
Ordina N.V.	Yes
Pharming Group N.V.	Yes
Pon Holdings B.V.	No
Roto Smeets Group N.V.	Yes
Royal Dutch SHELL Plc.	Yes
SAMAS N.V.	Yes
SBM Offshore N.V.	Yes
Schuitema B.V.	Yes
SdB N.V.	Yes
SHV Holdings N.V.	No
Simac Techniek N.V.	Yes
Sligro Food Group N.V.	Yes
Smit Internationale N.V.	Yes
Stern Groep N.V.	Yes
TBI Holdings B.V.	No
Telegraaf Media Groep N.V.	Yes
TKH Group N.V.	Yes
TNT N.V.	Yes
Unilever N.V.	Yes
Unit 4 Agresso N.V.	Yes
Van Drie Holding B.V.	No
Van Gansewinkel Groep B.V.	No
Van Leeuwen Buizen Groep B.V.	No
Van Oord N.V.	No
Vastned Retail N.V.	Yes
Wereldhave N.V.	Yes
Wolters Kluwer N.V.	Yes
Zeeman Groep B.V.	No

Appendix C

C.1 Introduction

This Appendix contains the SPSS output of the results of the regression analysis. First, the results for the entire sample of both listed and non-listed companies will be provided. Thereafter, the regression analysis of the listed companies will be included. Also, the results of the regression analysis for the non-listed companies will be provided. The SPSS output used to check the robustness of the results will also be provided. Finally, a random sample of five regressions will be tested on the assumptions which need to be met. When these assumptions are not met, generalizations of the regression analyses cannot be made.

C.2 SPSS output complete sample

In this section the SPSS output of the regression analyses of the entire sample are provided.

Figure C1   Regression model complete sample 2001

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,215[a]	,046	,012	,058683442127	1,391

a. Predictors: (Constant), DCF01, CF01, D01

b. Dependent Variable: TA01

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,036	,010		-3,515	,001		
	CF01	-,128	,069	-,248	-1,872	,065	,644	1,552
	D01	-,015	,032	-,082	-,455	,650	,350	2,854
	DCF01	,269	,314	,153	,857	,394	,355	2,813

a. Dependent Variable: TA01

Figure C2   Regression model complete sample 2002

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,741^a	,549	,530	,040515583745	2,398

a. Predictors: (Constant), DCF02, CF02, D02

b. Dependent Variable: TA02

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,006	,008		,713	,478		
	CF02	-,381	,057	-,702	-6,666	,000	,581	1,723
	D02	-,071	,020	-,395	-3,611	,001	,538	1,857
	DCF02	,966	,161	,665	6,020	,000	,528	1,894

a. Dependent Variable: TA02

Figure C3   Regression model complete sample 2003

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,561^a	,315	,291	,057290737827	2,103

a. Predictors: (Constant), DCF03, D03, CF03

b. Dependent Variable: TA03

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1,195E-5	,011		,001	,999		
	CF03	-,329	,078	-,575	-4,217	,000	,423	2,365
	D03	-,051	,024	-,235	-2,121	,037	,642	1,557
	DCF03	,716	,130	,707	5,499	,000	,476	2,100

a. Dependent Variable: TA03

Figure C4   **Regression model complete sample 2004**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,977[a]	,955	,953	,052588629686	1,956

a. Predictors: (Constant), DCF04, D04, CF04

b. Dependent Variable: TA04

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,014	,010		-1,386	,170		
	CF04	-,213	,075	-,127	-2,849	,006	,282	3,552
	D04	-,311	,036	-,272	-8,512	,000	,545	1,836
	DCF04	-2,359	,103	-1,027	-22,805	,000	,274	3,647

a. Dependent Variable: TA04

Figure C5   **Regression model complete sample 2005**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,526[a]	,277	,245	,038821173100	2,228

a. Predictors: (Constant), DCF05, D05, CF05

b. Dependent Variable: TA05

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,034	,009		-3,896	,000		
	CF05	,064	,063	,153	1,024	,309	,472	2,121
	D05	,012	,025	,067	,483	,631	,539	1,855
	DCF05	,368	,125	,452	2,939	,004	,443	2,258

a. Dependent Variable: TA05

Figure C6   Regression model complete sample 2006

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,822[a]	,675	,663	,040239128406	1,939

a. Predictors: (Constant), DCF06, CF06, D06

b. Dependent Variable: TA06

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,013	,008		-1,687	,096		
	CF06	-,120	,046	-,236	-2,590	,011	,509	1,963
	D06	,008	,027	,027	,283	,778	,479	2,088
	DCF06	-,616	,102	-,623	-6,067	,000	,399	2,504

a. Dependent Variable: TA06

Figure C7   Regression model complete sample 2007

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,573[a]	,329	,304	,051839975501	2,033

a. Predictors: (Constant), DCF07, D07, CF07

b. Dependent Variable: TA07

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,024	,012		-2,063	,042		
	CF07	-,171	,083	-,274	-2,065	,042	,475	2,104
	D07	-,070	,034	-,269	-2,055	,043	,489	2,044
	DCF07	-,646	,177	-,516	-3,644	,000	,418	2,394

a. Dependent Variable: TA07

Figure C8   **Regression model complete sample 2008**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,778[a]	,605	,589	,046416372631	1,862

a. Predictors: (Constant), DCF08, CF08, D08

b. Dependent Variable: TA08

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,037	,008		-4,671	,000		
	CF08	-,099	,050	-,171	-1,962	,053	,692	1,446
	D08	,030	,027	,117	1,097	,276	,462	2,166
	DCF08	1,574	,184	,931	8,566	,000	,447	2,239

a. Dependent Variable: TA08

C.3   SPSS output listed companies

In this section the SPSS output of the regression analysis for the listed companies is provided.

Figure C9   **Regression model listed companies 2001**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,224[a]	,050	-,007	,065987848830	1,199

a. Predictors: (Constant), DCF01, CF01, D01

b. Dependent Variable: TA01

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,039	,018		-2,136	,038		
	CF01	-,161	,129	-,236	-1,246	,218	,530	1,888
	D01	,014	,051	,071	,272	,787	,277	3,605
	DCF01	,742	,590	,321	1,256	,215	,291	3,435

a. Dependent Variable: TA01

Figure C10   Regression model listed companies 2002

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,384[a]	,147	,099	,086610575754	1,929

a. Predictors: (Constant), DCF02, D02, CF02

b. Dependent Variable: TA02

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,063	,028		-2,221	,031		
	CF02	,239	,234	,245	1,023	,311	,281	3,563
	D02	-,002	,049	-,007	-,038	,970	,409	2,446
	DCF02	,301	,406	,154	,741	,462	,374	2,675

a. Dependent Variable: TA02

Figure C11   Regression model listed companies 2003

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,625[a]	,391	,356	,056294979790	1,724

a. Predictors: (Constant), DCF03, D03, CF03

b. Dependent Variable: TA03

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,015	,019		,776	,441		
	CF03	-,500	,165	-,843	-3,028	,004	,151	6,625
	D03	-,083	,031	-,418	-2,712	,009	,494	2,025
	DCF03	,857	,196	1,040	4,377	,000	,208	4,816

a. Dependent Variable: TA03

Figure C12   Regression model listed companies 2004

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,979[a]	,959	,957	,061977834284	2,440

a. Predictors: (Constant), DCF04, D04, CF04

b. Dependent Variable: TA04

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,005	,021		,210	,835		
	CF04	-,200	,182	-,106	-1,101	,276	,085	11,703
	D04	-,522	,047	-,455	-11,096	,000	,467	2,142
	DCF04	-2,565	,201	-1,122	-12,788	,000	,102	9,810

a. Dependent Variable: TA04

Figure C13   Regression model listed companies 2005

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,542[a]	,293	,248	,063216011238	1,441

a. Predictors: (Constant), DCF05, D05, CF05

b. Dependent Variable: TA05

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,047	,024		1,982	,053		
	CF05	-,473	,181	-,625	-2,622	,012	,265	3,777
	D05	-,064	,077	-,171	-,827	,413	,351	2,849
	DCF05	,964	,293	,828	3,288	,002	,237	4,222

a. Dependent Variable: TA05

Figure C14   Regression model listed companies 2006

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,892[a]	,796	,781	,037108168495	1,966

a. Predictors: (Constant), DCF06, D06, CF06

b. Dependent Variable: TA06

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,017	,012		-1,382	,174		
	CF06	-,031	,081	-,055	-,387	,701	,232	4,303
	D06	,013	,033	,045	,393	,696	,355	2,814
	DCF06	-,701	,125	-,808	-5,616	,000	,230	4,355

a. Dependent Variable: TA06

Figure C15   Regression model listed companies 2007

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,676[a]	,457	,423	,051786824065	2,283

a. Predictors: (Constant), DCF07, D07, CF07

b. Dependent Variable: TA07

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,002	,016		-,143	,887		
	CF07	-,266	,106	-,440	-2,516	,015	,363	2,755
	D07	-,157	,041	-,614	-3,828	,000	,431	2,322
	DCF07	-,687	,197	-,627	-3,495	,001	,345	2,900

a. Dependent Variable: TA07

Figure C16   Regression model listed companies 2008

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,831[a]	,690	,669	,050095250076	1,967

a. Predictors: (Constant), DCF08, D08, CF08

b. Dependent Variable: TA08

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,019	,016		-1,187	,241		
	CF08	-,229	,125	-,276	-1,825	,075	,307	3,256
	D08	,012	,032	,049	,374	,711	,403	2,482
	DCF08	1,705	,228	1,062	7,466	,000	,348	2,871

a. Dependent Variable: TA08

C.4   SPSS output non-listed companies

In this section the SPSS output of the regression analysis for the non-listed companies is provided.

Figure C17   Regression model non-listed companies 2001

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,450[a]	,203	,123	,048797511652	2,122

a. Predictors: (Constant), DCF01, CF01, D01

b. Dependent Variable: TA01

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,021	,012		-1,795	,083		
	CF01	-,182	,067	-,513	-2,704	,011	,738	1,355
	D01	-,043	,042	-,267	-1,007	,322	,377	2,653
	DCF01	,101	,338	,079	,297	,768	,375	2,665

a. Dependent Variable: TA01

Figure C18   Regression model non-listed companies 2002

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,603[a]	,364	,295	,041348448502	2,270

a. Predictors: (Constant), DCF02, CF02, D02

b. Dependent Variable: TA02

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,005	,015		,356	,725		
	CF02	-,365	,128	-,489	-2,842	,008	,767	1,303
	D02	-,080	,047	-,401	-1,726	,095	,421	2,373
	DCF02	-2,443	1,126	-,489	-2,171	,039	,448	2,232

a. Dependent Variable: TA02

Figure C19   Regression model non-listed companies 2003

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,669[a]	,447	,395	,061077266561	2,727

a. Predictors: (Constant), DCF03, CF03, D03

b. Dependent Variable: TA03

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,000	,016		-,035	,972		
	CF03	-,289	,095	-,436	-3,042	,005	,841	1,189
	D03	-,130	,083	-,465	-1,560	,128	,195	5,138
	DCF03	-4,642	1,787	-,767	-2,597	,014	,198	5,047

a. Dependent Variable: TA03

Figure C20   Regression model non-listed companies 2004

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,470[a]	,221	,152	,056689647772	1,698

a. Predictors: (Constant), DCF04, CF04, D04

b. Dependent Variable: TA04

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,032	,014		-2,216	,033		
	CF04	-,188	,090	-,360	-2,076	,046	,761	1,314
	D04	,026	,058	,114	,440	,662	,343	2,914
	DCF04	-,150	,564	-,069	-,267	,791	,346	2,888

a. Dependent Variable: TA04

Figure C21   Regression model non-listed companies 2005

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,354[a]	,125	,032	,029686662511	2,457

a. Predictors: (Constant), DCF05, CF05, D05

b. Dependent Variable: TA05

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,052	,008		-6,137	,000		
	CF05	,091	,054	,347	1,698	,101	,750	1,334
	D05	-,009	,026	-,091	-,355	,725	,478	2,094
	DCF05	-,391	,287	-,343	-1,361	,184	,491	2,037

a. Dependent Variable: TA05

Figure C22   Regression model non-listed companies 2006

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,345[a]	,119	,070	,052765550533	2,130

a. Predictors: (Constant), DCF06, CF06

b. Dependent Variable: TA06

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,028	,012		-2,231	,032		
	CF06	-,143	,071	-,321	-2,017	,051	,967	1,034
	DCF06	-2,153	4,211	-,081	-,511	,612	,967	1,034

a. Dependent Variable: TA06

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	D06	.[a]	.	.	.	,000	.	,000

a. Predictors in the Model: (Constant), DCF06, CF06

b. Dependent Variable: TA06

Figure C23   Regression model non-listed companies 2007

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,338[a]	,114	,031	,061979087017	1,874

a. Predictors: (Constant), DCF07, CF07, D07

b. Dependent Variable: TA07

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,027	,015		-1,772	,086		
	CF07	-,173	,092	-,336	-1,877	,070	,862	1,160
	D07	,056	,127	,205	,438	,664	,126	7,912
	DCF07	,780	1,570	,232	,497	,622	,127	7,881

a. Dependent Variable: TA07

Figure C24   Regression model non-listed companies 2008

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,347[a]	,120	,026	,037480198732	1,760

a. Predictors: (Constant), DCF08, CF08, D08

b. Dependent Variable: TA08

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,040	,009		-4,683	,000		
	CF08	-,077	,045	-,328	-1,705	,099	,850	1,177
	D08	-,108	,153	-,698	-,706	,486	,032	31,119
	DCF08	-,754	1,087	-,685	-,693	,494	,032	31,137

a. Dependent Variable: TA08

C.5   SPSS output robustness check entire sample

In this section the SPSS output of the regression analysis for the robustness check of the complete sample is provided.

Figure C25   Regression model robustness check completed sample 2001

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,998^a	,995	,995	,03755	2,069

a. Predictors: (Constant), DCF01, D01, CF01

b. Dependent Variable: TA01

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,015	,007		-2,126	,037		
	CF01	-,199	,074	-,228	-2,691	,009	,009	110,339
	D01	-,009	,016	-,005	-,582	,562	,769	1,300
	DCF01	1,087	,074	1,222	14,638	,000	,009	107,496

a. Dependent Variable: TA01

Figure C26   Regression model robustness check completed sample 2002

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	,999	,999	,01999	2,126

a. Predictors: (Constant), DCF02, D02, CF02

b. Dependent Variable: TA02

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,013	,004		3,291	,002		
	CF02	-,568	,038	-,633	-14,821	,000	,009	109,541
	D02	-,002	,011	-,001	-,212	,833	,746	1,340
	DCF02	1,486	,039	1,627	38,576	,000	,009	106,813

a. Dependent Variable: TA02

Figure C27   Regression model robustness check completed sample 2003

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	,999	,999	,03176	1,838

a. Predictors: (Constant), DCF03, D03, CF03

b. Dependent Variable: TA03

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,009	,005		-1,968	,053		
	CF03	-,222	,035	-,485	-6,388	,000	,002	638,295
	D03	-,003	,013	,000	-,264	,793	,840	1,190
	DCF03	,682	,035	1,484	19,613	,000	,002	634,203

a. Dependent Variable: TA03

Figure C28   **Regression model robustness check completed sample 2004**

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000^a	1,000	1,000	,02075	2,343

a. Predictors: (Constant), DCF04, D04, CF04

b. Dependent Variable: TA04

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,002	,004		,579	,565		
	CF04	-,415	,044	-,187	-9,354	,000	,001	1586,601
	D04	-,031	,013	-,001	-2,474	,016	,714	1,400
	DCF04	-1,819	,044	-,814	-40,962	,000	,001	1575,505

a. Dependent Variable: TA04

Figure C29   **Regression model robustness check completed sample 2005**

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000^a	1,000	1,000	,02107	2,245

a. Predictors: (Constant), DCF05, D05, CF05

b. Dependent Variable: TA05

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,007	,003		-2,284	,026		
	CF05	-,088	,016	-,168	-5,627	,000	,001	949,380
	D05	-,008	,010	,000	-,780	,439	,826	1,211
	DCF05	,617	,016	1,167	39,225	,000	,001	945,409

a. Dependent Variable: TA05

Figure C30   Regression model robustness check completed sample 2006

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,03637	2,357

a. Predictors: (Constant), DCF06, D06

b. Dependent Variable: TA06

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,024	,004		-5,837	,000		
	D06	,025	,019	,001	1,347	,182	,808	1,238
	DCF06	-,705	,000	-1,000	-2037,487	,000	,808	1,238

a. Dependent Variable: TA06

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		Minimum Tolerance
						Tolerance	VIF	
1	CF06	-,221[a]	-3,298	,001	-,344	3,874E-5	25814,779	3,874E-5

a. Predictors in the Model: (Constant), DCF06, D06

b. Dependent Variable: TA06

Figure C31   Regression model robustness check completed sample 2007

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,03061	2,216

a. Predictors: (Constant), DCF07, D07, CF07

b. Dependent Variable: TA07

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,011	,005		-2,111	,038		
	CF07	-,165	,047	-,275	-3,524	,001	,000	5672,482
	D07	-,022	,016	-,002	-1,366	,176	,761	1,315
	DCF07	-,436	,047	-,726	-9,335	,000	,000	5654,165

a. Dependent Variable: TA07

Figure C32   Regression model robustness check completed sample 2008

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,03488	2,035

a. Predictors: (Constant), DCF08, D08, CF08

b. Dependent Variable: TA08

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,001	,006		-,174	,862		
	CF08	-,402	,051	-,301	-7,952	,000	,000	2896,252
	D08	,006	,014	,000	,430	,668	,817	1,223
	DCF08	1,739	,051	1,301	34,421	,000	,000	2885,173

a. Dependent Variable: TA08

C.6   SPSS output robustness check listed companies

In this section the SPSS output of the regression analysis for the robustness check of the sample of listed companies is provided.

Figure C33   Regression model robustness check listed companies 2001

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,997[a]	,995	,994	,04821	1,818

a. Predictors: (Constant), DCF01, D01, CF01

b. Dependent Variable: TA01

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,018	,013		-1,348	,184		
	CF01	-,330	,162	-,378	-2,042	,047	,003	316,803
	D01	-,018	,028	-,008	-,648	,520	,653	1,532
	DCF01	1,216	,162	1,371	7,502	,000	,003	308,566

a. Dependent Variable: TA01

Figure C34   Regression model robustness check listed companies 2002

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,998[a]	,997	,996	,04432	2,015

a. Predictors: (Constant), DCF02, D02, CF02

b. Dependent Variable: TA02

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,025	,010		-2,451	,018		
	CF02	-,069	,083	-,078	-,832	,410	,009	105,553
	D02	,030	,021	,015	1,406	,167	,741	1,350
	DCF02	,985	,084	1,081	11,771	,000	,010	102,369

a. Dependent Variable: TA02

Figure C35   Regression model robustness check listed companies 2003

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,03046	1,504

a. Predictors: (Constant), DCF03, D03, CF03

b. Dependent Variable: TA03

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,004	,008		-,517	,608		
	CF03	-,240	,089	-,523	-2,684	,010	,000	4533,702
	D03	-,043	,019	-,008	-2,246	,030	,686	1,458
	DCF03	,698	,089	1,519	7,818	,000	,000	4508,708

a. Dependent Variable: TA03

Figure C36   Regression model robustness check listed companies 2004

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,02736	2,210

a. Predictors: (Constant), DCF04, D04, CF04

b. Dependent Variable: TA04

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,013	,008		1,647	,108		
	CF04	-,428	,098	-,192	-4,362	,000	,000	4415,744
	D04	-,304	,029	-,010	-10,628	,000	,481	2,079
	DCF04	-1,820	,098	-,815	-18,558	,000	,000	4385,745

a. Dependent Variable: TA04

Figure C37 **Regression model robustness check listed companies 2005**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,03431	1,497

a. Predictors: (Constant), DCF05, CF05

b. Dependent Variable: TA05

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,002	,006		-,296	,769		
	CF05	,057	,019	,109	3,024	,004	,002	518,391
	DCF05	,471	,019	,891	24,763	,000	,002	518,391

a. Dependent Variable: TA05

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	D05	.[a]	.	.	.	,000	.	,000

a. Predictors in the Model: (Constant), DCF05, CF05

b. Dependent Variable: TA05

Figure C38 **Regression model robustness check listed companies 2006**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,05938	1,836

a. Predictors: (Constant), DCF06, D06

b. Dependent Variable: TA06

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,031	,008		-3,756	,000		
	D06	,033	,035	,001	,936	,354	,761	1,313
	DCF06	-,705	,001	-1,000	-1207,967	,000	,761	1,313

a. Dependent Variable: TA06

Excluded Variables^b

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	CF06	-,313^a	-2,278	,027	-,301	2,554E-5	39154,606	2,554E-5

a. Predictors in the Model: (Constant), DCF06, D06

b. Dependent Variable: TA06

Figure C39   **Regression model robustness check listed companies 2007**

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000^a	1,000	1,000	,04251	2,293

a. Predictors: (Constant), DCF07, D07, CF07

b. Dependent Variable: TA07

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,054	,007		-8,098	,000		
	CF07	,357	,017	,596	20,956	,000	,003	389,096
	D07	-,002	,031	,000	-,054	,957	,675	1,481
	DCF07	-,958	,017	-1,595	-56,179	,000	,003	387,509

a. Dependent Variable: TA07

Figure C40   Regression model robustness check listed companies 2008

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,03836	2,060

a. Predictors: (Constant), DCF08, D08, CF08

b. Dependent Variable: TA08

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,014	,009		-1,571	,124		
	CF08	-,250	,075	-,187	-3,328	,002	,000	5243,176
	D08	,000	,021	,000	-,041	,968	,731	1,368
	DCF08	1,587	,075	1,187	21,139	,000	,000	5219,887

a. Dependent Variable: TA08

C.7   SPSS output robustness check non-listed companies

In this section the SPSS output of the regression analysis for the robustness check of the sample of non-listed companies is provided.

Figure C41   Regression model robustness check non-listed companies 2001

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,712[a]	,506	,455	,031825591062	2,046

a. Predictors: (Constant), DCF01, D01, CF01

b. Dependent Variable: TA01

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,014	,007		-1,857	,073		
	CF01	-,165	,053	-,596	-3,123	,004	,468	2,138
	D01	-,016	,021	-,122	-,756	,456	,650	1,539
	DCF01	,425	,089	,939	4,779	,000	,441	2,270

a. Dependent Variable: TA01

Figure C42   Regression model robustness check non-listed companies 2002

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,814[a]	,663	,631	,034778995753	2,066

a. Predictors: (Constant), DCF02, CF02, D02

b. Dependent Variable: TA02

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,003	,008		-,460	,648		
	CF02	-,354	,045	-,822	-7,805	,000	,951	1,052
	D02	-,086	,051	-,423	-1,708	,097	,172	5,807
	DCF02	-9,022	7,101	-,313	-1,271	,213	,174	5,762

a. Dependent Variable: TA02

Figure C43   Regression model robustness check non-listed companies 2003

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,825[a]	,681	,643	,026076388666	2,085

a. Predictors: (Constant), DCF03, CF03, D03

b. Dependent Variable: TA03

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,013	,006		-2,107	,045		
	CF03	-,209	,031	-,776	-6,704	,000	,951	1,051
	D03	,146	,067	1,039	2,185	,038	,056	17,711
	DCF03	13,316	6,255	1,010	2,129	,043	,057	17,669

a. Dependent Variable: TA03

Figure C44   Regression model robustness check non-listed companies 2004

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,928[a]	,860	,847	,033769738465	2,402

a. Predictors: (Constant), DCF04, CF04, D04

b. Dependent Variable: TA04

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,009	,008		1,145	,261		
	CF04	-,674	,050	-,938	-13,518	,000	,935	1,070
	D04	-,007	,036	-,021	-,180	,858	,317	3,150
	DCF04	,493	1,951	,030	,253	,802	,322	3,102

a. Dependent Variable: TA04

Figure C45   Regression model robustness check non-listed companies 2005

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,710[a]	,505	,455	,029667873968	2,215

a. Predictors: (Constant), DCF05, CF05, D05

b. Dependent Variable: TA05

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,010	,007		-1,409	,169		
	CF05	-,317	,059	-,723	-5,358	,000	,907	1,102
	D05	-,008	,026	-,057	-,310	,758	,484	2,067
	DCF05	-,101	1,373	-,013	-,074	,942	,501	1,996

a. Dependent Variable: TA05

Figure C46   Regression model robustness check non-listed companies 2006

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,695[a]	,483	,452	,040028161063	2,202

a. Predictors: (Constant), DCF06, CF06

b. Dependent Variable: TA06

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,002	,009		,264	,794		
	CF06	-,441	,080	-,697	-5,500	,000	,976	1,024
	DCF06	1,952	28,333	,009	,069	,945	,976	1,024

a. Dependent Variable: TA06

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	D06	.[a]	.	.	.	,000	.	,000

a. Predictors in the Model: (Constant), DCF06, CF06

b. Dependent Variable: TA06

Figure C47   Regression model robustness check non-listed companies 2007

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,741[a]	,549	,507	,042300040490	1,384

a. Predictors: (Constant), DCF07, CF07, D07

b. Dependent Variable: TA07

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,005	,009		-,482	,633		
	CF07	-,367	,060	-,744	-6,120	,000	,952	1,050
	D07	,007	,057	,026	,117	,908	,287	3,483
	DCF07	,799	3,741	,047	,214	,832	,290	3,445

a. Dependent Variable: TA07

Figure C48   Regression model robustness check non-listed companies 2008

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,923[a]	,852	,836	,034047711035	2,011

a. Predictors: (Constant), DCF08, CF08, D08

b. Dependent Variable: TA08

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,011	,008		1,392	,175		
	CF08	-,727	,058	-,938	-12,602	,000	,952	1,051
	D08	,000	,086	,000	,001	,999	,084	11,921
	DCF08	1,666	4,599	,091	,362	,720	,084	11,889

a. Dependent Variable: TA08

C.8 Testing the assumptions of regression analysis

In this section the assumptions of regression analysis will be tested for a random sample of five regression analyses. In order to generalize the regression model several assumptions need to be met (Field 2005, pp. 169, 170). These assumptions are:

- Variable types; all independent variables should be quantitative or categorical (e.g. a dummy variable with values 1 and 0) and the independent variable should be quantitative, continuous and unbounded.
- Non-zero variance; the independent variables should vary in value.
- No perfect multicollinearity; the independent variables should not be perfectly related to each other.
- No correlation between the independent variables and external variables; variables that are not included in the regression analysis should not affect the dependent variable.
- Homoscedasticity;
- Independent errors; there should not be dependence between the residuals of any observations.
- Normally distributed errors; the differences between the model and the observed data should on average be zero.
- Independence; all observations of the dependent variable are independent.
- Linearity.

Since for each regression analysis the same variables are being used, some of the abovementioned assumption can be tested for the entire group of regression analysis. Other assumptions need to be tested for each regression analysis individually.

All variables included in the regression analysis are quantitative or a dummy variable. Total accruals (TA) is the dependent variable in the regression analysis. This variable is quantitative, continuous and unbounded. The independent variables are cash flow from operations (CF), dummy variable (D), and cash outflow from operations (DCF). The cash flows variables are quantitative. The dummy variable is a categorical variable with only two categories. Therefore, the first assumption is met.

The second assumptions is non-zero variance. The values of all variables show variance. Therefore, this assumption is met.

Another assumption is that there should not be correlation between the independent variables and external variables. In this study the independent variables are assumed to be uncorrelated with variables that are not included in the regression analysis.

Homoscedasticity is also an assumption of regression analysis. Homoscedasticity is assured, because the variables have been scaled to prevent heteroscedasticity.

Another assumption is independence. Independence of the observations is assured, because each observation is obtained from a different company.

The other assumption will be tested for five randomly selected regression analyses. The selected regression analyses are: the regression analysis of the complete sample for the year 2004; the robustness analysis of the complete sample for the year 2006; the regression analysis of the listed sample for the year 2004; the regression analysis of the non-listed companies for the year 2008; and the robustness analysis of the non-listed sample for the year 2004.

First, multicollinearity will be tested. Therefore, the VIF-value of each selected regression should be evaluated. The VIF-value should be lower than 10. Otherwise, the independent variables are too interrelated. As can be observed from the figures below, the VIF-values are mostly below 10.

Figure C49   **Multicollinearity test; complete sample 2004**

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-,014	,010		-1,386	,170		
	CF04	-,213	,075	-,127	-2,849	,006	,282	3,552
	D04	-,311	,036	-,272	-8,512	,000	,545	1,836
	DCF04	-2,359	,103	-1,027	-22,805	,000	,274	3,647

a. Dependent Variable: TA04

Figure C50   Multicollinearity; robustness complete sample 2006

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-,024	,004		-5,837	,000		
	D06	,025	,019	,001	1,347	,182	,808	1,238
	DCF06	-,705	,000	-1,000	-2037,487	,000	,808	1,238

a. Dependent Variable: TA06

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	CF06	-,221[a]	-3,298	,001	-,344	3,874E-5	25814,779	3,874E-5

a. Predictors in the Model: (Constant), DCF06, D06

b. Dependent Variable: TA06

Figure C51   Multicollinearity test; listed companies 2004

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	,005	,021		,210	,835		
	CF04	-,200	,182	-,106	-1,101	,276	,085	11,703
	D04	-,522	,047	-,455	-11,096	,000	,467	2,142
	DCF04	-2,565	,201	-1,122	-12,788	,000	,102	9,810

a. Dependent Variable: TA04

Figure C52   Multicollinearity test; non-listed companies 2008

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-,040	,009		-4,683	,000		
	CF08	-,077	,045	-,328	-1,705	,099	,850	1,177
	D08	-,108	,153	-,698	-,706	,486	,032	31,119
	DCF08	-,754	1,087	-,685	-,693	,494	,032	31,137

a. Dependent Variable: TA08

Figure C53   Multicollinearity test; robustness non-listed companies 2004

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,009	,008		1,145	,261		
	CF04	-,674	,050	-,938	-13,518	,000	,935	1,070
	D04	-,007	,036	-,021	-,180	,858	,317	3,150
	DCF04	,493	1,951	,030	,253	,802	,322	3,102

a. Dependent Variable: TA04

Second, the assumption of independent errors will be tested. To determine whether or not the errors are independent, the Durbin-Watson-value will be assessed. The most optimal situation is when the Durbin-Watson-value is 2.0. However, every value close to 2.0 is acceptable. Values smaller than 1 or higher than 3 indicate that the residuals are not independent. As can be observed from the figures below, the Durbin-Watson-values lie between 1.0 and 3.0. Therefore, the assumption of independent errors is met.

Figure C54   Independent errors; complete sample 2004

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,977[a]	,955	,953	,052588629686	1,956

a. Predictors: (Constant), DCF04, D04, CF04

b. Dependent Variable: TA04

Figure C55   **Independent errors; robustness complete sample 2006**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1,000[a]	1,000	1,000	,03637	2,357

a. Predictors: (Constant), DCF06, D06

b. Dependent Variable: TA06

Figure C56   **Independent errors; listed companies 2004**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,979[a]	,959	,957	,061977834284	2,440

a. Predictors: (Constant), DCF04, D04, CF04

b. Dependent Variable: TA04

Figure C57   **Independent errors; non-listed companies 2008**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,347[a]	,120	,026	,037480198732	1,760

a. Predictors: (Constant), DCF08, CF08, D08

b. Dependent Variable: TA08

Figure C58   **Independent errors; robustness non-listed companies 2004**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,928[a]	,860	,847	,033769738465	2,402

a. Predictors: (Constant), DCF04, CF04, D04

b. Dependent Variable: TA04

Third, the assumption of normally distributed errors will be tested. As can be observed from the figures presented below, the residuals form a bell-shaped graph. This bell-shaped graph indicates that the residuals are normally distributed. Therefore, the assumption of normally distributed errors is met.

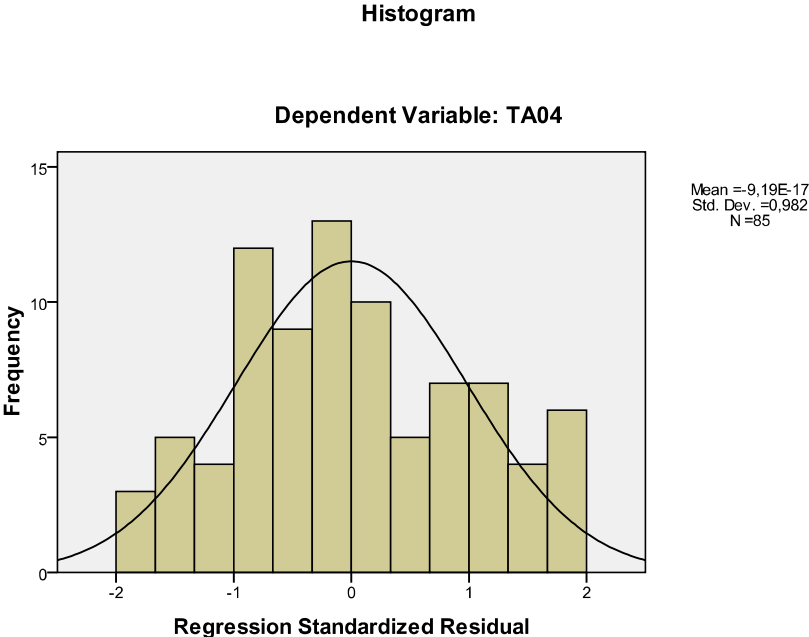**Figure C59   Normally distributed errors; complete sample 2004**

Histogram

Dependent Variable: TA04

Mean =-9,19E-17
Std. Dev. =0,982
N =85

Frequency

Regression Standardized Residual

Figure C60   Normally distributed errors; robustness complete sample 2006

Histogram

Dependent Variable: TA06

Mean =-3,89E-15
Std. Dev. =0,988
N =85

Frequency

Regression Standardized Residual
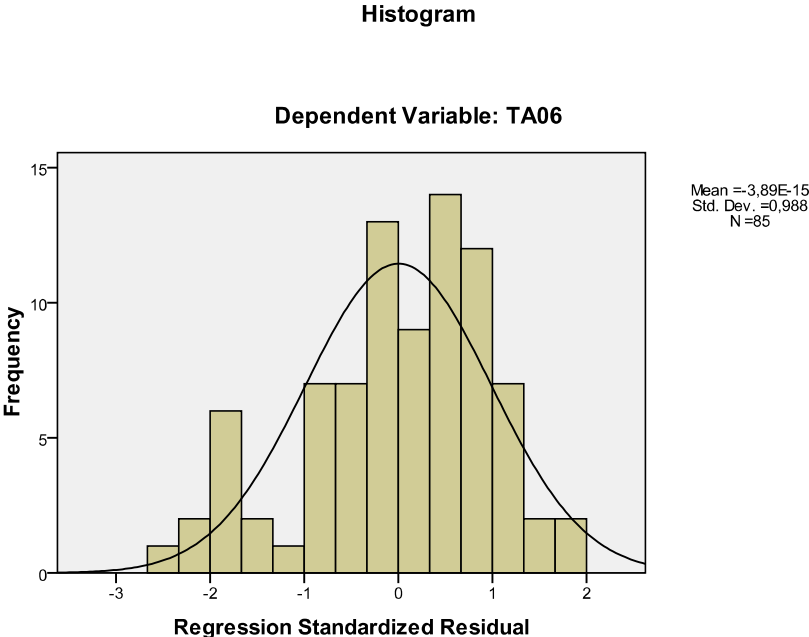
Figure C61   **Normally distributed errors; listed companies 2004**

Histogram

Dependent Variable: TA04

Mean =1,18E-16
Std. Dev. =0,972
N =56
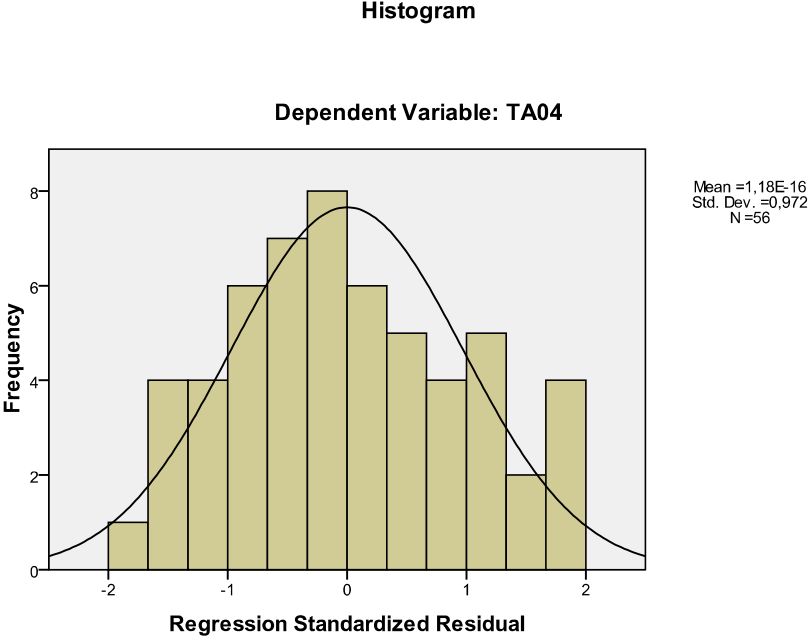
Figure C62   **Normally distributed errors; non-listed companies 2008**

Histogram

Dependent Variable: TA08

Mean =1,01E-16
Std. Dev. =0,947
N =30
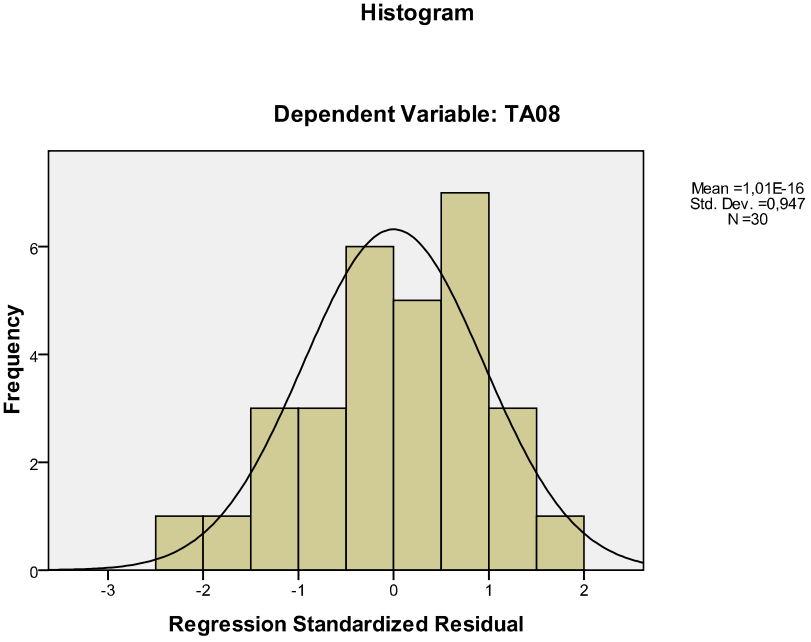
Figure C63   **Normally distributed errors; robustness non-listed companies 2004**

Histogram

Dependent Variable: TA04
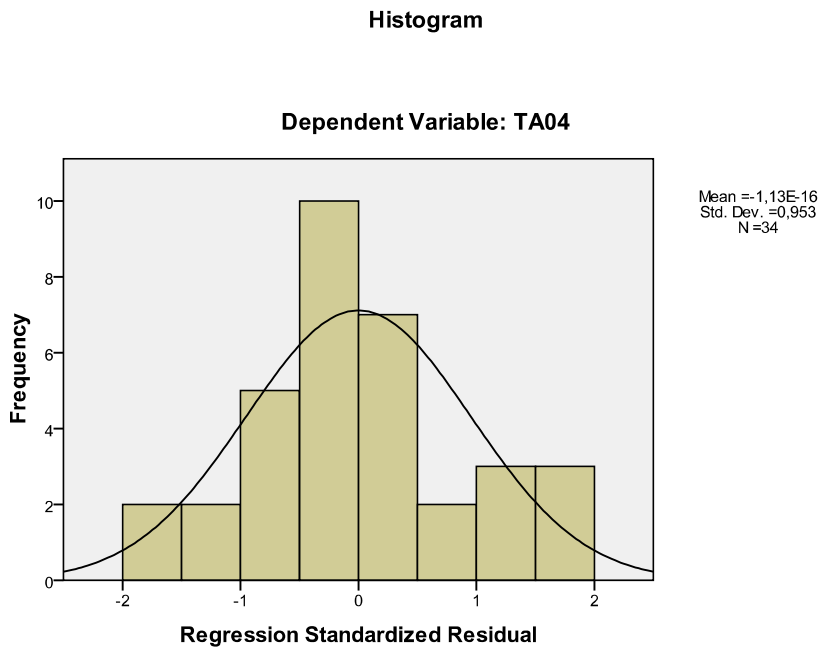
A linear relation between the independent variables and the dependent variable is assumed. This will be tested by reviewing a scatter plot of the residuals. As can be observed from the figures below, the scatter plots do not contain evenly divided data points. Therefore, the assumption of a linear relation might not be true. However, to be sure all regression analyses should be tested.

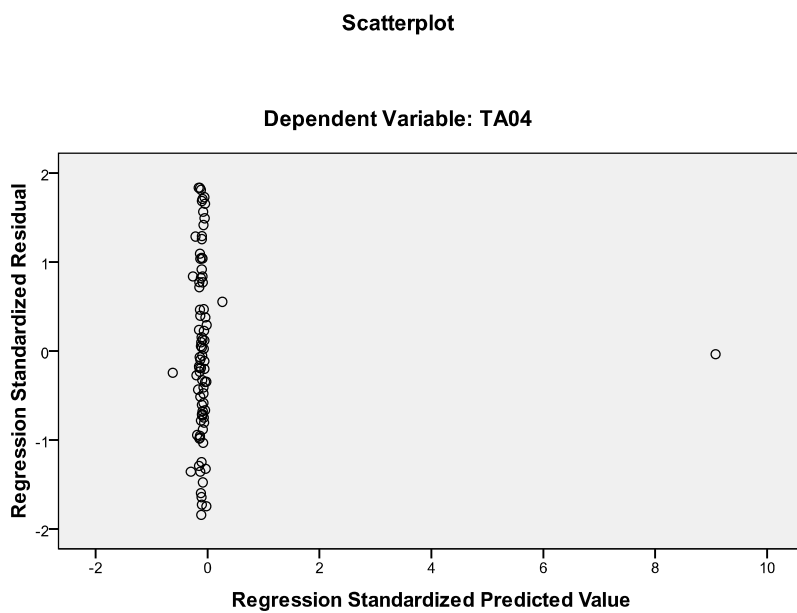**Figure C64**   **Linear relation; complete sample 2004**

Scatterplot

Dependent Variable: TA04

Figure C65   Linear relation; robustness complete sample 2006

Scatterplot

Dependent Variable: TA06
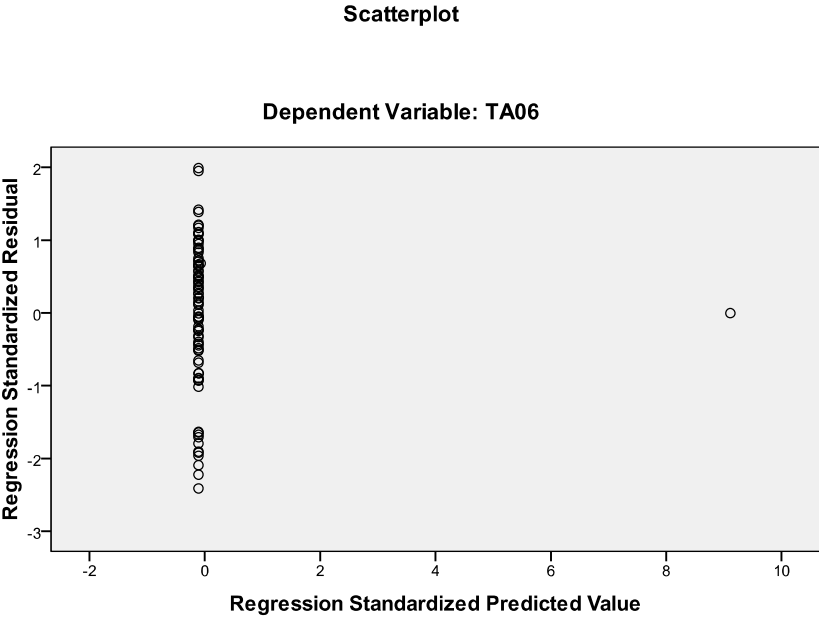
Figure C66   Linear relation; listed companies 2004

Scatterplot

Dependent Variable: TA04
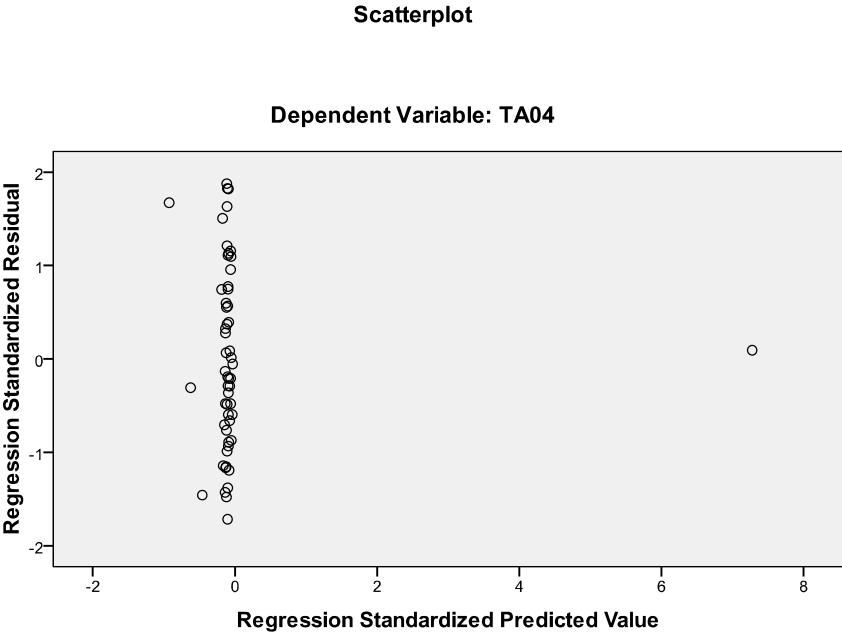
Figure C67   **Linear relation; non-listed companies 2008**
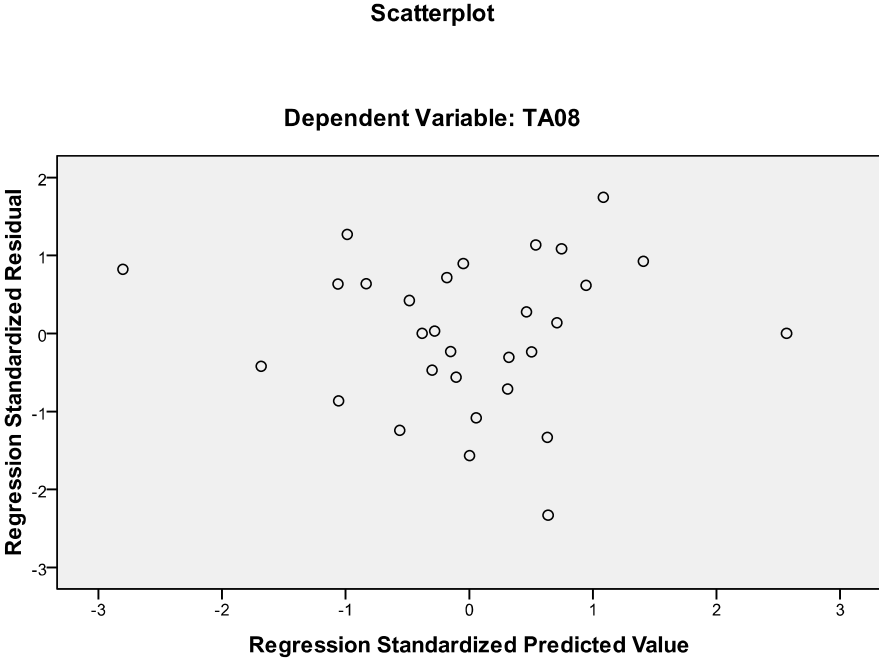
Scatterplot

Dependent Variable: TA08

Figure C68   **Linear relation; robustness non-listed companies 2004**

Scatterplot

Dependent Variable: TA04