The usefulness of fair value measurement in financial statements of South African listed companies

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DECLARATION

I, Keagan Domain Philander declare that “The usefulness of fair value measurement in financial statements of South African listed companies” is my own work; that all sources used or quoted have been indicated and acknowledged by means of complete references, and that this dissertation was not previously submitted by me or any other person for degree purposes at this or any other university.

Signature: _____

Date: _____

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ABSTRACT

Keywords: Fair value measurement, cost model, financial statement analysis, financial statement ratio analysis, financial statement manipulation, users of financial statements

The aim of this research study was to identify the impact fair value measurement would have on the usefulness of financial statements. Since the inception of fair value as a basis of measurement in 1973 it has been a controversial topic with many critics questioning the reliability and relevance of financial information and the role fair value played in the 2008 financial crisis. The objective of the International Accounting Standards Board (IASB) is to provide useful financial statements resulting in information that will assist its users in their decision-making. There is an increasing need to use fair value as a basis of measurement in order to improve the reliability and relevance of financial information, however there is still uncertainty about the usefulness of fair value measurement. The study therefore strived to determine whether the use of fair value as a basis of measurement influences the usefulness of financial statements. This was done by means of analysing the differences between the results of historical cost and fair value used as a basis of measurement in financial statements.

The findings of the literature study suggest that fair value as a basis of measurement provides relevant and reliable financial information that contributes to the usefulness of financial statements. The reliability of financial information is dependent on managements' manipulation and estimates used. The usefulness of fair value financial information is influenced by the overstatement of management estimates used and the misrepresentation of financial statements through manipulation.

In the empirical study the financial information including and excluding fair value adjustments were used to gather data by calculating the selected financial ratios for the financial periods 2009 to 2015 of selected Johannesburg Stock Exchange (JSE) listed companies. The interest cover (IC), financial leverage (FL), net current asset value per share (NCAVPS), net tangible asset value per

share (NTAVPS) and the equity debt (E:D) financial ratios indicated that fair value measurements had a statistical significant impact on these ratios, thereby affecting the usefulness of financial statements. The possible impact on the users' decisions based on debt management financial ratios may result in the inability for investors and shareholders to determine the future financial stability of the entity. The capital market financial ratios may cause that investors and shareholders are unable to identify the current capability of the entity to generate profits.

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LIST OF ABBREVIATIONS

ADX	:	Average Directional Index
BEPS	:	Basic Earnings Per Share
BVPS	:	Book Value Per Share
EPS	:	Earnings Per Share
FASB	:	Financial Accounting Standards Board
GAAP	:	Generally Accepted Accounting Principles
IASB	:	International Accounting Standards Board
IASC		International Accounting Standards Committee
IFAC	:	International Federation of Accountants
IFRS		International Financial Reporting Standards
JSE	:	Johannesburg Stock Exchange
MS	:	Microsoft
NAVPS	:	Net Asset Value Per Share
NTAVPS	:	Net Tangible Asset Value Per Share
PAFA	:	Pan-African Federation of Accountants
PwC	:	PricewaterhouseCoopers
SPSS	:	Statistical Package for the Social Sciences
UAE	:	United Arab Emirates

CHAPTER 1
INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 INTRODUCTION

The original purpose of financial statements, better known as record keeping in 600 BC, were to keep track of property owned (Edwards, 2013:30). Collins (2007:96) defines financial statements as a description of the entity's financial performance and financial position. Furthermore Iatridis (2015:2) regards financial statements as the judgements, estimates and accounting policies adopted by the entity. The Financial Accounting Standards Board (FASB) reason the general purpose financial reporting is to provide appropriate financial information for long term investors (IASB, 2015e:14). The International Accounting Standards Board (IASB) (2015b:4) and Van der Spuy (2015:312) explain that faithful presentation of firms is achieved by adhering to the five elements of financial statements (assets, liabilities, equity, income and expenses) and the recognition criteria of the International Reporting Framework Standards (IFRS). The IASB further stipulates that the recognition criteria should be adhered to before any of the five elements can be recognised in the financial statements of a company, including that it has to be probable that future economic benefits will flow to or from the entity and the cost should be reliably measured (IASB, 2015b:58). Financial statements should fairly represent the financial position and the financial performance of an entity (IASB, 2015b:4). Before initial recognition of these five financial statement elements, the element must firstly comply with the definition and secondly comply with the recognition criteria (IASB, 2015a:84). The IASB (2015b:5) explains that failure to adhere to the recognition criteria will result in non-compliance with faithful presentation, which will influence the decisions made by users of the financial statements. Van der Spuy (2015:809) argues that faithful presentation and relevance of financial disclosures are contributing factors in providing users of financial statements with useful financial information and any deficiency thereof will impair the usefulness of financial information.

Florin-Constantin (2012:201) and the IASB (2015a:113) discuss the two qualitative characteristics required to attain useful financial information namely relevance and faithful presentation, which in turn can be used to improve decision-making. Firstly, the relevance of financial statements refers to the information required by users to make economic decisions and secondly, faithful presentation of financial information refers to financial information that is complete, neutral and free from error. The IASB (2015a:79) states that to improve the usefulness of financial statements to its users, the following factors should be considered before selecting an appropriate basis of initial and subsequent measurement in a company's financial statements: relevance, faithful presentation, enhancing qualitative characteristics and factors to be considered on initial recognition. Raubenheimer (2013:384) explains that faithful presentation does not entail financial statements to be accurate, but rather that it is not misleading. Faithful presentation suggests that the financial statements are free from error and that it should faithfully represent the financial performance and financial position of the entity (IASB, 2015a:82) entity. The International Federation of Accountants (IFAC) (2009:72) stipulates that financial statements should be presented fairly, portraying a fair view of the accounting framework.

Alaryan *et al.* (2014:224) and Fargher and Zhang (2014:186) propose the qualitative characteristics of financial information can be improved through the use of fair value accounting. Qualitative characteristics include improving the usefulness of financial statements, namely enhancing "*comparability, verifiability, timeliness and understandability*" (IASB, 2015a:83). The usefulness of financial statements is further elaborated on by Alaryan *et al.* (2014:224) whom state that most academic researchers argue that qualitative characteristics of fair value is more beneficial than historic cost accounting. Among them is Fiechter (2011:105), whom argues that fair value is more economically relevant. Fair value as a basis of measurement is more relevant, up-to-date and consistent with the market and reflects the economic reality of the entity (Shamkuts, 2010:16). Fair value accounting has the added benefit of making meaningful comparisons between the financial information of different entities (Cairns *et al.*, 2011:2).

The historical cost approach as a basis of measurement recognises the assets at actual historical costs, which limits the overstatement of assets (Benston, 2008:106; Shaffer, 2011:4-5; Greenberg *et al.*, 2013:1; Zhang, 2015:63). Shaffer (2011:5) argues that due to the increasing complexity in economic markets, it has become evident that the historical cost as a basis of measurement is no longer sufficient within the inflationary markets as historical cost do not take into account inflation of goods and services. Since the introduction of financial instruments (derivatives and structured investments) it is clear that historical measurements are not recorded at their economic reality market values that resulted in the shift to fair value as a basis of measurement.

1.2 MOTIVATION OF TOPIC

Christensen and Nikolaev (2013:735) accentuate that the choice between historical cost and fair value as a basis of measurement has become a general point of discussion. Furthermore, Laux and Leuz (2009:2) explain that the reason for this is the role fair value played in the 2008 financial crisis where the change from active to inactive markets resulted in immense losses and overvalued assets. Biondi (2011:2) argues that since the inception of fair value as a basis of measurement in 1973, the reliability and relevance of financial information was brought into question. Fair value measurement provides useful financial information that contributes to improved decision-making and give the ability to evaluate the future financial stability of an entity (thus the ability to produce profits in the foreseeable future and maintain a sustainable growth rate) (Shaffer, 2011:2).

However, Chea (2011:14) and Shamkuts (2010:16) argue that fair value financial information is not reliable and subjective to managements' manipulation. The impact that fair value adjustments have on earnings in certain instances does not give a true reflection of management's performance (since the increase in profit is not the result of management's efficient and effective utilisation of the company's resources), which brings into question the prediction of future performance (Chea, 2011:16). The impact on earnings as a result of fair value adjustments is not the result of management performance in utilising the assets and liabilities (resources of the entity) in operating activities

(to generate income) (Shaffer, 2011:2). Management can manipulate fair value adjustments and directly impact the earnings, which could lead to an overstatement or understatement of the financial performance and position of the entity with the main aim to influence investors' perceptions (Iatridis, 2015:5). Buys (2009:508) argues that management's judgements made with the aim to manipulate the fair value adjustment could be an attempt to obtain desired financial indicators decreasing the reliability of financial information based on fair value.

1.3 PROBLEM STATEMENT

It is evident that there is a need for appropriate presentation pertaining to the structured financial position and performance of a company to provide users of the financial statements with relevant, fairly presented and comparable information, which can assist them in making economic decisions. Economic decisions are best made by using useful financial information. Useful financial information comprises relevant and fair presentation of financial information. Fair presentation of financial information includes reliability, which can be influenced by judgements and estimates made by management pertaining to the fair value measurements made, affecting the usefulness of information made available to users of the financial statements. Financial statement users' decisions could be influenced by the impact of the fair value adjustments if the financial information is not fairly represented or reliable. The difference between the analysis of the financial statements of the amounts including the fair value adjustments (also including the cumulative effect of prior years' fair value adjustments) and the amounts excluding the fair value adjustments should be compared to identify any significant differences.

Although there is a need for fair value as a basis of measurement, the usefulness of fair value as a basis of measurement remains uncertain.

1.4 OBJECTIVES OF THIS STUDY

The following objectives have been formulated for the study:

1.4.1 Primary objective

In order to address the problem statement, the following primary objective was formulated:

Determine the usefulness of fair value measurement in financial statements of South African listed companies.

1.4.2 Secondary objective

In order to achieve the primary objective, the following theoretical and empirical objectives are formulated for the study:

- Determine if and how fair value measurement can be used as a basis to manipulate financial statements through overstating assets and increasing profits.
- Identify and evaluate the differences in the risk ratios for financial statements including and excluding fair value adjustments and how the differences would affect decisions of financial statement users.

1.5 RESEARCH DESIGN AND METHODOLOGY

The study comprises a literature review and an empirical study. A mixed method approach, comprising qualitative and quantitative research, is adopted.

1.5.1 Research design

Kumar (2011:95) argues that the research design is the plan, structure and strategy that will be undertaken to address the research problem identified. The literature and empirical review are aimed at understanding and determining the impact fair value has on the usefulness of financial statements.

1.5.2 Research methodology

Sreejesh and Mohapatra (2014:5) explain that research methodology consists of qualitative and quantitative research. Furthermore Sreejesh and Mohapatra (2014:48) propose that a mixed research design affords the researcher the opportunity to use qualitative and quantitative research techniques that provide

more accurate responses to the research problem. Both a literature review (qualitative) and an empirical review (quantitative) are conducted to accurately address the research problem.

1.5.3 Literature review

The literature review is qualitative research in order to gain an understanding of the theoretical background pertaining to the study. Secondary data sources used to conduct the literature review include relevant textbooks, journal articles, acts, theses and dissertations, and newspaper articles.

1.5.4 Empirical study

The empirical part of this study comprises the following methodological dimensions:

1.5.4.1 Target population

The target population selected for this study is the Johannesburg Stock Exchange (JSE) listed companies. The decision to use these companies is supported by Cassim (2014:6) who argues that the JSE listed companies' information are accessible, reliable and publically available.

1.5.4.2 Sampling frame

The sample selected from the target population is the largest and smallest JSE listed companies per individual market share capitalisation for the seven identified sectors with the aid of using INET BFA (2014), namely: 1) consumer goods, 2) consumer services, 3) health care, 4) industrials, 5) technology, 6) telecommunications and 7) utilities.

Cassim (2014:38) argues that the financial and mining sectors are specialised and their profitability and asset structures are different from that of the other sectors. For that reason, these two sectors are not included in the sample selected.

1.5.4.3 Sample method

A non-probability sampling method was used for analysing secondary data and documents relating to the largest and smallest JSE listed companies per market share capitalisation for the five identified sectors. The non-probability sampling methods used include convenience, pairing and quota sampling in order to complete the empirical study.

Convenience sampling is described as information sources that are readily available, also perceived as the most convenient group (Howitt & Cramer, 2000:77). For the purpose of this study, the JSE listed companies are the most convenient group identified and their financial information are readily available.

Pairing sampling is the selection of two samples with an independent (changing) and dependent variable (continuous) within the same category (Pallant, 2013:209). For the purpose of this empirical study the category is the sector, the independent variable is the JSE listed companies and the dependent variable, is the ranking within the sector (largest and smallest company per market share capitalisation).

Quota sampling is identified as a non-random sample affording the appropriate number of participants per stratum (Howitt & Cramer, 2000:80). Quota sampling was applied by selecting the largest and smallest company per market share capitalisation in each sector (excluding the financial and mining sectors for reasons mentioned in Section 1.5.4.2 of this chapter), affording the opportunity of selecting two entities per sector.

1.5.4.4 Sample size

The sample size consists of the largest and smallest JSE listed companies per market share capitalisation for the five identified sectors except for the utilities sector, which has only one entity. It was determined that three companies did not have fair value adjustments within the period identified. These companies were excluded since the effect of fair value measurements would have a zero effect on financial statements including and excluding fair value adjustments.

The sample size is therefore ten companies which were investigated in great depth

1.5.4.5 Measuring instrument and data collection method

A mixed research methodology was applied. Firstly, the previous seven years of the published audited financial statements of each company was used to gather data of the largest and smallest JSE listed companies per market share capitalisation for the five identified sectors. Financial statement ratio analysis was performed to assess the effect of fair value as a basis of measurement on decisions made by users of the financial statements in comparison to historical cost as a basis of measurement.

According to Section 24(1)b of the Companies Act (71 of 2008), the minimum period for a company to keep records and other information is seven years (South Africa, 2008:68). The analysis of financial statements for the selected sample was made from the earliest of 2009 to the latest available financial statements, in order to take fair value adjustments made in the current year into account, as well as the cumulative effect of the fair value adjustments. The published audited financial statements were taken from the company's website and all fair value adjustments were identified. The financial information (data) collected was manipulated with the use of Microsoft (MS) Excel and adjusted by excluding fair value adjustments made in the year from 2009 onwards.

1.5.5 Statistical analysis

The captured data were analysed using the Statistical Package for Social Sciences SPSS© (2013) Version 23, MS Excel and MS Windows. The following statistical methods were used on the empirical data sets:

- Reliability and validity analysis: Reliability as identified by Howitt and Cramer (2000:28) is the ability to obtain the same results under similar circumstances. The sample selected consist of published audited financial statements that increase reliability of financial information and the financial ratios applied are consistently applied to all entities. Populating all findings in the empirical study of the sample selected of the largest and smallest JSE

listed companies per market share capitalisation for the five identified sectors increase the validity of the analysis (Yin, 2013:4).

- Descriptive analysis: This includes describing characteristics identified from the sample, addressing significant research questions and identifying any inconsistency with assumptions made. This is done by means of a financial ratio analysis (Pallant, 2013:49).
- Significance tests: As identified by Howitt and Cramer (2000:144), significance tests are the calculation of a known statistic, which is a characteristic of a sample. The financial ratio analysis of each entity is compared to the other samples to identify common trends that contribute to an identified statistic. When the statistics identified are consistent within the sample, this can be assumed for the population (Howitt & Cramer, 2000:108).

1.6 ETHICAL CONSIDERATIONS

For the purpose of the study, secondary data and literature were analysed such as relevant textbooks, journal articles, acts, published theses and dissertations, newspaper articles and financial statements of listed companies. These sources are all publically available, therefore no special ethical clearance was necessary.

1.7 CHAPTER LAYOUT

This study comprises the following chapters:

Chapter 1 Introduction and background of the study

This chapter includes the background information pertaining to fair value as a basis of measurement in comparison to the traditional historical cost as a basis of measurement. This chapter also includes the problem statement, the primary and secondary objectives, research design, methodology and the chapter layout.

Chapter 2 Literature review: Principles relating to fair value and usefulness of financial information

This chapter addresses the theoretical objectives of this study, and defines the following terms: fair value model, historical cost model, financial statement ratio analysis and financial statement users. These definitions assist in the understanding of the terms used in this research paper and improve the understanding of the use of fair value as a basis of measurement to manipulate financial statements. This chapter determine whether and how fair value measurement can be used as a basis to manipulate financial statements and also identify the financial ratios where fair value as a basis of measurement influence users of financial statements' decisions.

Chapter 3 Research design and methodology

This chapter describes the research design and methodology used to fulfil the empirical study. A mixed method approach was used: secondary data were used for the quantitative research when performing the financial statement ratio analysis and qualitative research was used when interpreting the decision-making based on the results of the financial statement ratio analysis.

Chapter 4 Data analysis and findings

This chapter discusses the empirical study conducted by analysing secondary data, based on the largest and smallest JSE listed companies per market share capitalisation for the five identified sectors, to identify differences between financial ratios identified in Chapter 2 and evaluate the significance of the information including fair value adjustments and financial information excluding fair value adjustments.

Chapter 5 Summary, Conclusions and Recommendations

This chapter discusses conclusions based on the findings of the primary and secondary objectives, as well as limitations and recommendations for further research.

1.8 CHAPTER SUMMARY

The main objective of this chapter was to indicate that the usefulness of fair value as a basis of measurement remains uncertain. It was established that the

IASB strives to increase the usefulness of financial statements by ensuring the appropriate basis of measurement is used. The two bases of measurements available are historical cost and fair value. The most appropriate basis of measurement is the basis that is more relevant and faithfully represented (reliable).

In order to achieve the main objective, Chapter 2 focuses on understanding the terms, advantages and disadvantages of fair value and historical cost as a basis of measurement, explore the factors that contribute to the usefulness of financial statements, identify instances where fair value measurements can be used as a tool to manipulate financial statements and identify financial ratios that assist in identifying significant differences between financial information including and excluding fair value adjustments.

CHAPTER 2

LITERATURE REVIEW: PRINCIPLES RELATING TO FAIR VALUE AND USEFULNESS OF FINANCIAL INFORMATION

2.1 INTRODUCTION

In Chapter 1 (Section 1.1), a brief introduction was given pertaining to the composition of the elements of the financial statements and the need for useful financial information that is influenced by qualitative characteristics and faithful presentation of financial information. Humpherys *et al.* (2011:592) argue that fraud and misrepresentation of financial statements influences the investments made into the company negatively and identified that in large corporations such as Enron and WorldCom the fraud and misrepresentations made by management influenced many individuals and their retirement funds or income. Christensen *et al.* (2012:139) suggest that in instances where highly uncertain estimates are made, these estimates influence the reported net income and earnings per share. In order to avoid uncertain estimates to be made, the appropriate basis of measurement should be identified. Gaynor *et al.* (2011:125) identify instances where liabilities are measured at fair value: the changes in the fair value are recognised as a gain or loss in the statement of profit and loss and other comprehensive income (where gains and losses are represented by positive and negative amounts, respectively). Gaynor *et al.* (2011:125) argue that users of financial statements are likely to misinterpret the fair value gains and losses for liabilities measured at fair value as a result of the disclosures made in the financial statements (fair value gains and losses influence the incorrect interpretation of the company's own credit risk). When a fair value gain is realised from a liability (which indicates a deterioration in the credit risk), it can be misinterpreted as an improvement in credit risk (because a gain or increase can be mistaken as an improvement), when a fair value loss is realised from a liability (which indicates an improvement in the credit risk), it can be misinterpreted as a deterioration in credit risk (because a loss or decrease is easily mistaken as a deterioration).

This chapter explores the following: the terms and differences between historical cost and fair value as a basis of measurement: investigate the usefulness, relevance, reliability and transparency of financial information; explore the users and uses of financial statements; investigate the accounting standards that apply fair value measurement; identify instances where fair value can be used as a tool to manipulate financial statements; investigate financial ratios that can be used to identify the impact of fair value on the usefulness of financial information; and investigate the role fair value played in the 2008 financial crisis, Enron and WorldCom.

2.1.1 Historical Cost

Historical cost was in existence before the introduction of fair value, being easier, reliable and verifiable. Historical cost splits costs between future value (which would be capitalised) and no future value (which would be expensed) (Smith & Smith, 2014:4). Arias (2010:34) states that historical cost records transactions at the original cost as at the transaction date. Biondi (2011:15) regards the conceptual basis of the change from the historical cost method to the fair value method as moving from an entity specific cost to an economic market value.

2.1.2 Fair value

Biondi (2011:2) explains that since 1973, the IASB and the FASB have been planning towards the implementation of fair value as a basis of measurement and ever since the implementation of the fair value model replacing the historical cost model was widely accepted by companies that need to comply with the pressures of the independent regulatory bodies. The International Accounting Standards Committee (IASC) first used the term fair value in the standard Property, Plant and Equipment (IAS 16) in 1982 (Cairns, 2006:7). Fair value valuations prevailed in the 1800's and were highly recommended by the legal community as a result of the railroads that were built during the Industrial Revolution that brought about the valuing of long-lived assets (Shamkuts, 2010:6). Georgiou and Jack (2011:311) referred to fair value as the silent revolution, since this basis of measurement is seen to be more consistently and

predominantly used in the presentation of financial statements by the accounting standard setters. Fair value is therefore not a recent development and has become common practice (Shamkuts, 2010:6).

Biondi (2011:9) identifies that when fair value is implemented, there are broader economic factors and consequences that should be considered. These economic factors identified by Cassim (2014:12) as contributing factors leading companies into financial distress resulting in business failures, include: macroeconomic, industry, company specific factors and interest rate changes (CFA, 2013:8). Collin (2007:138) defines the term macro as large, wide or broad. Broader economic factors include illiquid markets and incomplete information (Altamuro & Zhang, 2013:839), also referred to as purchasing power of consumers, degree of economic development, and infrastructure (Nadina, 2011:1739). Biondi (2011:18) argues that as the fair value model includes future inflows and the historical cost model includes actual costs, when an asset is fairly valued, the revaluation amount is actually a postponement of the inflow of future economic benefits (expected future revenues). The increases or decreases in assets then result in either an increased or decreased depletion in expected economical benefits, and increases or decreases in liabilities result in either an increased or decreased expected outflow in expected economic benefit. Fair value as a basis of measurement is beneficial to both long-term and short-term investors, which increases relevancy and transparency of financial statements, increasing the usefulness for investors (CFA, 2013:4). Hitz (2007:328) argues that the fair values that are market related, satisfies the users' needs and increases the decision usefulness of financial information.

2.2 USEFULNESS OF FINANCIAL INFORMATION

Biondi (2011:9) argues that the main purpose of fair value as a basis of measurement is value relevance and decision usefulness. Hitz (2007:327) points out that the usefulness concept has been included in the standard setting objective since the formation of the FASB and the conceptual framework project.

Whittington (2008:144) defines "*decision usefulness*" as the ability to produce financial statements that are relevant to future cash flows, which can be used by investors to measure performance of management. Kaya (2013:129) argues that the shift from rule-based accounting (GAAP) to principle-based accounting (IFRS) is intended to improve transparency and comparability that increases the usefulness of financial information. Georgiou and Jack (2011:316) describe usefulness as the availability of current information and the user's ability to make forecasts about the future of the company. Decision usefulness of financial statements is a term used to elaborate the need for standard setters (including the IASB and Pan-African Federation of Accountants (PAFA)) to provide users of financial statements with current amounts to assist users with future predictions (Whittington, 2008:144; Georgiou & Jack, 2011:316).

In a study performed by Christensen *et al.* (2009:1167) titled "*Do IFRS reconciliations convey information? The Effect of Debt Contracting*" the disclosure quality of UK GAAP and IFRS was tested. Their sample was selected from all the firms listed on the London Stock Exchange (LSE) where they tested two hypotheses:

- "*The news content in IFRS earnings reconciliations is positively associated with the change in shareholder wealth on the announcement day*" (Christensen et al., 2009:1177).
- "*The change in shareholder wealth on the announcement day is more pronounced among firms with greater likelihood and costs of covenant violations*" (Christensen et al., 2009:1178).

The conclusion that was drawn from their testing supported their first hypothesis and proposes that IFRS reconciliation disclosure increases relevancy by conveying relevant information on equity value and in turn improves the usefulness of financial information to the users thereof (Christensen *et al.*, 2009:1187). Christensen *et al.* (2009:1187) further explain that the relevancy in turn improves the usefulness of financial information that can be improved through the IFRS reconciliation disclosure. The Reconciliation disclosure improves usefulness of financial information, as set out in IFRS 7 (financial instrument disclosures). The IASB (2011:A250) proposes that the reconciliation

of movements in financial instruments are required to be disclosed with regard to fair value movements and the impact on the company's credit risk, including reasons for conclusions made.

Kadous *et al.* (2012) state that in order to gain useful financial information, both reliability and relevance of financial information are required. Landsman (2007:24) further explains that management can influence the reliability of financial information that impacts the usefulness of financial information (prepared on the basis of fair value) to investors, and identified instances where management subjectively influenced the valuation of assets that reduced the reliability (usefulness) of the financial information.

It can be argued that usefulness can be measured as the degree or extent to which financial information disclosed in financial statements provides a sound basis to make informed decisions. As discussed in this Section, Biondi (2011:9), Whittington (2008:144), the CFA (2013:4), Christensen *et al.* (2009:1187) and Kadous *et al.* (2012) strongly agree that relevancy increases the usefulness of financial statements. The CFA (2013:4) and Kaya (2013:129) reason that transparency increases the usefulness of financial information. Kaya (2013:129) state that comparability increases the usefulness of financial information. For the purpose of improving the understanding of usefulness of financial information, the following aspects are therefore discussed further: relevance, reliability and transparency.

2.2.1 Relevance of financial information

Chalmers *et al.* (2011:153) and Tsalavoutas *et al.* (2012:11) state that timeous recognition of assets and liabilities when measured at fair value, results in increasing relevant financial information. The measurement of relevance, referred to as "*value relevance*", was determined when companies changed from their preceding accounting standards initially adopted, to IFRS, when it was concluded that the nature and timing of fair value adjustments increase relevance (Tsalavoutas *et al.*, 2012:22). Marchini and D'Este (2015:1726) identify two perceptions of value reference namely "*the impact of the presentation format on analysts and investors*" and "*descriptive statistics,*

focused on the comprehensive income display choices made by management and on its usefulness for the financial reporting users". Alali and Foote (2012:91) state that value relevance is effectively measureable when investors can make their own decisions and their decisions have an impact on prices.

In the study of Alali and Foote (2012:91) titled "*The value relevance of International Financial Reporting Standards: Empirical evidence in an emerging market*" the value relevance of financial information reported on the basis of IFRS was investigated. The sample of firms was selected from firms trading on the Average Directional Index (ADX) that mandates IFRS (an emerging market). Alali and Foote (2012:92) differentiate between the following hypotheses developed:

- Firstly, that financial information reported according to IFRS on the ADX in the United Arab Emirates (UAE) market may not be value relevant or have less value relevance and secondly, to argue the increase in value relevance of financial information since the expectation that the market will become more established and investors will become familiar with the availability of financial information.
- Alali and Foote's (2012:103) second hypothesis where that the adoption of IFRS improved the value relevance of financial information from 2000 since the adoption of IFRS until 2005.

The conclusion drawn from their testing identified that value relevance of financial information differs between large and small companies.

After evaluating the possibility of the impact of moving from GAAP to IFRS , Clarkson *et al.* (2011:22) conclude that in Europe and Australia, the value relevance may be reduced as a result of measurement errors. Mala and Chand (2012:24) state that countries that did not comply with fair value accounting and did not adopt IFRS were not affected by the global crisis.

Chalmers *et al.* (2011:169) state that an improved quality of fair value will enhance value relevance earnings. Choi *et al.* (2011:12) and Hung (2001:418) argue that value relevance decreases under the governance of weak legal institutions.

When taking into consideration the previous researchers' views, the conclusion can be made that the improved quality, nature and timing of fair valuation, increases the relevance of financial statements, where measurement errors decreases the relevance of financial statements.

2.2.2 Reliability of financial information

Reliability and relevance (this have been defined and discussed in Section 2.2.1) are jointly referred to as faithful presentation of the five financial statement elements identified in Chapter 1 (Section 1.1) and revolves around fair value accounting (Chea, 2011:14; Kadous *et al.*, 2012:1336). Chea (2011:14) explains that reliability of financial information gives users the assurance that the financial information provided to users of financial statements is reasonably free from error and subjectivity. In the study of Kadous *et al.* (2012:1341) titled "*Do financial statement users judge relevance based on properties of reliability?*", determined that the manipulation of financial statements influences the reliability of financial information. This influenced the relevance of financial statements and the valuation judgements made by the investors (Kadous *et al.*, 2012:1353). Kadous *et al.* (2012:1354) are of the opinion that the reliability of the measurement basis selected has an impact on the valuations made by investors of the financial statements. Carroll *et al.* (2003:5) identified that the reliability of financial instrument fair value gains and losses are dependent on the predictive measures taken when investors view the fair value of the financial instruments on a continuous basis, which in turn has an impact on the value relevance to investors. Carroll *et al.* (2003:21), Chea (2011:15) and Dietrich *et al.* (2000:126) conclude that the reliability challenges regarding fair value measurement are the result of illiquid markets and other factors to be considered, limiting the basis for fair value measurement. Dietrich *et al.* (2000:153) illustrate that the most reliable source used for determining fair value amounts are amounts estimated by external appraisers that have been audited. Dietrich *et al.* (2000:155) argue that the change from historic cost to fair value, as a basis of measurement, increases the relevance and decreases the reliability of financial statements.

Reliability provides users the assurance that the financial information is free from error and has not been influenced by subjectivity. The changing of liquid markets to illiquid markets reduces the reliability of fair value measurements, as an absent market for the asset or the liability increases the influence of management's use of estimates in determining the fair value measurement. In addition to relevance and reliability, transparency also contributes to the usefulness of financial information.

2.2.3 Transparency of financial information

The IASB (2015d:A52) includes objectives for the presentation of financial statements in First-time Adoption of International Financial Reporting Standards (IFRS 1) to provide financial information that is transparent for users who will assist in the comparability of financial statements. Bushman *et al.* (2004:208) regard transparency as the availability of the company's specific information to outsiders that assists in the analysis of the company. Humpherys *et al.* (2011:585) and Vasarhelyi *et al.* (2012:159) state that transparency is a desirable characteristic with regard to providing users with financial information. Part of the role the IASB included in the accounting standards, is that financial statements should be transparent, which assist users to make improved, efficient and informed decisions (IASB, 2015b:14). Tsalavoutas *et al.* (2012:11) reason that IFRS standard setters should increase transparency by increasing the level of disclosure required.

Transparency increases the usefulness of financial information, allowing company specific financial information to be made available to the users, which can be used and converted to financial ratios and compared to other companies. The availability of the entity specific financial information can be used to determine the company's future stability and to make informed decisions. The appropriate basis of measurement needs to be applied as identified in Chapter 1 (Section 1.1) by the IASB (2015c:79) in order to achieve an increase in usefulness of financial information. The two available bases of measurement are therefore discussed in Sections 2.3 and 2.4.

2.3 HISTORICAL COST AS A BASIS OF MEASUREMENT

In Chapter 2 (Section 2.2), the usefulness of financial information was investigated and the factors including reliability, relevance and transparency of the financial information was investigated. This brought the appropriate basis of measurement to be used when recognising an asset into question. Historical cost is one of the available bases of measurement, which is investigated, and the advantages and disadvantages are analysed in Sections 2.3.1 and 2.3.2 respectively.

The IASB (2015a:A932) identifies several costs to be included at initial recognition of IAS 16 (Property, plant and equipment), namely:

- Purchase price
- Import duties
- Non-refundable purchase taxes
- Any costs directly attributable to bringing the asset to the location and condition.
- Initial estimate of the costs of dismantling and removing the item and restoring the site.
- The obligation for which an entity incurs either when the item is acquired or as a consequence of having used the item during a particular period.

All costs incurred from the acquisition, until the asset is in its desired condition and location as intended by management, are taken into consideration in the value thereof. Smith and Smith (2014:4) further reason that the historical cost of acquiring an asset includes all costs incurred to set up the asset for its intended use. As indicated by Georgiou and Jack (2011:314) and Smith and Smith (2014:4), historical costs split costs between costs with future value and costs with no future value, capitalising costs with value and expensing costs with no value. Historical cost therefore includes all costs at acquisition and is measured in future in the financial statements at the basis of historical cost. The advantages and the disadvantages are addressed in the following sections.

2.3.1 Advantages of historical cost as a basis of measurement

Historical costs are needed for specific purposes, for example to calculate taxable income (Barlev & Haddad, 2003:404-405). Biondi (2011:21), Herrmann *et al.* (2006:51) and Smith and Smith (2014:4) argue that the historical cost objective requires the recording of the asset at the acquisition costs (including all costs as listed in Section 2.3), and Herrmann *et al.* (2006:53), Khurana and Kim (2003:20) and Smith and Smith (2014:8) further reason that these costs are less subjective, and easily verifiable and reliable from the time of acquisition. Buys (2009:510) further explains that historical cost is not exposed to estimate errors. Furthermore Biondi (2011:21) argues that historical cost is more reliable and traceable.

2.3.2 Disadvantages of historical cost as a basis of measurement

Barlev and Haddad (2003:398) emphasise that historical costs are not a true reflection on the real economic values of assets disclosed in the financial statements, since the asset generates hidden reserves (the increased value the asset adds to the company) that is not reflected in the value of the asset. The dictionary of accounting explains that the historical cost as a basis of measuring assets does not take into account inflation and any price variations (Collin, 2007:113-114), which could lead to a reduced relevance of financial information. Shamkuts (2010:16) states that historical cost does not provide relevant information to investors due to it not being up to date with active markets. Based on the disadvantages identified pertaining to historical cost as a basis of measurement, market changes are not taken into account, which does not provide real time relevant information to stakeholders, therefore producing less relevant financial information.

Based on the advantages and disadvantages identified the conclusion can be drawn that historical cost as a basis of measurement provides more reliable and less relevant financial information, since the origin of the cost at acquisition remains consistent throughout the asset's useful life (reliability), making financial information easily verifiable, but historical cost does not reflect the

economic reality of the value of the asset in active markets (relevancy). The impact of reliability and relevance on the usefulness of financial information was identified for historical cost. These factors are analysed for fair value in the following sections.

2.4 FAIR VALUE AS A BASIS OF MEASUREMENT

Fair value measurement has been identified as the price at a specified measurement date (Shamkuts, 2010:11; KPMG, 2013:4). PricewaterhouseCoopers (PwC) defines fair value as the price in exchange for an asset or transfer of liability between two market participants at a specified date. Collin (2007:92-93) and Cristea (2015:152) define fair value as the market related amount, between willing parties, pertaining to assets and liabilities at the time of valuation. Biondi (2011:13) argues that fair value focuses on the creation of wealth, where the wealth is measured in an active market, since assets are valued at market values and liabilities are valued at the net present value of the future obligation (therefore increasing the net effect). The reliability and the relevance of financial information are addressed when investigating the advantages and disadvantages thereof.

2.4.1 Advantages of fair value as a basis of measurement

Carroll *et al.* (2003:2) and Shamkuts (2010:16) argue that fair value discloses the market related value of the asset at the time of valuation, providing up-to-date financial information that is more relevant in an increasingly changing business environment. Fair value improves the users of the financial statements' ability to assess consequences of the company's financing and investment strategies (Khurana & Kim, 2003:20). Biondi (2011:21) explains that fair value as a basis of measurement provides more useful financial information for investment decisions made by users.

2.4.2 Disadvantages of fair value as a basis of measurement

Khurana and Kim (2003:20) argue that fair value reduces the reliability of financial statements in instances where financial instruments are held in an inactive market, and users are reluctant to base their decisions on subjective

fair value estimates that are not market related and that are subjectively made by management. The fair value amounts used in the financial statements are estimates and judgements, which affords the preparer the opportunity of manipulation (Buys, 2009:508; Shamkuts, 2010:16). Shamkuts (2010:17) and Argilés-Bosch *et al.* (2012:130) argue that there is a decline in reliability and comparability of financial statements pertaining to fair valued assets in an inactive market, which were previously fairly valued in accordance to an active market. Based on the disadvantages of fair value, the conclusion can be made that fair value as a basis of measurement can be manipulated by opportunists if there is no active market and therefore the reliability of information is limited to the existence of an active market.

Based on the advantages and disadvantages of fair value as a basis of measurement, fair value measurement is a trade-off between relevance and reliability (Jarolim & Öppinger, 2012:70). The advantages prove that fair value is more relevant, increasing the usefulness for users of the financial statements, however, the disadvantages prove that the reliability is dependent on the existence of an active market. The accounting rationality between fair value and cost are summarised in Table 2.1.

Table 2.1: Accounting logic (adapted)

	Fair value	**Historical cost**
Focus	Wealth	Income
Conceptual basis of measurement	Market	Enterprise process/acquisition date cost
Approach	Market value	Historical cost
Epistemological foundation	Individualistic, spot valuation (asset or liability in isolation)	Comprehensive (holistic) presentation system (asset or liability in combination)
Methodological basis	Actualisation (Discounting)	Matching
Perspective	Value relevance	Accountability
Reference	Stock	Flow
Relevancy	Market related/ Real time values	Historic amounts

	Fair value	Historical cost
Reliability	Dependent on the existence of an active market	Based on acquisition date amounts

Source: Biondi (2011:15) (adapted)

Table 2.1 outlines the main differences between historical cost and fair value, and it confirms that fair value is wealth-orientated based on market values at a specific point in time, which increases the relevance of financial information. Historical cost is income-orientated based on actual cost that occurred at initial recognition, which increases the accountability (reliability and verifiability) of financial information. Table 2.1 is adapted to include the identified advantages and disadvantages of historical cost and fair value.

The conclusion made from Table 2.1 brings into question the usefulness of financial information carried at historic cost. This is due to the fact that even though historical cost is reliable, it does not provide relevant financial information. Estimates made as part of fair value as a basis of measurement are market- or real time-based, and the reliability of financial information is dependent on the existence of an active market in order to be free from subjectivity.

The two bases of measurements have been discussed but further investigation is required to identify which line items in the financial statements can be fairly valued.

2.5 FINANCIAL STATEMENTS LINE ITEMS WHICH CAN BE FAIRLY VALUED

The three broad categories of financial statement elements identified that are fairly valued include assets, liabilities and own equity instruments (IASB, 2012:5). As identified in Chapter 1 (Section 1.1), the increase in the change in markets brought upon the need for fair value as a basis of measurement. Financial instruments that are measured at fair value and introduced in IFRS 7 include: financial assets, financial liabilities and equity instruments (Landsman, 2006:21; Haji *et al*., 2014:69). Biological assets are measured at fair value

reducing the complexity in calculating their cost and unrealistic net profit (Argilés *et al*., 2011:92; Argilés-Bosch *et al*., 2012:111). Liabilities can be recognised at fair value, which result in profits and losses being recognised in the statement of profit and loss and other comprehensive income (Gaynor *et al*., 2011:125). Liabilities require a discounted cash flow that assist in determining the fair value, also known as present value (Nobes, 2011:522). Non-current assets can also be measured at fair value, which includes: property plant and equipment, investment property and intangible assets (Christensen & Nikolaev, 2013:735). Table 2.2 sets out the line items (in accordance with its corresponding accounting standard) that can be fairly valued in terms of IFRS. Table 2.2 was compiled by Cairns (2006:12) as a list of the relevant accounting standards that provide the company with the option for the financial line item to be measured at fair value.

Table 2.2: The use of fair value in initial and subsequent measurement identified in IFRS

Standard	Name of standard	Measurement
IAS 16	Property, plant and equipment	Initial: All costs (monetary and non-monetary) including costs to bring the asset to its intended use (IAS 16.16 to 16.24). Subsequent: The choice between the cost or revaluation model can be made (IAS 16.30 and 16.31).
IAS 17	Leases	**Lessees** Initial: Asset and liability at lower of the fair value of the asset and present value of minimum lease payments (IAS 17.20). Subsequent: Finance lease payments apportioned between finance charge and reduction on liability (IAS 17.25).

Standard	Name of standard	Measurement
		Lessors Initial: Finance receivable at an amount equal to the net investment in the lease (IAS 17.36). Subsequent**:** Finance income should be a constant periodic rate based on the net investment (receivable) outstanding (IAS17.39).
IAS 19	Employment benefits	Defined benefit plans Initial and subsequent: At the present value of the defined benefit obligation reduced by the fair value of plan assets (IAS 19.54).
IAS 20	Government grants	Non-monetary grants Initial and subsequent: The option between recording the asset and the grant at nominal value or at fair value (IAS 20.23).
IAS 26	Accounting and reporting by retirement benefit plan	Retirement benefit plan investments Initial and subsequent: At fair value, reason to be disclosed if not at fair value (IAS 26.32).
IAS 27	Consolidated and separate financial statements	Separate financial statements Initial and subsequent: Investments in subsidiaries, associates, and jointly controlled entities to be accounted for at cost or according to IFRS 9 or the equity method adopted in IAS 28 (IAS 27(2011).10).
IAS 28	Investments in associates and joint ventures (2011)	Investments in associates held by venture capital organisations or mutual funds, unit trusts and similar entities Initial and subsequent: The option to measure the investments at fair value through profit and loss according to IFRS 9 (IAS 28(2011).19).

Standard	Name of standard	Measurement
IAS 31	Investments in joint ventures	Investments in jointly controlled entities held by venture capital organisations or mutual funds, unit trusts and similar entities Initial and subsequent: Measured at fair value with fair value changes recognised in profit and loss (IAS 31.1 and 31.2).
IAS 38	Intangible assets	Intangible asset acquired in a business combination Initial and subsequent: At fair value that can be reliably measured (IAS 38.35). Intangible assets Initial: At cost less accumulated amortisation and impairment losses (IAS 38.74). Subsequent: At fair value determined by reference to an active market (IAS 38.75).
IAS 40	Investment property	Initial and subsequent: Choose between cost or fair value model (IAS 40.30).
IAS 41	Agriculture	Biological assets Initial and subsequent: At fair value less estimated costs to sell, unless fair value cannot be reliably measured (IAS 41.12). Agricultural produce harvested from the entity's biological assets Initial and subsequent: Fair value less estimated costs to sell at the point of harvest (IAS 41.13).
IFRS 1	First time adoption of International financial reporting standards	Initial and subsequent: Assets held at cost may at date of transition be recognised at fair value (fair value is the new cost) (IFRS 1.D6).

Standard	Name of standard	Measurement
IFRS 2	Share-based payments	Initial: At fair value for goods and services received and the equity instruments granted in equity-settled share-based payment transactions (IFRS 2.10). Subsequent: At fair value when the liability incurred for the goods and services received in a cash-settled share-based payment transaction (IFRS 2.30).
IFRS 3	Business combinations	Initial and subsequent: All acquired assets and liabilities to be measured at fair value (IFRS 3.18).
IFRS 7	Financial instruments	Initial and subsequent: Measured at fair value through profit and loss (financial asset, financial liability, interest income and expense for financial instruments) (IFRS 7.7 and 7.20b).
IFRS 13	Fair value	Initial and subsequent: The objective of fair value measurement is to estimate a price that closely simulates an exchange of assets or liabilities in an active market between two willing parties at a specific date (IFRS 13.B2).
IAS 21	The effects of changes in foreign exchange rates	Initial and subsequent: Measured at fair value through profit and loss (non-monetary items) (IAS21.23).
IFRS 9	Financial instruments (Replacement of IAS 39)	Initial: Financial instruments measured at fair value (IFRS 9, Section 4.1.1). Subsequent: Financial assets either at fair value through profit and loss, or fair value through other comprehensive income. Financial liabilities at fair value through other comprehensive income.
IFRS 15	Revenue from contracts with customers	Contract assets and receivables Initial In terms of IFRS 9 the difference between the amount receivable and revenue is expensed (IFRS 15:107-108)

Source: Cairns (2006:12) (adapted) and IFRS (2015)

The financial statement line items included in Table 2.2 are affected by fair value as a basis of measurement. These line items are therefore susceptible to manipulation through the use of fair value adjustments, which can influence the users of the financial statements' decisions.

2.6 USERS AND USES OF FINANCIAL STATEMENTS

The users of financial statements can be categorised in two categories, namely: internal users (the company owners, board of directors, management and employees) and outside users (lenders/creditors, suppliers, customers, the public, existing and potential investors, state institutions, regulators and other authorities) (Florin-Constantin, 2012:202; IASB, 2012:18). Tsalavoutas *et al.* (2012:3) reiterate IFRS by stating that the main users of financial statements are the investors, who provide the risk capital. Biondi (2011:29) explains that various investors have their own purpose and strategies. Florin-Constantin (2012:202) and the IASB (2012:18) state that the users of financial statements assess future net cash flows. Florin-Constantin (2012:202) further argues that the internal and external users of financial statements are interested in future profits and stability of the entity to use as a basis for decisions made. In order to fulfil these purposes and strategies the users utilise financial statement ratio analysis to assess the performance of an entity (Das, 2010:127).

Alexander *et al.* (2012:85) state that diverse users have different information needs and therefore financial statements are used for different purposes. Mala and Chand (2012:38) concur with the IASB that concludes that the financial statements should improve transparency for users of the financial statements, which will increase their ability and willingness to make an investment decision. Fair value as a basis of measurement should theoretically provide useful information for users, both internal and external, of the financial statements (Jarolim & Öppinger, 2012:70).

2.6.1 Internal users

As included in Section 2.6, the internal users of financial statements include: the owners, board of directors, management and employees. Three major categories were identified with regard to the decision function of financial managers (which are also useful to owners, board of directors and employees): investment decision, financing decision and the asset management decision (JC Van Horne & Wachowicz, 2008:2; Brigham & Houston, 2013:5). Management is responsible for decision-making that influences all users of the financial statements. Financing decisions made by management are important since they lead to long- and short-term financial obligations and expenditure by the entity (Paramasivan & Subramanian, 2009:25). Dividend decisions directly influence the value of the entity and shareholders' wealth (Paramasivan & Subramanian, 2009:99). The financial manager chooses from the best alternative of investments that contribute the most to shareholders' wealth maximisation (Paramasivan & Subramanian, 2009:8). Chen *et al.* (2013:89) investigate how fair value has an impact on hedging derivatives, since the higher the price volatility of the hedged asset, the greater the risk hedging decision made.

Caskey and Hughes (2011:505) assert that fair value measurement has an impact on the investment decisions (investment and asset investment decisions), since certain financial ratios may be influenced as a result of fair value measurements and investment decisions may be dissatisfying to investors (increasing fair valuation measurements contribute to satisfactory financial ratios, making investment decisions more difficult and increasing pressures by investors). Brigham and Houston (2013:584) identify that one of the constraints on dividends paid is the availability of cash. Section 2.4.2 identify that fair value adjustments where the market value cannot be determined are based on management's estimates and judgements which reflect an increase in management's performance. As discussed in Chapter 1 (Section 1.2) the fair value adjustment is not cash that have an influence on the dividend decision made. The decisions identified for internal users are the investment decision, asset investment decision, financing decision and dividend decision, which is

influenced by fair value measurements. The impact fair value has on external users of financial statements is discussed in Section 2.6.2.

2.6.2 External users

As discussed in Section 2.6, the external users of financial statements include: investors, lenders/creditors, suppliers, customers, the public, existing and potential investors, state institutions, regulators and other authorities. Haji *et al.* (2014:67) identify that these users of financial statements are involved in buying, selling or holding equity and debt instruments and provide loans to the company. Strouhal (2015:561) argues that the financial statements are then analysed by the external users affording the ability to make decisions. Abu-Nassar and Rutherford (1996:73) state that the external users and their uses of financial statements are as follows: stockbrokers (to provide informative advice), financial institutions (to provide, monitor, increase and restructure loan and debt facilities), and academics (for teaching and research purposes). Dvořáková (2013:154) argues that financial statements are mainly intended for the financial information needs of the external users (including investors whom ultimately are the risk capital providers) providing information pertaining to the financial performance and position of the company. External users, as with internal users, therefore depend on the financial statements as their decisions are based on the disclosures made by the company.

Alireza *et al.* (2012:60) scribe that financial statement ratio analysis is a suitable tool assisting the users of the financial statements in predicting financial crisis in future. Another use for financial statements include assessing an entity's overall health (Du Toit & Vermaak, 2014:820). For this purpose, further investigation pertaining to manipulation of financial statements is required.

2.7 THE USE OF FAIR VALUE AS A TOOL TO MANIPULATE FINANCIAL STATEMENTS

Manipulation is known as acts of falsification or alteration of financial information (Spathis *et al.*, 2002:512; Trussel, 2003:618). Alaryan *et al.* (2014:225) illustrate that manipulation by means of raising the net income (increasing sales or decreasing expenses) has a positive impact on the

company's share price. Alaryan *et al.* (2014:225) and Spathis *et al.* (2002:510) define falsification as increasing assets, revenues and incomes or by decreasing liabilities, expenses and losses without reason. Fair value can be used as a tool to manipulate estimates made that reduces the reliability of estimates in the end, resulting in irrelevant and ambiguous disclosures made in financial statements (Benston, 2008:106; Alaryan *et al.*, 2014:226).

Two instances give management the incentive to manipulate earnings (Jordan & Clark, 2011:64) namely:

- to satisfy external users of the financial statements that the targeted earnings have been achieved, which will in turn increase the share price; and
- to assist in the verification of management's performance. The earnings are then used as an indicator to portray management's efficient and effective use of assets employed to generate earnings.

Liabilities can be manipulated, where a decrease in the liabilities give rise to a fair value gain and an increase in liabilities give rise to a fair value loss (Gaynor *et al.*, 2011:130). Intangible assets such as goodwill can be overstated that affords management the opportunity to control and increase the company's earnings, subsequently avoiding losses (Alaryan *et al.*, 2014:226). Management can manipulate financial statements in order to satisfy debt covenants required by creditors that lead to a manipulated debt equity ratio and total debt to total assets ratio (Dietrich *et al.*, 2000:146; Spathis *et al.*, 2002:518). Management can also manipulate earnings by subjectively overstating the valuation of assets (Dietrich *et al.*, 2000:130; Herrmann *et al.*, 2006:53).

The identified three level hierarchy of measuring fair value and its increasing likelihood (from level one to three) to be manipulated are explained as follows (Landsman, 2007:22; Laux & Leuz, 2009:8; Shamkuts, 2010:11; Huizinga & Laeven, 2012:620):

- Level one – uses prices from active markets (liquid markets) for the same asset, therefore less room for manipulation;

- Level two – uses prices from active markets for the similar asset and some discretion of management used, therefore increasing room for manipulation; and
- Level three – uses estimates and considerable discretion of management, therefore extensive room for manipulation.

Bosch (2012:3) states that the three level hierarchy of fair value measurements are based on the quality of contributions made when determining the revalued amount. The three level hierarchy can be simplified, where level one is an active market and level two and three are illiquid markets (Goh *et al.*, 2015:2). The decision diagram is illustrated in Figure 2.2 where it is clarified which levels (levels two and three) can be influenced by management's estimates as a result of an illiquid or inactive market. Critics argue that there are illiquid markets for assets and liabilities held by companies resulting in managers that subjectively fair value the assets and liabilities, which gives management the opportunity to manipulate the fair value estimates (Mala & Chand, 2012:31).

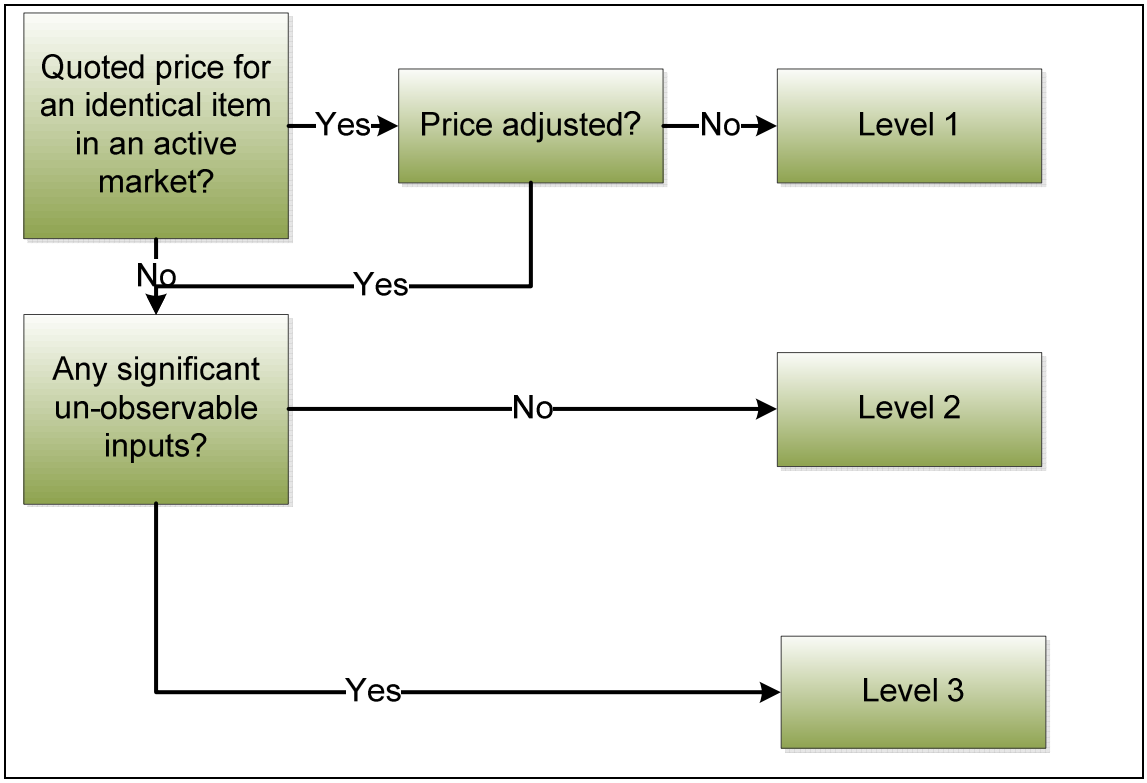


Figure 2.1: The categorisation of fair value in the fair value hierarchy

Source: KPMG (2013:46)

Spathis *et al.* (2002:518) identified that the financial statement line items that are more likely to be manipulated are: sales, accounts receivable, allowance for doubtful debts and inventory. The following examples of manipulation of these line items were identified (Spathis *et al.*, 2002:518):

- sales and accounts receivable can be manipulated by recording sales before they actually occur;
- the incorrect matching of sales and cost of goods sold, thereby increasing the gross margin;
- allowance for doubtful debts and obsolete inventory are subjective estimates; and
- not reporting inventory at lower of cost and net realisable value.

The use of book value reduces the risk of manipulation of earnings (Whelan, 2004:67). Landsman (2007:24) found that manipulation has an impact on the usefulness of asset revaluations performed by management of companies that are in financial distress, motivating management to manipulate the financial performance and position of the company. Benston (2008:106) and Alaryan *et al.* (2014:226) argue that fair value can be used as a tool to manipulate financial statements. It was identified in Section 2.6 that users rely on financial statements to analyse the financial performance and position of the company by means of manipulating financial statements (financial ratio analysis). Consequently Gouws and Lucouw (1999:108) reason that financial statement ratio analysis increases the comparability and meaningfulness of financial information. Section 2.8 defines and identify the financial statement ratio analysis that assist in determining the usefulness between financial statements including and excluding fair value adjustments.

2.8 FINANCIAL STATEMENT RATIO ANALYSIS

Financial statement ratio analysis is an ancient method used to compare financial information that is important for the valuation process, and includes: assets and liabilities structures, operational gearing, financial leverage, capital structure, financial leverage effect, debt analysis, balance sheet analysis, cash

flow ratios and cost and profit ratios (Catty, 2010:176). It includes profitability ratios, liquidity ratios, activity ratios, solvency ratios and security market ratios that are used to evaluate the financial performance of companies (Marx, 2009:34; Paramasivan & Subramanian, 2009:21). Financial statement ratio analysis assists in concluding on the liquidity position, long-term solvency, operating efficiency and overall profitability of the company, as enabling inter-firm comparisons (Das, 2010:13). Delen *et al.* (2013:3970) state that the risk for creditors is measured by the long-term solvency ratios, which includes interest coverage, debt, leverage and total financial debt to total debt ratios. Selahudin *et al.* (2014:55) utilised the debt ratio for monitoring financial risk ratios.

Financial ratios that influence the change of the basis of measurement (fair value or historical cost) as identified by Strouhal (2015:561), includes:

- profitability ratios (return on asset, return on equity and return on sales);
- liquidity ratio (current ratio);
- asset management ratio (assets turnover);
- debt ratios (debt ratio, equity debt ratio, financial leverage, interest coverage and assets and debts ratio); and
- capital market ratio (Earnings Per Share).

Robbetze (2015:157) identifies that Basic Earnings Per Share (BEPS) is the most useful earnings per share category for investors disclosed in the financial statements. Brigham and Houston (2013:779) and the IASB (2015e) illustrate how the BEPS is calculated, which is earnings available to ordinary shareholders divided by the actual number of shares outstanding. Clarkson *et al.* (2011:14) argue that there is a comparable relationship between Book Value Per Share (BVPS) and Earnings Per Share (EPS), which result in a proportionate decrease or increase. The Net Asset Value Per Share (NAVPS) as proposed by Correia *et al.* (2015:17-17) is based on book values and not on market values. It can further be highlighted that the book values are not easily accessible to external users, whom in turn use the fair values included in the financial statements. Brigham and Houston (2013:853) set the net asset calculation out as the total assets less the total liabilities. Collin (2007:149)

defines the NAVPS as the NAVPS divided by the authorised issued share capital. The NAVPS can be further manipulated by calculating the Net Tangible Asset Per Share. Investopedia (2016) defines the NAVPS as "*the value of a share in a company, calculated by subtracting a company's total debt from its total assets and dividing the result by the number of shares that exist*". It can be argued that the Net Tangible Asset Value Per Share (NTAVPS) is also based on book values and also have a proportionate effect on EPS. However, unlike the NAVPS, it will not take into account the intangible assets only the tangible assets. It can be concluded that BEPS, NAVPS and NTAVPS can be included in the financial ratios identified that assist in identifying the impact on the usefulness of fairly valued information.

The financial ratios identified that assist the analysis of the usefulness between the financial statements including and excluding fair value are summarised in Table 2.3.

Table 2.3: Financial ratio category and explanation

Financial ratio	Category of ratio	Explanation of ratio	Basic formula
Return On Assets (ROA)	Profitability ratio	The profitability in relation to the assets employed (Correia *et al.*, 2015:5-23).	Net income/total assets
Return On Equity (ROE)	Profitability ratio	The profitability in relation to equity funds used (Correia *et al.*, 2015:5-25).	Net Income/shareholders' equity
Return On Sales (ROS)	Profitability ratio	Also known as the net profit margin. It indicates the net income as a percentage of sales made (Correia *et al.*, 2015:5-22).	Net income/ sales
Current Ratio (CR)	Liquidity ratio	The extent to which short term credit can be covered by assets that can be easily converted to cash (Correia *et al.*, 2015:5-16).	Current assets/current liabilities

Financial ratio	Category of ratio	Explanation of ratio	Basic formula
Asset Turnover (ATO)	Asset management ratio	The efficient usage of the assets in relation to the sales made (Correia *et al.*, 2015:5-19).	Turnover/total assets
Debt Ratio (DR)	Debt management ratio	The total funds provided by creditors as a percentage of the total assets (Correia *et al.*, 2015:5-20).	Total debt/total assets
Asset Debt Ratio (A:D)	Debt management ratio	The total assets employed as a percentage of the total funds provided by creditors (Correia *et al.*, 2015:5-20).	Total assets/total debt
Equity Debt Ratio (E:D)	Debt management ratio	The total funds provided by creditors as a percentage of total equity held (Correia *et al.*, 2015:5-20).	Equity/total debt
Financial Leverage (FL)	Financial risk ratio	The degree to which the company is exposed to fixed interest as a result of financing assets interest bearing debt (Correia *et al.*, 2015:3-7).	EBIT/EBIT-I
Interest Cover (IC)	Debt management ratio	The extent to which earnings before interest and tax can be reduced before a loss is incurred (Correia *et al.*, 2015:5-21).	EBIT/interest expense
Basic Earnings Per Share (BEPS)	Capital market ratio	The net income per share after the preferred dividends have been paid (Brigham & Houston, 2013:52).	Net Income-dividends on preferred stock/average outstanding shares

Financial ratio	Category of ratio	Explanation of ratio	Basic formula
Net Current Asset Value Per Share (NCAVPS)	Capital market ratio	The current assets less the total debt expressed per shareholder (Investopedia, 2016).	Current assets-total liabilities/number of shares outstanding
Net Tangible Asset Value Per Share (NTAVPS)	Capital market ratio	The tangible asset value less all the debt expressed per shareholder (Financial-Dictionary, 2016).	Tangible assets/number shares outstanding

The financial ratios included in Table 2.3 can be used when analysing the usefulness of financial statements including and excluding fair value measurements, and is therefore applied in Chapter 4. These ratios are used by users of financial statements to analyse data, making the data more comparable in order to compare it to industry norms and other companies, as part of the process of making informed decisions. Section 2.9 discuss the influence fair value had on the financial crisis.

2.9 FINANCIAL CRISIS

There have been many critics that have argued that the recent 2008 financial crisis included fair value as a basis of measurement as a contributing factor (Laux & Leuz, 2009:29; Mala & Chand, 2012:23). Mala and Chand (2012:22) argue that the same asset can be valued differently by two different companies, since the factors considered by management are not the same, resulting in a difference in management's estimates of fair valuation of an asset that reduces the reliability of fair value estimates. Biondi (2011:33) acknowledge the fact that the fair value model is dependent on perfect and complete markets. Goh *et al.* (2015:3) illustrate how the financial crisis deteriorated as a result of investors concerned with liquidity and information risk. The report of the United States Securities Exchange Commission (2008:A-2) explains that the use of fair value in distressed or illiquid markets was a contributing factor to the financial crisis. Mala and Chand (2012:23) and McCreevy (2008:2) point out that fair value

accounting was not suspended during this period, however, recommendations were made to improve the application. The recommendations made include that improvements should be made to the fair value measurement standard such as: fair value and market to market reserve should not be suspended, improvements are to be made to level two and three of the three level hierarchy of fair value measurements, financial asset impairments should be improved, guidance pertaining to the application of sound judgement, financial statement users' needs should remain a priority, and guidance to address existing accounting standards implemented in practice and to simplify the accounting for investments in financial assets (United States Securities Exchange Commission, 2008:200; Arias, 2010:37). Several commenters on the report of the United States Securities Exchange Commission (2008:A-13) also identified that the financial crisis was driven by the overvaluations done preceding the financial crisis. The financial crisis was advanced through the impact fair value had on the markets (changing from liquid to illiquid) in which the financial instruments traded. The rapid decrease in value of financial instruments was the result of investors reducing their appetite for risk and selling their shares, furthermore increasing the credit and other risks of the companies influenced (United States Securities Exchange Commission, 2008:3). The shift to illiquid markets for both assets and liabilities made it impossible to make a reliable market estimate and the lack of evaluating managements estimates previously used only contributed to the financial crisis (Masoud & Daas, 2014:161). Fair value was not the cause of the financial crisis, but rather worsened and accelerated the financial crisis. Brigham and Houston (2013:13) indicate that among failed corporate scandals in the past, management fraudulently aimed to maximise share prices of Enron and WorldCom. Section 2.10 identifies the causes of failure of Enron and WorldCom.

2.10 THE CAUSES OF FAILURE OF ENRON AND WORLDCOM

2.10.1 Enron

Subsequent investigations of Enron's failure in December 2001 revealed how management continually used level three of the hierarchy for fair value

estimates for internal and external measurements of the financial performance and position (Benston, 2006:465; Dvořáková, 2011:85). Benston (2006:467) and Dvořáková (2011:85) explain that the motive behind using level three fair value estimates was not to mislead users of financial statements, but rather to motivate and reward managers for increased satisfaction of shareholders. The reward for increasing shareholders' satisfaction gave management the incentive to over value assets (Benston, 2006:467; Fargher & Zhang, 2014:184). Enron's use of level three fair value estimates led to the presentation of misleading financial statements that influenced the financial performance and position indicators (Benston, 2006:468). Fair value increases were recorded immediately and fair value losses were deferred (Benston, 2006:471; Fargher & Zhang, 2014:186). Fair value gains contributed to net income enabling them to record substantial profits (Benston, 2006:478; Bonaci & Strouhal, 2011:17). Smith and Smith (2014:40) argue that as a result of fraudulent presentations by Enron and WorldCom, financial markets were negatively influenced. Section 2.10.1 identified the causes of failure of Enron, which are identified for WorldCom in Section 2.10.2.

2.10.2 WorldCom

Unerman and O'Dwyer (2004:982) propose that the fraud at WorldCom almost led to a widespread withdrawal of non-expert trusts, beating the Chapter 11 bankruptcy record set by Enron. Sidak (2003:207) explains how WorldCom's presentation of false internet traffic reports and the supply of incorrect information to the state and federal governments resulted in damage in the telecommunications industry, government, workers and capital markets. Sidak (2003:210) emphasised that the fraud committed and the misrepresentation of internet growth by WorldCom resulted in deceived investors, competitors and regulators. The overstatement of earnings increased the price of the listed financial instruments of WorldCom that inversely influenced and reduced the cost of capital used as a basis for acquisitions of investments (Sidak, 2003:230). Financial instruments fraud and earnings fraud committed resulted in overstatement of earnings, increase in the value of financial instruments,

reducing the cost of capital and giving rise to the supportive infrastructure to make investments beyond the means of WorldCom.

2.11 CONCLUSION

Fair value as a basis of measurement provides current information about the financial position and performance of the company. In this chapter, focus was given to the usefulness of financial information to users of the financial statements. It was identified that in order to attain the desired level of usefulness, reliability, relevance and transparency are major contributing factors. It was identified that fair value increases the relevance of financial information, but the reliability of financial information is dependent on external economic factors such as the existence of an active market or changes in the market pertaining to the fair valued asset or liability, and management's estimates and manipulations used in deriving at the fair value amount. Fair value influence both internal and external users' decisions, which indicates the increased relevance of financial statements. However, it was identified that, as a result of manipulating financial statements, the lack of reliability of financial estimates made (which could also be influenced by manipulations by management) eventually impair the relevance of financial statements.

The three levels of fair value measurements were explored, that highlighted that the reliability of financial information reduced as management estimates increases. Level one produces the most reliable financial information and level two and level three are more exposed to management's judgements. Level three is the least reliable, since this is most subjective to management estimates, which can be manipulated to obtain desired results. This was the case with Enron, where management utilised level three of the hierarchy of fair value measurement as there was no market available to value their assets and management received incentives based on their performance. This gave management the incentive to overvalue assets to benefit from the performance incentives. WorldCom illustrated how management's manipulation of financial information can be misleading to users and detrimental to the company and the industry.

Fair value adjustments impact the financial performance and position of the company, with the changing markets moving from liquid to illiquid markets, affording management the increased opportunity to apply subjective estimates to assets. This gives users of financial statements the incorrect impression about the company's and management's performance. Fair value adjustments therefore afford management the opportunity to improve the company's financial position and performance through manipulation.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In Chapter 1 (Section 1.5.2) it was established that a mixed method approach is to be used for the completion of this study. In Chapter 2 the literature review was conducted to increase an understanding pertaining to fair value and to identify elements influencing the usefulness of fair value adjustments.

Boeije (2010:1) associates research with *"asking and answering relevant and researchable questions"*. Bayat and Fox (2007:2) explain that research is called a scientific method since it is conducted in a scientific manner. Research is not limited to answering a question, addressing a problem or issue resolutions, but also contributes to a discipline and if possible, formulates a basis for the possibility of further study (Bayat & Fox, 2007:2). Research is a study or an investigation to discover new facts or to gain new information needed to address the problem raised (Bayat & Fox, 2007:5).

3.2 RESEARCH PROBLEM AND PROBLEM FORMULATION

Sahu (2013:21) reasons that criteria should be met before the study is undertaken, since not all problems are researchable: it must refer to theoretical or practical difficulties, it should solve a problem for a group of individuals, it should draw attention of experts, policy makers and academics within the identified field of study, it should not be over researched before, debateable research should not be performed unless the researcher is exceptional in the field of study, it should not be too narrow or broad problems identified, and the researcher should have an idea of alternative outcomes of the study before the research is undertaken. Kumar (2011:40) proposes that when formulating a research problem one should be aware that it should tell the possible readers what one intend to research.

Tracy (2013:17) outlines three tips that can assist in deriving a research question: research questions can relate to areas that are salient, problematic

or significant, relating to theoretical and research areas, and the number of research questions formulated should be limited. Antonius (2013:35) states that the general research question should be relevant from a theoretical or concrete applications perspective. Furthermore Antonius (2013:36) argues that the researcher must have background in the discipline in which the study will be conducted, to ensure that the study will contribute to the discipline. Tracy (2013:230) remarks that excellence can be achieved if the research topic (in line with research question) is relevant, timely, significant and interesting. For the purpose of problem formulation for this study, it was determined that the fair value measurement standard is very topical. As identified in Chapter 1 (Section1.2) the choice between fair value and historical cost brings into question the reliability and relevance of financial statements. Critique against fair value measurement is significant since it was a contributing factor in the financial crisis as evident from the events surrounding Enron and WorldCom.

Smith (2011:9) suggests that a research problem should be a clear question where the objectives are already prominent. Tracy (2013:100) argues that the research question should be in line with the research title. The problem is whether fair value as a basis of measurement has an impact on the usefulness of financial information, since fair value measurement increases the incentive for management to manipulate the published audited financial statements. The focus is on JSE listed companies, since these companies attract more users.

3.3 RESEARCH DESIGN

Bray *et al*. (2014:322) and Creswell (2013:203) suggest that many studies utilise mixed methods to benefit more from quantitative and qualitative research. A mixed method approach was used to achieve the objectives set out for this study: qualitative and quantitative research were elected to better understand and investigate the identified problem statement. Boeije (2010:157) illustrates that a mixed method is where the researcher collects and analyse data, integrate findings and draw conclusions for both qualitative and quantitative research. Three designs of mixed methods identified by Boeije (2010:159) include: sequential explanatory (quantitative to qualitative), sequential exploratory (qualitative to quantitative) and concurrent triangulation

(quantitative and qualitative). A sequential explanatory mixed method was used where the literature review is first conducted and applied in the empirical review. The literature review conducted assists by:

- Improving the understanding pertaining to the factors and elements contributing to the useful financial statements.
- Determining whether fair value can be used as a tool to manipulate financial statements.
- Identifying financial statement ratios that can assist in determining the impact fair value has on financial statements in the empirical review.

Kumar (2011:29) affirms that empirical "*means that any conclusions drawn are based upon hard evidence gathered from information collected from real-life experiences or observations*". An empirical study was undertaken to collect financial information required for the identified financial ratios, from which the data were collected through applying the financial ratios. Thereafter, a descriptive statistical analysis was performed to identify any differences between the financial information including and excluding fair value adjustments, which could have a significant influence on the usefulness of financial statements.

3.4 METHODOLOGY

Bayat and Fox (2007:8) identify three common quantitative research approaches, namely: historical research, descriptive research and experimental research. Historical research is performed as historical information (published audited financial statements) was used to derive data and perform data analysis. Historical research analyses existing information and does not need to gain new information, however, its limitations include the quality of historical information and coverage of information within the specific field of study (Bayat & Fox, 2007:8).

Furthermore (Bayat & Fox, 2007:9) identify the descriptive research surveys namely, evaluation surveys (longitudinal and cross-sectional research), comparative surveys (comparing two or more situations) and descriptive

surveys (case study, correlation, mass and retrospective surveys). Experimental research is done with the aim to solve a problem in future where predictions pertaining to what will happen or proposing new approaches can be made and applied to experimental study to determine whether address the problem. Bayat and Fox (2007:9) conclude that the condition or element studied is the independent variable and the criterion in which the condition or element is studied is the dependent variable. For the purpose of this study a sequential exploratory mixed method was followed, where the literature review was conducted, which assisted in distinguishing between historical cost and fair value (identifying the advantages and disadvantages of both), identifying and defining what increases the usefulness of financial information (relevance, reliability and transparency), identifying line items that are measured at fair value, identifying the users and uses for financial statements, identifying the means in which fair value can be used as a tool to manipulate financial statements and to assist in identifying the financial ratios that can be used that assist in identifying the differences between financial information including and excluding fair value adjustments.

For the qualitative part of the study, a comprehensive literature review was undertaken to identify the elements affecting the usefulness of fair value adjustments and to derive at financial ratios to be applied when collecting data to be used for the statistical analysis. Bayat and Fox (2007:7) explain that qualitative research is scientifically designed to explain events, people and matters, and is not dependent on numerical data even though quantitative methods and techniques are used. Bayat and Fox (2007:10) identified two qualitative approaches, namely: interpretive research and critical theory. Interpretive research is used when the collection of records forms the basis of the inductive production and the explanatory theory (Bayat & Fox, 2007:10). The literature review of this study was an interpretive research approach where the information obtained was used as a basis to conclude on the objectives identified to address the problem statement. The published audited financial statements were used to gather data to be applied to the general financial statement ratios identified in Chapter 2 (Section 2.8). These identified financial ratio results were further statistically analysed with the use of SPSS© (2013)

version 23 where significant differences between financial statements including and excluding fair value was identified and analysed. Critical theory is when the researcher starts with assumptions other than those made by persons operating within qualitative and quantitative designs (Bayat & Fox, 2007:10).

Bayat and Fox (2007:7) explain that quantitative research refer to things or a reality that can be counted with the common use of statistics to process and explain data findings. Tolmie *et al.* (2011:4) state that quantitative research models are based on a reality expressed through numbers. Bayat and Fox (2007:7) point out that quantitative research include systematic measurement, statistical analysis and methods of experimentation.

MS Excel was used to perform ratio analysis to enunciate secondary data collected in an uniformed percentage that can be easily compared to the companies' ratios identified under various circumstances (financial information including and excluding fair value adjustments). The findings were interpreted with the use of SPSS© (2013) to determine significant differences.

3.4.1 Secondary data

As the research design and methodology have been set out, this Section describes the source of financial information. Smith (2011:143) and Tolmie *et al.* (2011:302) distinguish secondary data as data disclosed by third parties (by means of reports and press releases), and data that were aggregated, reworked and categorised. Tolmie *et al.* (2011:55) state that there are challenges, such as the available resources and increased labour, in data collection that researchers face when obtaining data first hand, which resort to many researchers engaging in secondary data to avoid these challenges. Reference was made to the data sets that that are designed to address the need for reliable efficient and efficient data (Tolmie *et al.*, 2011:55). This study made use of McGregor (2014), an online international data set that is used to gather secondary data to identify the target population and the sample selected. As well as published financial statements on the company's website (if not found, databases such as Share Data and Global Reporting were considered)

to identify financial information (including and excluding fair value adjustments) pertaining to the identified ratios discussed in Chapter 2 Section 2.8.

3.4.2 Research process stages

Antonius (2013:33) and Bayat and Fox (2007:7) simplify the research process or procedures as follows:

- identifying the research problem and questions;
- gathering relevant information;
- collecting required data;
- processing data into meaningful information;
- analysing information; and
- drawing conclusions, reporting the findings and making recommendations.

The research problem and question are formulated in Section 3.2 and then addressed in Section 1.3. The relevant information was gathered and discussed in Chapter 2. The data collection and processing of data into meaningful information is applied in Section 3.7.1. and analysed in Section 3.7.2. The conclusions, reporting of findings and making recommendations are addressed in Chapter 5. Careful consideration is given to the process identified by Antonius (2013:33) and Bayat and Fox (2007:7), focusing on the matters identified in the literature review, which ensure that these matters are considered when conducting the empirical study. The process is set out in the following sections of this chapter.

3.5 RESEARCH PARADIGMS

A paradigm is a conceptual framework to describe how we look at reality (Silverman, 2013:446). Tracy (2013:38) compares the paradigm of various ways of understanding knowledge and reality to a pair of glasses helping to make sense of what is seen. The research paradigm or perspective of the researcher is influenced by the following: ontology (what is the nature of reality?), epistemology (what is the nature between the researcher and knowledge being researched?), axiology (what is the role of values associated

with areas of research and theorising?) and methodology (what is the strategies for gathering, collecting and analysing data?) (Donaldson *et al*., 2009:23; Denzin & Lincoln, 2011:102; Tracy, 2013:38). The reality of this study is the influence fair value has on the usefulness of financial statements: the researcher only collects and interprets the findings, and the collection of data will be by means of obtaining secondary data sources for both the literature and empirical reviews, that will then be analysed. The effect of fair value adjustments is then determined.

Hays *et al.* (2016:176) identify six research paradigm sub-categories: positivism, post-positivism, social constructivism, critical theory, feminism, and queer theory. Denzin and Lincoln (2011:114) and Tracy (2013:39) differentiate between researchers from positivist and post-positivist paradigms. Positivist paradigm researchers believe that a single true reality exists and awaits research to reflect reality while post-positivism researchers believe that the reality is not completely known, however, it exists and just needs to be proven. Tracy (2013:40) defines the interpretive paradigm as where the researcher explains, describes or translates both knowledge and reality. Tracy (2013:42) reason that a critical paradigm is based on an idea (doctrine, myths and beliefs) that have power over groups. A post-positive approach was undertaken since the reality of the influence of the usefulness of fair value adjustments are unknown and is determined when tested in the empirical review. This paragraph focuses on improving the understanding in the research methodology undertaken, formulating the research problem and elaborating upon it.

3.6 POPULATION AND SAMPLING

3.6.1 Population

In Section 3.2 the research process, research problem and problem formulation was identified. Now the means of selecting the group to be tested are determined. Antonius (2013:10) and Tolmie *et al.* (2011:299) state that a population is units that consist of the targeted populated group. Bayat and Fox (2007:144) explain that the target population is the total respondents required to meet the research criteria, from which the sample is selected. For the

purpose of this study, the targeted population identified is the JSE listed companies as at 31 March 2016. The total companies included in the consumer goods sector is 28 companies, consumer services sector 48 companies, health care sector 10 companies, industrial sector 83 companies, technology sector 17 companies and the telecommunications sector is five companies and only one company is included in the utilities sector. In total 192 JSE listed companies were included, excluding the basic materials, financials and oil and gas sectors for reasons mentioned in Chapter 1 (Section 1.5.4.2).

3.6.2 Sampling

Antonius (2013:10), Maree (2013:90) and Tolmie *et al.* (2011:301) explain that a sample is a selection of a smaller group that is a fair presentation of the population. Time and cost constraints do not allow for the testing of all units in the population, however, the population can still be tested through the use of sampling (Bayat & Fox, 2007:54; Antonius, 2013:10). The identified sampling methods set out in Chapter 1 (Section 1.5.4.3) that were used in this study, include non-probability, convenience, pairing and quota sampling.

Maree (2013:176) argues that non-probability sampling does not make use of random sampling within the population and is best used when there are time constraints to perform tests. Sahu (2013:59) explains that one of the non-probability sampling techniques identified include quota sampling. Howitt, Maree (2013:177) and Sahu (2013:59) define quota sampling as a method where categories are identified in which a fixed sample number is selected that was identified in the different sectors. There are a maximum of two samples selected per sector, the largest and smallest company per market share capitalisation in each sector (excluding the basic materials, financials and oil and gas sectors for reasons mentioned in Chapter 1 (Section 1.5.4.2)). Howitt and Cramer (2000:77) identify another inexpensive sampling method, this being convenience sampling.

Maree (2013:177) explains that convenience sampling includes the use of an easy and convenient method when selecting a sample. Howitt and Cramer (2000:77) point out that convenience sampling is very cost effective since the

information (financial information required) is easily accessible and readily available. The JSE listed companies' audited financial statements are published and made available to the public, which makes the collection thereof inexpensive and easy to obtain.

Gibbons and Chakraborti (2011:231) explain paired sampling as a means of identifying differences among paired observations. The largest JSE listed company per market share capitalisation was compared to the smallest JSE listed company per market share capitalisation for the seven identified sectors (excluding basic materials, financials and oil and gas sectors as the profitability and asset structures are different).

3.7 DATA COLLECTION, ANALYSIS AND RATIO ANALYSIS

3.7.1 Data collection

This study utilised McGregor (2014) to assist in selecting the sample identified in Section 3.6.2. before the data were collected. Bayat and Fox (2007:143) argue that data can be collected by means of the following techniques: experimental research, observation technique and survey research. Antonius (2013:43) proposes that the collection of data techniques applied should not be biased.

The data collected from the sample selected as stipulated in Chapter 3 (Section 3.6.2) for the different financial ratios as identified in Chapter 2 (Section 2.8) are summarised in Table 3.1. The financial information used to gather data were published audited financial statements that are made available to the public (referred to the observations made for statistical purposes). Instances where the published audited financial statements were not available were identified and summarised in Table 3.1 below.

Table 3.1: Observations made that were included and excluded in the empirical study

		Sector	Largest or smallest company per market capital-isation per industry	Observations (✔ or ✘) and sources														Total
				Financial years														
				2015		2014		2013		2012		2011		2010		2009		
Company	C1	Consumer services	Smallest	✔	AOE LTD (2015)	✔	AOE LTD (2014)	✔	AOE LTD (2013)	✔	AOE LTD (2012)	✔	AOE LTD (2011)	✔	AOE LTD (2010)	✔	AOE LTD (2009)	7
	C2	Consumer goods	Largest	✔	ABI (2015)	✔	ABI (2014)	✔	ABI (2013)	✔	ABI (2012)	✔	ABI (2011)	✔	ABI (2010)	✔	ABI (2009)	7
	C3	Health care	Largest	✔	Aspen (2015)	✔	Aspen (2014)	✔	Aspen (2013)	✔	Aspen (2012)	✔	Aspen (2011)	✔	Aspen (2010)	✔	Aspen (2009)	7
	C4	Health care	Smallest	✔	Adcock (2015)	✔	Adcock (2014)	✔	Adcock (2013)	✔	Adcock (2012)	✔	Adcock (2011)	✔	Adcock (2010)	✔	Adcock (2009)	7
	C5	Utilities	Largest	✔	IPSA (2015)	✔	IPSA (2014)	✔	IPSA (2013)	✔	IPSA (2012)	✔	IPSA (2011)	✘	N/A	✔	IPSA (2009)	6
	C6	Consumer goods	Smallest	✘	N/A	✘	N/A	✔	Awethu (2013)	✔	Awethu (2012)	✔	Awethu (2011)	✘	N/A	✘	N/A	3
	C7	Tele-communi-cations	Largest	✔	MTN (2015)	✔	MTN (2014)	✔	MTN (2013)	✔	MTN (2012)	✔	MTN (2011)	✔	MTN (2010)	✔	MTN (2009)	7
	C8	Technology	Largest	✔	EOH (2015)	✔	EOH (2014)	✔	EOH (2013)	✔	EOH (2012)	✔	EOH (2011)	✔	EOH (2010)	✔	EOH (2009)	7
	C9	Consumer services	Largest	✔	Nasper Ltd (2015)	✔	Nasper Ltd (2014)	✔	Nasper Ltd (2013)	✔	Nasper Ltd (2012)	✔	Nasper Ltd (2011)	✔	Nasper Ltd (2010)	✔	Nasper Ltd (2009)	7
	C10	Industrials	Largest	✔	Bidvest Ltd (2015)	✔	Bidvest Ltd (2014)	✔	Bidvest Ltd (2013)	✔	Bidvest Ltd (2012)	✔	Bidvest Ltd (2011)	✔	Bidvest Ltd (2010)	✔	Bidvest Ltd (2009)	7
Total number of observations																		**65**

Source: Each company's website (published audited financial statements)

There were instances where the published audited financial statements were not available during the analysis as per Table 3.1. Attempts to contact the companies indicated in C5 and C6 telephonically were unsuccessful. The reason for not obtaining the published audited financial statements is summarised in Table 3.2.

Table 3.2: Reasons for not obtaining data

Company	Reason for not obtaining data
C5	C5 did not publish audited financial statements in 2010, which caused the 2011 published audited financial statements to cover a period of 18 months. The 18 months were taken into consideration as part of 2011's observations. In the attempt to contact them telephonically, there were no response and no other means of contacting them.
C6	C6 did not publish audited financial statements in 2010 and 2009, which resulted in the 2011 published audited financial statements covering a period of 18 months. The 18 months were taken into consideration as part of 2011's observations. In 2014 and 2015, C6 failed to submit their published audited financial statements. In the attempt to contact them telephonically, there were no response and no other means of contacting them.

As a result of the unavailability of the published audited financial statements of the companies of C5 and C6, it were not included in Table 3.1 . Therefor the mentioned financial periods were excluded from the data analysis of these two companies.

3.7.2 Data Analysis

Bayat and Fox (2007:143) propose that the means of data analysis should be stipulated, specifying statistical and other techniques used. Antonius (2013:43) explains that the data collected should be prepared in a manner that assist in the analysis by using a statistical software package. For the purposes of completing this study, MS Excel and SPSS© (2013) version 23 were used to analyse data. Pallant (2013:114) explains that SPSS© (2013) offers the following statistical techniques:

- Correlation (used to determine the strength and direction of a relationship between two variables);

- Partial correlation (used to determine the strength and direction between two variables, while controlling a third variable that could influence the two variables);
- Multiple regression (used when a prediction can be made on a single dependent continuous variable assisting in identifying the contribution by each variable);
- Logistic regression (used when a dependent variable is categorical, that assists in testing the predictive power and contribution of each variable) and
- Factor analysis (used when there is a large number of related variables and the variables are grouped into manageable sizes).

The statistical technique applied for the purpose of this study, is correlation, where financial ratios of financial information including and excluding fair value adjustments are being compared to determine the strength of the relationship between the two variables (correlation), and then the significance of the correlation is further investigated.

Pallant (2013:195) explains that SPSS© (2013) offers the following statistical techniques when comparing groups:

- Independent-samples t-test is used when comparing two different mean scores of different groups.
- Paired-samples t-test is used when comparing the mean scores of the same group under different conditions.
- One-way analysis of variance (between groups) is used when there are different subjects in each group.
- One-way analysis of variance (repeated measures) is used when the same subjects are measured under different conditions.
- Two-way analysis of variance (between groups) is used between groups and each group has different people. The two-way design assists in identifying the impact the dependent variables have on the independent variables and the difference between the independent variables are identified.

- Mixed between-within groups analysis of variance is used when there are three variables identified, two being categorical independent variables (one between the subjects and one within the subjects) and one continuous dependent variable.
- Multivariate analysis of variance (MANOVA) is used when there are more than three variables one being categorical independent variable and two or more continuous dependent variables.
- One-way and two-way analysis of covariance: the one-way of covariance is used when there is one independent and dependent variable; and the two-way covariance is used when there are two independent variables and one dependent variable.
- Non-parametric techniques are used in the following instances: when data is measured at categorical ranked scales; when sample sizes are small and when data does not meet the assumptions made by the parametric techniques.

The paired-samples t-test is used when comparing the mean scores of the same company under different conditions, which is the financial information including and excluding fair value adjustments. The best suited paired-samples t-test for non-parametric techniques is further investigated.

Pallant (2013:286) explains that the following non-parametric techniques can be used: Chi-square for independence, Mann-Whitney test, Wilcoxon signed-rank test, Kruskal-Wallis test, Friedman test, Spearman rank order and correlation. The Wilcoxon signed-rank test technique (paired-samples t-tests for non-parametric techniques) was identified as a suitable technique, since the same financial ratios are analysed under two different conditions (including and excluding fair value adjustments) for each of the selected companies.

3.7.3 Ratio Analysis

Antonius (2013:70) states that ratios are the result of comparing the frequency of two categories of data. The following financial statement ratios were identified in Chapter 2 (Section 2.8): profitability ratios (ROA, ROE, ROS),

liquidity ratio (CR), asset management ratio (AT), debt management ratios (DR, A:D ratio, E:D ratio and IC), financial risk ratio (FL) and capital market ratios (BEPS, NCAVPS and NTAVPS).

The financial ratios that were identified assisted in identifying the financial information required from the published audited financial statements. Further financial information was required to assist in excluding the fair value adjustments from the already inclusive fair value adjusted financial information in which the sample selected was tested. As previously indicated, there were companies that did not have fair value adjustments. These companies were excluded since there were no fair value adjustments made for the period 2009 to 2015 as stated in Section 1.5.4.4. The identified financial ratios were then calculated for the remaining 10 companies for both including and excluding fair value adjustments in order to create comparable figures that populated the data.

3.8 VALIDITY, RELIABILITY AND GENERALISATION OF DATA

3.8.1 Validity

Antonius (2013:21) and Bayat and Fox (2007:144) define validity as a variable that should measure what it is intended to measure. Bayat and Fox (2007:144) identify six types of validity, namely: face validity (a test performed to determine if it makes sense), construct validity (a test to determine if a relationship exist statistically), predictive validity (a test performed to measure against alternative expected future outcomes; all variables can only be determined at a later date), concurrent validity (a test to measure against a present particular criterion; the result of one of the variables is currently known or can already be determined and it is evident that the present variable is more dominant, discriminating the other variable), internal validity (a test that ensures objectivity was maintained) and external validity (a test to determine how far the research findings apply outside the research setting). Through the use of MS Excel, the financial statement ratio analysis was applied to the sample selected, which will ensure face validity, construct validity and internal validity.

3.8.2 Reliability

Antonius (2013:22) defines reliability as the degree to which consistency is maintained and Bayat and Fox (2007:145) further explain that reliability is a state of consistency that needs to be maintained when tests, models and measurements are performed. This study made use of financial information obtained from audited financial statements that are publicly made available, which is therefore reliable.

3.8.3 Generalisation of data

Tracy (2013:229) defines generalisation as the transfer of findings from one study to another and the expectation that the finding will continue in future within the proven circumstances. In the study of Strouhal (2015:561), the same financial statement ratios identified in Chapter 2 (Section 2.8) were used to determine differences between financial information including and excluding fair value adjustments (historical cost compared to fair value). Bray *et al.* (2014:73) and Burke and Kendall (2014:480) explain that improved generalisation can be determined by the repetition of input and output of mapping for unseen test data. The repetition of input and output of data are applied when consistently applying the same identified financial ratios (financial information including and excluding fair value adjustments) to the different companies' selected to improve the generalisation of results.

3.9 CONCLUSION

The most appropriate method identified for this study is the mixed method approach (which consists of a qualitative and quantitative study). The mixed method approach assisted in fulfilling the purpose of this study where both literature and empirical study contribute to identify whether fair value measurements have an impact on the usefulness of financial information and to increase the understanding of the impact of fair value adjustments. The research methodology including the means in which data were obtained (by using secondary data sources to obtain the published audited financial statements) were discussed. The considerations to ensure the reliability (by consistently applying for both published audited financial information including

and excluding fair value adjustments, the financial ratios used in previous studies) and validity (by using MS Excel to consistently apply the financial ratios identified to ensure face, construct and internal validity) of data obtained were also established. The target population relevant for this study was identified as the JSE listed companies as the financial records are easily accessible. The relevant sample from the identified population was determined to be the largest and smallest JSE listed companies per market share capitalisation for the five selected sectors that where identified to ensure that both extremes (regarding the size of the share capitalisation) are taken into account. The means to determine the targeted population and sample selected were identified by using an online data base, McGregor (2014).

In Chapter 4 the data analysis is performed with the use of financial statement ratio analysis, data were collected, and then analysed and the results thereof are investigated and interpreted.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

4.1 INTRODUCTION

In this chapter, comparisons are drawn between financial statements including (In) and excluding (Ex) fair value adjustments based on the literature review in Chapter 2. The data were gathered based on the methods detailed in Chapter 3, to identify whether there are any significant differences. In Chapter 3 (Section 3.7.2), the following data analysis methods were identified, that are applied to the empirical review:

- correlation (defined in Section 4.2.8 and analysed in Section 4.4), to determine the strength of the relationship between the two means; and
- Wilcoxon signed-rank test, and paired-samples t-tests for non-parametric techniques (defined in Section 4.2.11 and analysed in Section 4.3).

Field (2009:5) distinguishes between scientific statements that can be made from empirical evidence and non-scientific statements that cannot be empirically tested. The conclusions made are based on the descriptive statistical analysis of the financial ratios calculated when collecting data from analysing published audited financial statements. Section 4.2 outline the steps taken in the data analysis that was used to perform the descriptive statistics.

4.2 DATA ANALYSIS

Before addressing the research problem, which is based on the descriptive statistical analysis as identified in Section 4.1, the financial information need to be converted into data that can be used in the data analysis. Once the financial information was collected from the published audited financial statements and captured in MS Excel, MS Excel was used to manipulate the financial information by populating financial ratio's including and excluding fair value adjustments. The data were then cleaned and prepared to be merged with the

statistical package used, namely SPSS© (2013). Field (2009:436) defines data analysis as when descriptive statistics are performed that assist in identifying the direction of analysis to be performed. Pallant (2013:54) further highlights that descriptive statistics can assist in addressing research questions. The research question to be addressed is to identify the differences in the usefulness between financial statements including and excluding fair value adjustments.

Pallant (2013:55) illustrates how SPSS© (2013) can be used to create a codebook, which is a summary of the characteristics of the variables that can be obtained using frequencies, descriptive or explore procedures. Pallant (2013:34) suggests that in SPSS© (2013) the variables need to be assigned either names or value labels, which assist in capturing the data collected. The codebook created to assist in identifying and abbreviating the variables is illustrated in Table 4.1 and Table 4.2.

Table 4.1: Codebook identifying variables

Code	Explanation of the variable
In ROA	Return on assets including fair value adjustments
Ex ROA	Return on assets excluding fair value adjustments
In ROE	Return on equity including fair value adjustments
Ex ROE	Return on equity excluding fair value adjustments
In ROS	Return on sales including fair value adjustments
Ex ROS	Return on sales excluding fair value adjustments
In CR	Current ratio including fair value adjustments
Ex CR	Current ratio excluding fair value adjustments
In ATO	Asset turnover ratio including fair value adjustments
Ex ATO	Asset turnover ratio excluding fair value adjustments
In DR	Debt ratio including fair value adjustments
Ex DR	Debt ratio excluding fair value adjustments
In A:D	Asset debt ratio including fair value adjustments
Ex A:D	Asset debt ratio excluding fair value adjustments
In E:D	Equity debt ratio including fair value adjustments
Ex E:D	Equity debt ratio excluding fair value adjustments

Code	Explanation of the variable
In FL	Financial leverage including fair value adjustments
Ex FL	Financial leverage excluding fair value adjustments
In IC	Interest cover ratio including fair value adjustments
Ex IC	Interest cover ratio excluding fair value adjustments
In BEPS	Basic earnings per share including fair value adjustments
Ex BEPS	Basic earnings per share excluding fair value adjustments
In NCAVPS	Net current asset value per share including fair value adjustments
Ex NCAVPS	Net current asset value per share excluding fair value adjustments
In NTAVPS	Net tangible asset value per share including fair value adjustments
Ex NTAVPS	Net tangible asset value per share excluding fair value adjustments

Source: Pallant (2013:34) (Adapted)

The variables are identified in SPSS© (2013) by the codenames that were created as stipulated in Table 4.1. The companies selected for testing were codenamed as illustrated by Table 4.2.

Table 4.2: Codebook for companies

Code (Pallant, 2013:34) (Adapted)	Sector	Largest or smallest company per market capitalisation per industry	Market capitalisation on 2016/03/31 R'mil (McGregor, 2014)
C1	Consumer services	Smallest	3,3
C2	Consumer goods	Largest	2,9
C3	Health care	Largest	0,1
C4	Health care	Smallest	31,6
C5	Utilities	Largest	50,5
C6	Consumer goods	Smallest	2,5
C7	Telecommunications	Largest	249,5
C8	Technology	Largest	20 192,8
C9	Consumer services	Largest	902 492,5

Code (Pallant, 2013:34) (Adapted)	Sector	Largest or smallest company per market capitalisation per industry	Market capitalisation on 2016/03/31 R'mil (McGregor, 2014)
C10	Industrials	Largest	125 105,8

Names were given to the respective identified variables (calculated ratios and selected companies) in Table 4.1 and values were used for the companies in Table 4.2 that assists in translating data into SPSS© (2013) with the aim to obtain good quality data (Pallant, 2013:1).

For the purpose of performing the data analysis, the following statistical terms are explained: descriptive statistics, mean, standard deviation skewness, kurtosis, t-test, correlation, parametric, non-parametric tests and frequencies.

4.2.1 Descriptive statistics

Pallant (2013:57) explains that descriptive statistics pertain to the variables identified. For this study, as identified in Chapter 1 (Section 1.5.4.3), the dependent variables identified are the financial ratios including and excluding fair value adjustments, and the independent variables are the companies, which in turn assist in identifying the mean, standard deviation, minimum, maximum, range, skewness and kurtosis. Refer to Appendix A for reference to descriptive statistics obtained from SPSS© (2013) for C1 to C10 respectively.

4.2.2 Mean

Field (2009:22) defines the mean as a "*central tendency*" that is the average. Pallant (2013:6) proposes that when there are less than 10 values (there are only seven years included in the sample as explained in Chapter 3 Section 3.6.2), it is beneficial to calculate the mean inter-item correlation values range (the mean correlation between financial information including and excluding fair value adjustments). Pallant (2013:43) explains that if the mean identified makes sense either by considering if the mean falls within the maximum and minimum range and if it correlates to that of previous researchers (the ratios as identified

in Chapter 2 (Section 2.8) were calculated as stipulated in Chapter 2 (Section 2.8) the results can be considered as consistent and reasonable.

The mean per company for each financial ratio including and excluding fair value adjustments are shown in the Table 4.3.

Table 4.3: The mean per company for each financial ratio including and excluding fair value adjustments

		COMPANY									
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
Financial ratio	In ROA	0,045	0,074	0,102	0,136	-0,145	-0,031	0,129	0,090	0,074	0,075
	Ex ROA	0,044	0,067	0,103	0,133	-0,167	-0,183	0,124	0,090	0,074	0,075
	In ROE	0,406	0,226	0,185	0,229	-1,063	-0,312	0,247	0,204	0,132	0,194
	Ex ROE	0,410	0,212	0,195	0,228	-1,673	0,201	0,251	0,204	0,144	0,201
	In ROS	0,032	0,229	0,179	0,154	-2,124	-0,846	0,190	0,064	0,154	0,031
	Ex ROS	0,033	0,207	0,180	0,150	-2,682	-1,000	0,179	0,064	0,154	0,031
	In CR	5,130	0,751	1,498	1,973	0,141	0,829	0,978	1,312	2,840	1,135
	Ex CR	5,134	0,753	1,417	1,973	0,143	0,829	0,964	1,312	2,840	1,137
	In ATO	1,451	0,325	0,583	0,905	0,159	0,775	0,677	1,413	0,482	2,454
	Ex ATO	1,454	0,325	0,584	0,904	0,159	1,014	0,679	1,413	0,482	2,451
	In DR	0,165	0,646	0,473	0,389	0,763	1,356	0,527	0,552	0,391	0,600
	Ex DR	0,165	0,645	0,477	0,387	0,798	1,703	0,529	0,552	0,391	0,599
	In A:D	7,039	1,552	2,604	2,628	1,464	0,754	1,923	1,827	2,604	1,669
	Ex A:D	7,044	1,553	2,447	2,644	1,402	0,622	1,914	1,827	2,604	1,671
	In E:D	4,192	0,552	1,614	1,628	0,445	-0,246	1,017	0,827	1,526	0,669
	Ex E:D	2,331	0,515	1,501	1,558	0,394	-0,539	0,950	0,824	1,385	0,641
	In FL	1,001	0,419	0,565	0,657	1,055	0,197	-0,487	0,807	0,670	0,637

		COMPANY									
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
Financial ratio	In IC	-69,858	-1,589	-1,500	-8,790	17,091	-3,748	-1,258	-5,447	-5,643	-1,941
	Ex IC	-69,310	-4,703	-5,321	-19,913	14,698	29,816	-7,992	-20,385	-16,014	-7,678
	In BEPS	73,503	403,592	731,633	387,630	-1258,587	1263,267	224749,538	297,298	1584,129	1354,426
	Ex BEPS	73,830	357,420	739,113	377,641	-3,091	-130,480	229167,182	297,298	1584,677	1366,237
	In NCAVPS	1315,407	-3448,621	-1,912	501,821	-18052,077	-10285,559	-2443,461	0,074	-3,917	-0,919
	Ex NCAVPS	1316,704	-3447,379	0,617	507,534	2,368	-10285,559	862,494	0,074	-3916,902	-0,902
	In NTAVPS	1562,809	946,400	1,166	1308,014	24165,238	7141,597	6974,166	0,224	3,157	7,926
	Ex NTAVPS	1562,809	950,282	1,166	1308,014	-2,933	-130,480	1101,097	0,224	3156,656	7,926

Source: SPSS© (2013)

The identified means included in Table 4.3, for each observation both including and excluding fair value information were reasonable, since it were tested and identified that all of the observations fall within the relative maximum and minimum range identified in Section 4.3.4 illustrated in the minimum Table 4.5 and the maximum Table 4.6 that was derived from the frequency tables included in Appendix A. It was identified that all the means for all the financial ratios including and excluding fair value adjustments per company fall within the minimum and maximum range.

4.2.3 Standard deviation

Field (2009:335) defines standard deviation as the "*calculated indicator of the extent of deviation for a specific collection of data. The value is derived from the variations where the points are compared to a standard bell-shaped curve. It is the square root of the variance.*" Griffith (2007:335) explains that the standard deviation is an indicator of the extent a collection of data can deviate.

The standard deviation per company for each financial ratio including and excluding fair value adjustments are shown in the Table 4.4.

Table 4.4: The standard deviation per company for each financial ratio including and excluding fair value adjustments

		Company									
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Financial ratio	In ROA	0,062	0,022	0,060	0,063	0,308	0,317	0,037	0,005	0,025	0,008
	Ex ROA	0,063	0,015	0,062	0,063	0,310	0,160	0,040	0,005	0,025	0,010
	In ROE	0,816	0,051	0,043	0,100	2,245	1,132	0,043	0,030	0,041	0,025
	Ex ROE	0,824	0,046	0,026	0,104	3,514	0,098	0,054	0,029	0,059	0,033
	In ROS	0,039	0,075	0,024	0,071	3,126	1,761	0,040	0,004	0,053	0,003
	Ex ROS	0,041	0,048	0,021	0,071	3,777	1,618	0,039	0,004	0,053	0,004
	In CR	1,182	0,131	0,325	0,538	0,131	0,656	0,404	0,192	3,991	0,053
	Ex CR	1,178	0,131	0,253	0,538	0,123	0,656	0,402	0,192	3,991	0,056
	In ATO	0,378	0,013	0,388	0,171	0,143	0,636	0,125	0,143	0,009	0,232
	Ex ATO	0,380	0,013	0,389	0,170	0,143	0,776	0,124	0,143	0,009	0,233
	In DR	0,048	0,033	0,160	0,061	0,239	0,259	0,070	0,053	0,057	0,017
	Ex DR	0,049	0,033	0,151	0,062	0,256	0,495	0,070	0,053	0,057	0,017
	In A:D	3,994	0,076	1,781	0,414	0,611	0,131	0,218	0,182	0,395	0,045
	Ex A:D	4,040	0,076	1,376	0,424	0,585	0,180	0,217	0,182	0,395	0,045
	In E:D	1,093	0,076	1,817	0,414	0,269	0,131	0,105	0,182	0,267	0,045
	Ex E:D	0,913	0,072	1,728	0,430	0,230	0,388	0,154	0,177	0,191	0,094
	In FL	0,013	0,412	0,152	0,622	0,349	1,389	2,535	0,083	0,286	0,109

		Company									
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
Financial ratio	Ex FL	0,012	0,202	0,097	0,094	0,274	1,663	0,506	0,042	0,258	0,060
	In IC	91,165	1,604	0,690	6,508	38,164	97,669	2,044	3,585	6,498	0,747
	Ex IC	92,709	1,767	1,290	12,304	37,461	54,119	8,184	13,219	22,530	1,784
	In BEPS	94,997	278,985	292,081	139,836	4151,651	1760,942	381626,838	161,846	893,733	642,501
	Ex BEPS	99,706	212,026	306,978	141,425	4,709	965,838	389425,903	161,846	894,768	634,731
	In NCAVPS	311,047	1532,870	1,966	321,965	14274,084	1182,744	1544,578	0,150	2,842	0,462
	Ex NCAVPS	311,100	1532,707	1,165	327,049	1,070	1182,744	1442,126	0,150	2841,627	0,504
	In NTAVPS	2016,575	429,787	0,441	416,552	18904,328	2923,448	6924,139	0,170	1,494	1,852
	Ex NTAVPS	2016,575	432,490	0,441	416,552	4,561	965,838	275,662	0,170	1493,549	1,852

Source: SPSS© (2013)

4.2.4 Minimum, maximum and range

Pallant (2013:42) suggests that the maximum and minimum of the variables need to be analysed to see if it makes sense and whether it falls within the range. The minimum (min) and maximum (max) per company for each financial ratio including and excluding fair value adjustments are shown in the following tables, firstly the minimum in Table 4.5 and the maximum in Table 4.6.

Table 4.5: The minimum range per company for each financial ratio including and excluding fair value adjustments

		Company									
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
Financial ratio	In ROA	-0,038	0,050	0,059	0,036	-0,742	-0,349	0,075	0,083	0,043	0,060
	Ex ROA	-0,043	0,037	0,060	0,034	-0,767	-0,349	0,056	0,083	0,043	0,058
	In ROE	-0,085	0,163	0,152	0,066	-5,578	-1,597	0,161	0,154	0,073	0,152
	Ex ROE	-0,098	0,117	0,164	0,065	-8,776	0,128	0,163	0,155	0,073	0,167
	In ROS	-0,023	0,159	0,144	0,036	-6,539	-2,867	0,147	0,060	0,088	0,026
	Ex ROS	-0,029	0,115	0,148	0,034	-8,083	-2,867	0,118	0,060	0,089	0,025
	In CR	3,717	0,627	1,142	1,162	0,045	0,072	0,130	1,097	1,200	1,100
	Ex CR	3,739	0,627	1,116	1,162	0,042	0,072	0,117	1,097	1,200	1,107
	In ATO	0,606	0,305	0,358	0,669	0,017	0,122	0,469	1,163	0,465	2,268
	Ex ATO	0,602	0,305	0,358	0,669	0,017	0,122	0,473	1,163	0,465	2,274
	In DR	0,063	0,610	0,152	0,314	0,383	1,179	0,473	0,462	0,303	0,580
	Ex DR	0,062	0,609	0,182	0,313	0,400	1,235	0,473	0,462	0,303	0,581
	In A:D	5,021	1,418	1,538	2,121	1,000	0,605	1,480	1,572	2,144	1,591
	Ex A:D	5,007	1,418	1,530	2,119	0,900	0,450	1,473	1,572	2,144	1,590
	In E:D	2,127	0,418	0,538	1,121	0,133	-0,395	0,874	0,572	1,144	0,591
	Ex E:D	0,471	0,381	0,476	1,028	0,086	-0,956	0,669	0,569	1,126	0,544
	In FL	0,983	-0,203	0,295	-0,748	0,535	-1,407	-6,212	0,725	0,106	0,425

		Company									
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
Financial ratio	Ex FL	0,983	1,170	1,172	1,028	0,594	-1,407	1,040	1,024	0,389	1,114
	In IC	-150,897	-4,247	-2,315	-19,678	-3,598	-102,961	-5,279	-12,117	-16,918	-2,886
	Ex IC	-151,088	-6,896	-6,800	-36,965	-5,198	-2,268	-26,064	-42,825	-58,309	-9,756
	In BEPS	-60,857	5,051	374,560	117,235	-5923,015	-291,476	1108,615	120,718	770,393	141,264
	Ex BEPS	-74,688	4,839	383,773	110,001	-7,463	-1005,704	813,700	120,718	778,795	141,236
	In NCAVPS	854,441	-4340,510	-4,921	67,204	-36131,080	-11105,470	-5430,844	-0,092	-9,822	-1,656
	Ex NCAVPS	862,582	-4342,564	-1,423	64,922	0,634	-11105,470	-2306,141	-0,092	-9822,369	-1,691
	In NTAVPS	444,077	11,570	0,657	681,610	1,782	3765,893	3669,637	0,059	1,359	5,750
	Ex NTAVPS	444,077	11,793	0,657	681,610	-7,249	-1005,704	813,671	0,059	1359,121	5,750

Source: SPSS© (2013)

Table 4.6: The maximum range per company for each financial ratio including and excluding fair value adjustments

		Company									
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Financial ratio	In ROA	0,119	0,117	0,234	0,233	0,143	0,285	0,192	0,096	0,118	0,085
	Ex ROA	0,120	0,081	0,240	0,231	0,112	-0,030	0,189	0,096	0,118	0,087
	In ROE	2,231	0,328	0,275	0,351	0,452	0,535	0,293	0,248	0,192	0,219
	Ex ROE	2,251	0,264	0,246	0,364	0,453	0,313	0,313	0,249	0,262	0,249
	In ROS	0,076	0,382	0,209	0,266	1,291	0,352	0,257	0,071	0,241	0,036
	Ex ROS	0,077	0,266	0,209	0,264	1,031	-0,022	0,221	0,071	0,241	0,037
	In CR	7,332	1,011	1,946	2,773	0,367	1,217	1,338	1,655	11,889	1,254
	Ex CR	7,299	1,016	1,915	2,773	0,362	1,217	1,305	1,655	11,889	1,264
	In ATO	1,658	0,347	1,458	1,197	0,391	1,393	0,862	1,569	0,489	2,928
	Ex ATO	1,659	0,347	1,460	1,194	0,391	1,527	0,866	1,569	0,489	2,930
	In DR	0,199	0,705	0,650	0,471	1,000	1,653	0,676	0,636	0,466	0,629
	Ex DR	0,200	0,705	0,654	0,472	1,112	2,221	0,679	0,636	0,466	0,629
	In A:D	15,995	1,641	6,600	3,190	2,613	0,849	2,117	2,167	3,303	1,723
	Ex A:D	16,106	1,641	5,509	3,197	2,502	0,810	2,114	2,167	3,303	1,721
	In E:D	5,820	0,641	5,692	2,190	0,825	-0,152	1,119	1,167	1,821	0,723
	Ex E:D	3,398	0,592	5,377	2,155	0,617	-0,190	1,158	1,152	1,609	0,808
	In FL	1,012	0,809	0,698	0,952	1,467	1,010	0,841	0,924	0,944	0,743

		Company									
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
Financial ratio	Ex FL	1,011	1,676	1,424	1,295	1,250	1,789	2,517	1,124	1,130	1,289
	In IC	59,371	0,169	-0,418	0,428	94,689	92,300	0,861	-2,639	-0,119	-0,740
	Ex IC	67,107	-2,479	-3,359	-4,386	90,772	92,300	-1,659	-9,051	9,698	-4,460
	In BEPS	180,574	897,382	1139,791	572,296	5248,372	3175,539	791352,916	561,397	3474,688	2100,556
	Ex BEPS	182,866	623,021	1171,082	568,411	4,192	905,738	813294,200	561,397	3480,734	2020,631
	In NCAVPS	1672,790	-43,947	0,017	931,050	-5,503	-8929,722	-1162,344	0,378	-1,399	-0,405
	Ex NCAVPS	1663,376	-43,821	2,368	954,300	3,382	-8929,722	1957,180	0,378	-1398,942	-0,306
	In NTAVPS	6033,752	1302,307	1,735	1902,230	48662,120	8833,195	22624,579	0,461	5,014	10,620
	Ex NTAVPS	6033,752	1303,933	1,735	1902,230	4,191	905,738	1513,696	0,461	5013,524	10,620

Source: SPSS© (2013)

When identifying cleaning up data and checking for errors, Pallant (2013:40) explains that there are no errors if the mean falls within the minimum and maximum range. The mean identified in Table 4.3 is between the minimum and maximum range (Table 4.5 and Table 4.6, respectively) for each ratio identified. The minimum identifies the lowest observation and the maximum identifies the highest observation, which assists in understanding the data. By subtracting the values of the minimum from the maximum, assist in identifying the range, which can be used to identify the consistency of the data when comparing the range of the financial data including and excluding fair value adjustments. The range is illustrated in Table 4.7.

Table 4.7: The range per company for each financial ratio including and excluding fair value adjustments

		Company									
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Financial ratio	In ROA	0,157	0,066	0,175	0,197	0,885	0,634	0,117	0,013	0,075	0,025
	Ex ROA	0,163	0,044	0,179	0,196	0,879	0,319	0,134	0,013	0,075	0,030
	In ROE	2,316	0,165	0,123	0,285	6,029	2,132	0,132	0,095	0,118	0,067
	Ex ROE	2,349	0,147	0,082	0,299	9,229	0,185	0,149	0,094	0,189	0,081
	In ROS	0,099	0,224	0,065	0,230	7,830	3,219	0,110	0,011	0,153	0,010
	Ex ROS	0,106	0,150	0,061	0,231	9,114	2,846	0,103	0,011	0,152	0,011
	In CR	3,616	0,384	0,804	1,610	0,322	1,145	1,208	0,558	10,689	0,154
	Ex CR	3,561	0,389	0,799	1,610	0,320	1,145	1,188	0,558	10,689	0,157
	In ATO	1,052	0,042	1,100	0,528	0,374	1,272	0,393	0,406	0,024	0,660
	Ex ATO	1,057	0,043	1,103	0,525	0,374	1,406	0,393	0,406	0,024	0,656
	In DR	0,137	0,096	0,499	0,158	0,617	0,475	0,203	0,175	0,164	0,048
	Ex DR	0,138	0,096	0,472	0,159	0,712	0,986	0,206	0,175	0,164	0,048
	In A:D	10,974	0,223	5,062	1,069	1,613	0,244	0,637	0,595	1,158	0,132
	Ex A:D	11,099	0,223	3,979	1,079	1,602	0,359	0,641	0,595	1,159	0,131
	In E:D	3,693	0,223	5,154	1,069	0,692	0,244	0,245	0,595	0,676	0,132
	Ex E:D	2,927	0,211	4,902	1,127	0,530	0,766	0,488	0,584	0,483	0,264
	In FL	0,030	1,012	0,404	1,699	0,932	2,416	7,053	0,199	0,838	0,317
	Ex FL	0,029	0,507	0,252	0,268	0,656	3,196	1,477	0,100	0,741	0,175

		Company									
		C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**	**C8**	**C9**	**C10**
	In IC	210,268	4,415	1,897	20,106	98,287	195,262	6,141	9,479	16,799	2,146
	Ex IC	218,195	4,417	3,441	32,579	95,970	94,568	24,405	33,774	68,007	5,296
Financial ratio	In BEPS	241,431	892,331	765,231	455,061	11 171,387	3 467,015	790 244,301	440,679	2 704,295	1 959,292
	Ex BEPS	257,554	618,182	787,309	458,410	11,655	1 911,442	812 480,500	440,679	2 701,938	1 879,395
	In NCAVPS	818,349	4 296,564	4,939	863,846	36 125,576	2 175,748	4 268,500	0,470	8,424	1,251
	Ex NCAVPS	800,794	4 298,742	3,791	889,378	2,748	2 175,748	4 263,321	0,470	8 423,426	1,385
	In NTAVPS	5 589,676	1 290,737	1,078	1 220,620	48 660,338	5 067,302	18 954,942	0,401	3,654	4,870
	Ex NTAVPS	5 589,676	1 292,139	1,078	1 220,620	11,441	1 911,442	700,025	0,401	3 654,403	4,870

Source: SPSS© (2013)

The range (between the minimum and maximum) are consistent when comparing the financial information including and excluding fair value adjustments, except for IC (number of times interest is covered), BEPS (value in cents), NCAVPS (value in cents) and NTAVPS (value in cents) where the difference identified is greater than 10% as illustrated in Table 4.8.

Table 4.8: Difference identified between the data range of financial information including and excluding fair value adjustments

Financial ratio	Identified companies where the data range between financial information including and excluding fair value adjustments are greater than 10%
IC	C4; C6; C7; C8 and C9
BEPS	C2; C5 and C6
NCAVPS	C5 and C9
NTAVPS	C5; C6; C7 and C9

Source: SPSS© (2013)

Pallant (2013:49) identifies one purpose for the range (relevant to this study) is to assist in determining if there are any errors in the data collected. No errors were identified. The means (data) fall within the range (minimum and maximum values) per financial ratio for both financial information including and excluding fair value adjustments in Table 4.8 only indicates that the range varies (increased or decreased) by more than 10% between financial information including and excluding fair value adjustments.

4.2.5 Skewness

Pallant (2013:57) explains that the skewness is an indication of the symmetry of distribution. Pallant (2013:52) distinguishes between a positive and a negative skewness value, where a positive skewness value indicates that the values are clustered to the left of the low values and a negative skewness value indicates that the values are clustered to the right of the high values. The skewness per company for each financial ratio including and excluding fair value adjustments is shown in the following Table 4.9.

Table 4.9: The skewness including the statistic and standard (std.) error

		Company									
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
		Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Financial ratio	ln ROA	-0,449	1,174	2,243	-0,111	-1,881	-0,018	0,402	-0,297	0,601	-0,991
	Ex ROA	-0,501	-1,684	1,964	-0,305	-1,886	-0,361	-0,122	-0,286	0,613	-0,960
	ln ROE	2,494	1,344	-0,145	-0,160	-2,285	-1,484	-1,470	0,940	0,106	-0,250
	Ex ROE	2,479	-1,727	0,687	0,127	-2,344	1,485	-0,650	0,780	1,410	2,509
	ln ROS	-0,845	1,571	2,570	0,492	-0,602	-1,645	0,592	-1,114	0,451	1,705
	Ex ROS	-0,864	-1,138	-1,433	0,078	-0,759	-1,726	-0,526	-0,192	0,463	0,922
	ln CR	0,933	1,493	2,528	0,209	1,345	-1,731	-1,932	0,830	2,643	-0,836
	Ex CR	0,865	1,535	2,529	0,209	1,451	-1,731	-1,957	0,830	2,643	-0,836
	ln ATO	-2,512	0,316	-1,291	-2,609	0,752	-0,248	-0,393	0,460	-1,430	-1,354
	Ex ATO	-2,535	0,332	0,806	-0,409	0,759	-1,674	-0,336	-1,216	-1,429	0,389
	ln DR	-2,052	0,996	0,517	-1,117	-0,684	1,640	2,012	0,688	0,008	-1,185
	Ex DR	-2,060	1,013	-1,022	-0,183	-0,458	0,449	1,987	1,588	0,008	-0,675
	ln A:D	2,528	-0,818	0,283	-0,255	1,706	-1,562	-1,626	0,839	0,652	0,320
	Ex A:D	2,532	-0,834	2,313	-0,051	1,686	0,413	-1,595	-0,297	0,652	-0,989
	ln E:D	-0,791	-0,818	1,350	-0,122	0,241	-1,562	-0,311	-0,217	-0,751	0,355
	Ex E:D	-1,543	-1,073	-0,098	-0,069	-0,469	-0,773	-0,748	0,940	-0,381	-0,219
	ln FL	-1,120	-0,912	1,293	0,127	-0,508	-1,732	-2,601	0,780	-1,389	2,536
	Ex FL	-1,160	0,927	2,569	0,471	0,194	-1,292	2,495	-1,114	-2,244	1,757

		Company									
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
		Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Financial ratios	In IC	0,923	-0,559	-1,236	0,126	2,406	-0,146	-1,523	-0,192	-1,207	1,037
	Ex IC	0,976	0,112	2,439	0,137	2,393	1,730	-2,359	0,830	-1,164	-0,946
	In BEPS	-0,852	0,606	2,526	0,253	0,442	0,876	1,230	0,758	1,913	0,915
	Ex BEPS	-0,876	-0,557	1,228	2,051	0,712	0,729	1,232	-0,046	1,930	1,957
	In NCAVPS	-0,449	2,427	0,741	-0,266	-0,406	1,620	-1,549	-0,896	-1,873	0,883
	Ex NCAVPS	-0,465	2,424	0,634	-0,974	-1,005	1,620	-2,302	0,688	-1,873	-1,413
	In NTAVPS	2,423	-2,189	-0,427	-0,142	0,053	-1,732	2,609	1,588	0,299	-0,659
	Ex NTAVPS	2,423	-2,166	0,283	-0,255	0,741	0,729	0,530	0,839	0,299	0,320

Source: SPSS© (2013)

The skewness standard error is identified by Field (2009:43) as the standard deviation of the means, the larger the standard error the larger the variability of the mean that is representable of the population. The skewness statistics indicate that 101 of the 152 statistics in Table 4.9 are negative that suggest that the negative skewness values indicate that the values are clustered to the right of the high values.

4.2.6 Kurtosis

Field (2009:19) and Pallant (2013:51) explain that kurtosis provides information of the peakedness of the distribution. Field (2009:19) and Pallant (2013:52) differentiate between a positive and a negative kurtosis value, where the positive kurtosis indicates that the values are clustered in the centre and the negative kurtosis value are distributed and relatively flat. The kurtosis per company for each financial ratio including and excluding fair value adjustments is set out in Table 4.10.

Table 4.10: The Kurtosis including statistic (stat.) and standard (std.) error

		Company								
		C1	C2	C3	C4	C5	C7	C8	C9	C10
Financial ratio	In ROA	-1,385	2,270	5,453	0,559	4,192	0,928	-0,268	0,093	0,987
	Ex ROA	-1,211	2,998	5,705	0,436	4,133	2,104	-0,268	0,070	0,776
	In ROE	6,413	3,122	4,209	-0,106	5,396	2,635	0,941	-0,850	-0,431
	Ex ROE	6,354	3,992	3,054	-0,348	5,600	-0,597	1,233	3,018	-1,837
	In ROS	-0,969	3,251	-0,899	1,248	-1,516	-0,623	-0,740	-0,512	-0,821
	Ex ROS	-0,978	1,850	-0,446	1,083	-1,559	-1,063	-0,740	-0,538	-1,329
	In CR	1,529	2,570	-1,233	-0,194	0,476	4,050	0,552	6,988	6,477
	Ex CR	1,233	2,726	2,619	-0,195	1,412	4,105	0,552	6,988	6,547
	In ATO	6,445	1,723	6,704	0,516	-0,062	0,677	0,222	0,815	3,130
	Ex ATO	6,543	1,709	6,702	0,478	-0,069	0,755	0,222	0,814	3,286
	In DR	4,256	0,797	3,027	-1,755	-0,308	4,550	1,539	-0,336	0,258
	Ex DR	4,292	0,868	2,493	-1,838	-0,161	4,447	1,539	-0,335	0,737
	In A:D	6,486	0,332	6,540	-1,743	2,974	3,193	2,101	0,736	0,104
	Ex A:D	6,504	0,397	6,204	-1,917	3,081	3,063	2,101	0,736	0,517
	In E:D	2,856	0,332	6,546	-1,743	-1,439	-2,208	2,101	-1,042	0,104
	Ex E:D	3,564	1,187	6,523	-1,646	-2,139	1,461	2,143	-1,713	0,166
	In FL	-0,902	-1,101	0,200	6,848	-0,954	6,827	-2,205	2,414	1,871
	Ex FL	-0,804	-0,868	-0,096	4,504	-2,005	6,436	-2,233	5,269	4,193
	In IC	-1,101	-0,423	-0,639	0,428	5,839	2,258	0,744	-0,121	-0,528

		Company								
		C1	**C2**	**C3**	**C4**	**C5**	**C7**	**C8**	**C9**	**C10**
Financial ratio	Ex IC	-1,016	-1,857	-0,917	-1,496	5,789	5,899	-0,622	1,431	0,724
	In BEPS	-0,925	1,227	-1,197	2,579	-0,150	-0,836	-0,749	4,452	1,584
	Ex BEPS	-0,925	-0,155	-1,179	2,178	-1,041	-0,828	-0,749	4,504	1,812
	In NCAVPS	-1,137	6,099	-0,874	-1,671	-1,358	1,657	3,149	3,683	-1,048
	Ex NCAVPS	-1,266	6,089	1,442	-1,568	-0,320	5,712	3,149	3,683	-0,950
	In NTAVPS	5,993	5,368	-2,318	-0,600	-1,422	6,851	-1,168	-1,939	-1,391
	Ex NTAVPS	5,993	5,282	-2,318	-0,600	-0,881	-1,212	-1,168	-1,939	-1,391

Source: SPSS© (2013)

Similarly to skewness, The kurtosis standard error is identified by Field (2009:43) as the standard deviation of the means, the larger the standard error the larger the variability of the mean that is representable of the population. The kurtosis indicates that 62 of the 260 kurtosis statistics in Table 4.10 are negative that indicates that the majority are positive kurtosis values that indicate that the values are clustered in the centre.

4.2.7 T-test

Pallant (2013:205) explains that the t-tests are used to compare the means of the identified variables and distinguishes between independent (comparison of two different groups) and variable (comparison of the same group for two different instances) sample t-tests. In the Table 4.11 Field (2009:325) distinguishes between independent and dependent means t-tests.

Table 4.11: Independent and dependent means t-tests

T-test	Explanation
Independent-means t-test	This test is used when there are different participants and conditions, also referred to as "*independent-measures or independent-samples t-test*".
Dependent-means t-test	This test is used when there are the same participants tested under different conditions, also referred to as "*matched-pairs or paired-samples t-test*".

Source: Field (2009:325)

Table 4.11 assists in identifying the appropriate means t-test required for this study. The mean of identified financial ratios was compared to each other (including and excluding fair value adjustments) for each company selected. The data obtained from the companies (participants) were used under different conditions (including and excluding fair value adjustments) thus the Dependent means t-test (paired-samples t-tests) was used. Pallant (2013:206) further proposes that the t-test assists in identifying if there are any statistical significant differences between the two groups. Pallant (2013:209) illustrates that paired t-tests are used when data are collected from the same group of companies and are expressed under two different conditions (pre- and post-test experimental design). The statistical significant differences are identified in Section 4.2.8 and

investigated in Section 4.4 where the correlation between the variables including and excluding fair value adjustments are identified. Pallant (2013:198) proposes that the purpose of a t-test is to identify variances that are significant to the study.

4.2.8 Correlation

Field (2009:167) and Pallant (2013:6) reason that the correlation between two scores or variables ranges from zero to one, where the highest value is an indication of increased reliability. Field (2009:167) explains the three types of correlation, namely: none; positive; and negative correlation. The examples and meaning of each type of correlation are outlined in Table 4.12.

Table 4.12: The different types of correlation

Correlation	Example	Meaning
None	The difference between the financial ratios including and excluding fair value adjustments has no influence on the result of the financial ratio	There is no effect on the relationship between the two variables.
Positive	The impact on the financial ratios including and excluding fair value adjustments has the same result on the financial ratio.	There is a similar effect on the relationship between the two variables.
Negative	The impact on the financial ratios including and excluding fair value adjustments has a contrary result on the financial ratio.	There is an inverse effect on the relationship between the two variables.

Source: Field (2009:167) (Adapted)

The conclusion can be drawn from Table 4.12 that the different types of correlation assist in identifying the correlations made between the financial information including and excluding fair value adjustments, which assists in identifying instances (negative correlations) where fair value adjustments have an impact on the financial ratios and could have an impact on the usefulness of financial information.

Pallant (2013:121) explains that correlation analysis identifies the relating strength between two variables. The two variables identified for each of the financial ratios identified in Chapter 2 are financial information including and excluding fair value adjustments. Each of the selected companies that were included in the sample are analysed according to the correlation analysis. Pallant (2013:127) points out that a low sample selection has a statistical significant difference within the large correlation relationship category (statistical insignificant difference within the small and medium correlation relationship categories), and a high sample selection has a statistical significant difference within the large and medium correlation relationship categories (statistical insignificant difference within the small correlation relationship category). Pallant (2013:126) stated that a "*zero*" correlation indicate that no relationship exists and "*one*" signifies a correlation. Pallant (2013:126) further proposes the guidelines in Table 4.13 where the intervals of the correlation relationship categories are summarised.

Table 4.13: Guidelines when interpreting the correlations

	Correlation interval	**Correlation relationship categories**
Intervals of correlation	r=0,10 to 0,29 or r=–0,10 to –0,29	Small (weak correlation) The relationship between the variables are **weak**. A **positive correlation** (r=0,10 to 0,29) indicates a similar weak relationship (variables acting in a similar manner). A **negative correlation** (r=–0,10 to –0,29) indicates an inverse weak relationship (variables reacting in an opposite manner).
	r=0,30 to 0,49 or r=–0,30 to –0,49	Medium (medium correlation) The relationship between the variables are **medium/moderate**. A **positive correlation** (r=0,30 to 0,49) indicates a similar moderate relationship (variables acting in a similar manner). A **negative correlation** (r=–0,30 to –0,49) indicates an inverse moderate relationship (variables act in an opposite manner).

	Correlation interval	Correlation relationship categories
	r=0,50 to 1,00 or r=–0,50 to –1,00	Large (strong correlation) The relationship between the variables are **strong**. A **positive correlation** (r=0,50 to 1,00) indicates a similar strong relationship (variables act in a similar manner). A **negative correlation** (r=–0,50 to –1,00) indicates an inverse strong relationship (variables act in an opposite manner).

Source: Pallant (2013:126) (adapted)

It can be concluded from Table 4.13 that the guidelines when interpreting the correlations are split into three correlation relationship categories when identifying if a statistical insignificant difference exists between the relationship of the two variables that are dependent on whether the sample size is low (small) or high (large), namely: small (a weak correlation), medium (a medium correlation) and large (a strong correlation) correlation relationship categories. Table 4.13 was further applied to the study as illustrated in Table 4.14. All significant negative correlations were identified as this indicates a significant difference between the ratios including and excluding fair value adjustments. Pallant (2013:126) argues that a zero indicates that no relationship exists and the positive and negative values indicate the strength of the relationship, except for the direction of the reaction. Table 4.14 assists in identifying which category is considered.

Table 4.14: Guidelines when interpreting the correlations for this study

	Correlation relationship categories	Correlation interval	Sample size obtaining strong correlation
Intervals of correlation	Small	Positive correlation: r=0,10 to 0,29 Negative correlation: r=–0,10 to –0,29	None
	Medium	Positive correlation: r=0,30 to 0,49 Negative correlation: r=–0,30 to –0,49	High sample size
	Large	Positive correlation: r=0,50 to 1,0 Negative correlation: r=–0,50 to –1,0	High and Low sample size

Source: Pallant (2013:126) (adapted)

The sample size is low which indicates that the large negative correlations (identified opposite effect on financial ratios that has a statistical significant relationship between the two variables) are identified in Section 4.4 in Table 4.30 (where negative correlations are identified) and Table 4.31 (where statistical significant negative correlations are identified). As illustrated in Table 4.14, when analysing the results of the correlation of the data including and excluding fair value adjustments, the aim is to identify instances where fair value adjustments influence the results of the financial ratios with the aim to identify strong inverse (negative) correlations that indicate that the fair value adjustment impact the result of the financial ratio. This then has an impact on the usefulness of financial statements. For the purpose of this study, the strongest negative relationship as per the guidelines used when interpreting the correlations are r=–0,50 to –1,0. The result thereof is one of three: no correlation, positive correlation or negative correlation. The negative correlations identify an increased inverse relationship between the two variables. Pallant (2013:297) and Field (2009:180) explain that the procedure and output of the Spearman correlation is similar to the Pearson correlation. Pallant (2013:298) state that the Spearman correlation can be interpreted in the same manner as the Pearson correlation.

Once the correlation has been determined, the significant value of the correlation can be determined. Field (2009:180) explains Spearman's correlation coefficient as a non-parametric statistic and that the significant value should be less than 0,05 in order for there to be a significant relationship. Pallant (2013:127) suggests that the correlation between two variables is significant when the significance level is less than 0,05. This study aims to identify significant statistical negative correlation relationships (identifying differences between financial information including and excluding fair value adjustments), therefore the negative correlation values that is less than 0,05 identify instances where the usefulness of financial information is influenced.

This study focus on both the correlation and the significance value of the relationship between the variables. The type of correlation used to test the

relationship between the variables is dependent on whether parametric or non-parametric tests are used.

4.2.9 Parametric and non-parametric tests

Pallant (2013:286) explains that the term parametric is derived from the term parameter or a characteristic of a population. Pallant (2013:199) argues that parametric tests have criteria that need to be adhered to before applying this method of analysis, for instance the sample size would have to be a large size, for instance greater than 100. This study only has a sample size of 10 as identified in Chapter 3 (Section 3.6.2). Field (2009:540) explains that non-parametric tests are known as assumption free tests as there are fewer assumptions made on the type of data that can be used. Pallant (2013:287) further proposes that the assumption for non-parametric tests include that each observation is independent and does not influence the other data, where the same data are tested under different conditions. A non-parametric approach is adopted and in addition, another technique applied is the Wilcoxon approach (Section 4.2.11), where the same financial data are used and the financial information including and excluding fair value adjustments are compared to each other.

4.2.10 Frequencies

Pallant (2013:41) explains that frequencies can be used to identify errors. Frequencies are required in order to perform descriptive statistics. Field (2009:96) proposes that the data can be divided per variable identified. The data are divided into variables per company (if there are no published audited financial statements, it will not only impact one variable/financial statement ratio but all the variables/financial statement ratios for that company). Field (2009:8) explains that frequencies are like keeping score, identifying when each variable has the opportunity to score, and in this instance, to be observed, in this study, the number of observations made for the identified financial statement ratios. A simple histogram is used to illustrate the frequencies of the observations made per financial ratio identified for each company. This is normally used when identifying one variable (Field, 2009:94) since all variables per company are

dependent on the availability of published audited financial statements. The frequency in this study was determined by the number of observations made for each company. The frequency for all variables per company is the same for each company. Figure 4.1 illustrates the frequencies per company using a simple histogram.

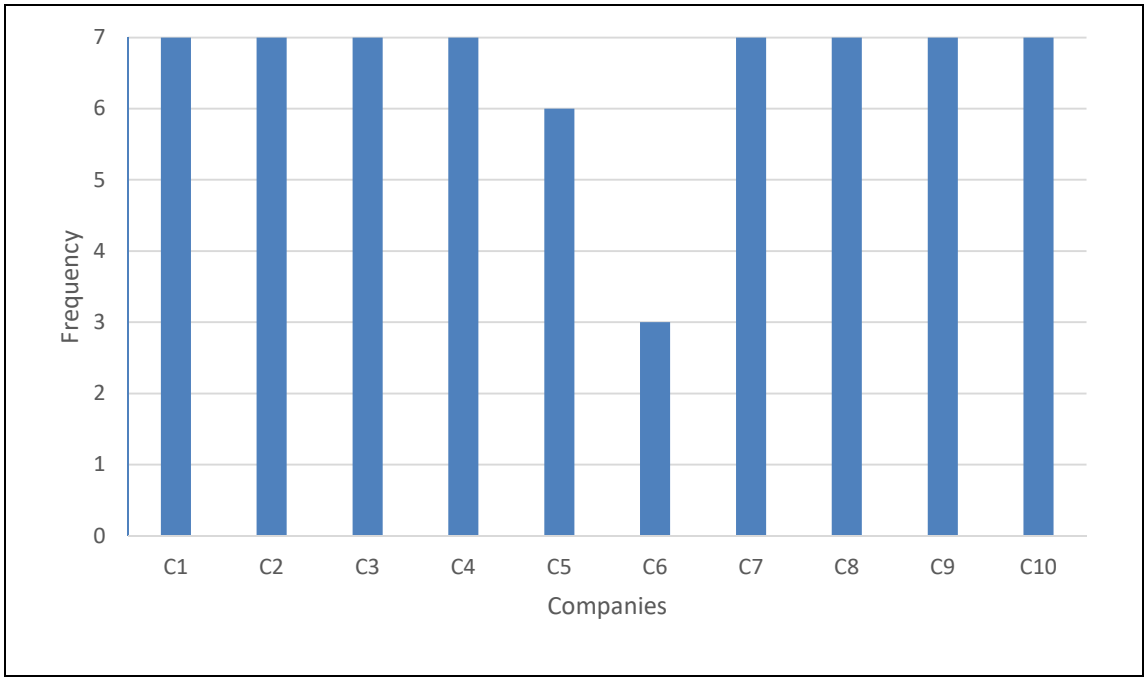


Figure 4.1: Frequencies of observations made per company (years observed)

Source: Field (2009:94) (Adapted)

The variables are consistent for each company individually. For instances where financial data were not obtained as a result of no published audited financial statements being available, that missing period was not taken into account and all other financial periods where the published audited financial statements were available was taken into account. The frequencies for C5 and C6 are less because of the reduced number of observations made, the reasons were explained in Table 3.2 where no published audited financial statements could be obtained.

4.2.11 Wilcoxon signed-rank test

Pallant (2013:286) explains that one of the paired-samples tests included in the non-parametric techniques is Wilcoxon signed-rank test (where the same data are retested under different conditions). Field (2009:552) explains that the Wilcoxon signed-rank test compares two related conditions from the same participants. The Wilcoxon signed-rank test is used for repeated measures, where the data collected are measured under two different conditions. The financial information collected is measured, firstly including and secondly excluding fair value adjustments. The identified financial ratios (paired per financial ratio, inclusive and exclusive of fair value adjustments) are tested for significant differences for a period of seven years (as identified in Section 3.7.1 in Table 3.1, only five years and six months were observed for C5 and three years and six months was observed for C6). Pallant (2013:294) states that the two products as a result of applying the Wilcoxon signed-rank test include the Z-value and the significant (2-tailed) level. Pallant (2013:294) and Field (2009:562) explain that a significant level can be assumed if the result is equal to or less than 0,05, and if greater, there is no statistical significant difference. Pallant (2013:198) and Field (2009:562) explain that the consistency (homogeneity) of the correlation is violated when the correlation is less than 0,01.

4.3 IDENTIFYING THE DIFFERENCES BETWEEN THE FINANCIAL STATEMENTS INCLUDING AND EXCLUDING FAIR VALUE USING THE WILCOXON SIGNED-RANK TEST (PAIRED-SAMPLES T-TEST)

The results as per the Wilcoxon signed-rank test decision was accepted if the median of the differences between the inclusive and exclusive fair value financial information was the same (equal to zero). The Wilcoxon signed-rank test decision was rejected if the difference identified is equal to or less than 0,05 that implies that it is statistical significant, unless the correlation has been violated as explained in Section 4.2.11 of this chapter. The data were obtained from SPSS© (2013) and included in Appendix A are the frequencies obtained

for C1 to C10. The results of the significant statistical differences and the correlation were identified and is discussed per financial ratio.

4.3.1 Return on assets (ROA)

The ROA ratio is a profitability ratio as identified in Chapter 2, which expresses the return on assets employed.

Table 4.15 summarises the significant statistical differences identified.

Table 4.15: Wilcoxon signed-rank test decision for ROA

Company	ROA		
	Median		Wilcoxon signed-rank test
	In ROA	Ex ROA	Significance
C1	0,067	0,065	0,735
C2	0,073	0,070	0,128
C3	0,089	0,089	0,398
C4	0,136	0,132	0,018
C5	-0,092	-0,114	0,028
C6	-0,030	-0,170	0,317
C7	0,132	0,129	0,310
C8	0,090	0,090	1,000
C9	0,069	0,069	1,000
C10	0,076	0,079	0,499

Source: SPSS© (2013)

It was identified that 20% of the selected sample (2 out of the 10 companies) had a significant statistical difference between the ROA ratios including and excluding fair value adjustments. The results of C4 (0,018) and C5 (0,028) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11) and it can be concluded that C4 and C5's ROA ratios (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the ROA including and excluding fair value adjustments.

4.3.2 Return on equity

The ROE ratio is a profitability ratio as identified in Chapter 2, which expresses the return on equity employed. The following Table 4.16 summarises the significant statistical differences identified.

Table 4.16: Wilcoxon signed-rank test decision for ROE

Company	ROE		
	Median		Wilcoxon signed-rank test
	In ROE	Ex ROE	Significance
C1	0,156	0,152	0,612
C2	0,226	0,224	0,128
C3	0,173	0,191	0,398
C4	0,221	0,213	0,237
C5	-0,315	-0,381	0,046
C6	0,128	0,163	0,655
C7	0,266	0,257	0,735
C8	0,205	0,205	0,237
C9	0,126	0,129	0,31
C10	0,206	0,192	0,499

Source: SPSS© (2013)

It was identified that 10% of the selected sample (1 out of the 10 companies) had a significant statistical difference between the ROE ratios including and excluding fair value adjustments. It was evident from the results that C5's (0,046) is below 0,05 but not less than 0,01 (as identified in Section 14.2.11) and it can be concluded that C5's ROE ratios (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on the decision-making when calculating the ROE including and excluding fair value adjustments.

4.3.3 Return on sales

The ROS ratio is a profitability ratio as identified in Chapter 2, which expresses the ROS made for the period. The following Table 4.17 summarises the significant statistical differences identified.

Table 4.17: Wilcoxon signed-rank test decision for ROS

Company	ROS		
	Median		Wilcoxon signed-rank test
	In ROS	Ex ROS	Significance
C1	0,044	0,042	0,866
C2	0,226	0,217	0,128
C3	0,182	0,179	0,499
C4	0,156	0,152	0,018
C5	-1,167	-1,251	0,028
C6	-0,022	-0,111	0,317
C7	0,195	0,195	0,310
C8	0,061	0,061	1,000
C9	0,141	0,141	1,000
C10	0,031	0,031	0,499

Source: SPSS© (2013)

It was identified that 20% of the selected sample (2 out of the 10 companies) had a significant statistical difference between the ROS ratios including and excluding fair value adjustments. From Table 4.17, it was evident that the results of C4 (0,018) and C5 (0,028) is below 0,05 but not less than 0,01 (as identified in Section 14.2.11) and it can be concluded that C4 and C5 ROS ratios (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on the decision-making when calculating the ROS including and excluding fair value adjustments.

4.3.4 Current ratio

The CR is a liquidity ratio as identified in Chapter 2, which expresses the ability for the company to pay debt. The following Table 4.18 summarises the significant statistical differences identified.

Table 4.18: Wilcoxon signed-rank test decision for the current ratio

Company	CR		
	Median		Wilcoxon signed-rank test
	In CR	Ex CR	Significance
C1	5,176	5,264	0,866
C2	0,729	0,732	0,144
C3	1,425	1,412	0,176
C4	1,893	1,893	0,109
C5	0,072	0,088	0,463
C6	1,199	1,199	1,000
C7	1,107	1,103	0,018
C8	1,307	1,307	1,000
C9	1,358	1,358	1,000
C10	1,118	1,115	0,398

Source: SPSS© (2013)

It was identified that 10% of the selected sample (1 out of the 10 companies) had a significant statistical difference between the CR including and excluding fair value adjustments. From Table 4.18 it was evident from the significance value of C7 (0,018) is below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C7's CR ratios (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the CR including and excluding fair value adjustments.

4.3.5 Asset turnover ratio

The ATO ratio is a financial ratio as identified in Chapter 2, which expresses the efficient use of the company's assets. The following Table 4.19 summarises the significant statistical differences identified.

Table 4.19: Wilcoxon signed-rank test decision for the asset turnover ratio

Company	ATO		
	Median		Wilcoxon signed-rank test
	In ATO	Ex ATO	Significance
C1	1,578	1,582	0,612
C2	0,324	0,324	0,144
C3	0,462	0,466	0,043
C4	0,871	0,869	0,866
C5	0,143	0,142	0,18
C6	0,810	1,393	0,317
C7	0,692	0,693	0,043
C8	1,471	1,471	1,000
C9	0,486	0,486	0,655
C10	2,389	2,381	0,398

Source: SPSS© (2013)

It was identified that 20% of the selected sample (2 out of the 10 companies) had a significant statistical difference between the ATO ratios including and excluding fair value adjustments. From Table 4.19 it was evident that the results of C3 (0,043) and C7 (0,043) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C3 and C7 ATO ratios (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the ATO including and excluding fair value adjustments.

4.3.6 Debt ratio

The DR is a financial ratio as identified in Chapter 2, which expresses the percentage of assets financed through debt. The following Table 4.20 summarises the significant statistical differences identified.

Table 4.20: Wilcoxon signed-rank test decision for the debt ratio

Company	DR		
	Median		Wilcoxon signed-rank test
	In DR	Ex DR	Significance
C1	0,184	0,187	0,612
C2	0,635	0,635	0,144
C3	0,498	0,495	0,31
C4	0,384	0,383	0,063
C5	0,791	0,807	0,028
C6	1,235	1,653	0,317
C7	0,516	0,521	0,018
C8	0,550	0,550	1,000
C9	0,385	0,385	0,655
C10	0,596	0,594	0,398

Source: SPSS© (2013)

It was identified that 20% of the selected sample (2 out of the 10 companies) had a significant statistical difference between the DR including and excluding fair value adjustments. From Table 4.20 it was evident that the results of C5 (0,028) and C7 (0,018) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C5 and C7 DR (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the DR including and excluding fair value adjustments.

4.3.7 Asset debt ratio

The A:D ratio is a debt management ratio as identified in Chapter 2, which compares the total debt to the total assets. The following Table 4.21 summarises the significant statistical differences identified.

Table 4.21: Wilcoxon signed-rank test decision for the asset debt ratio

Company	A:D		
	Median		Wilcoxon signed-rank test
	In A:D	Ex A:D	Significance
C1	5,423	5,360	0,866
C2	1,575	1,575	0,144
C3	2,008	2,021	0,499
C4	2,602	2,610	0,063
C5	1,268	1,242	0,028
C6	0,810	0,605	0,317
C7	1,937	1,920	0,018
C8	1,818	1,818	1,000
C9	2,596	2,596	0,655
C10	1,679	1,684	0,398

Source: SPSS© (2013)

It was identified that 20% of the selected sample (2 out of the 10 companies) had a significant statistical difference between the A:D ratios including and excluding fair value adjustments. From Table 4.21 it was evident that the results of C5 (0,028) and C7 (0,018) is below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C5 and C7 A:D ratios (including and excluding fair value adjustments) is statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the A:D including and excluding fair value adjustments.

4.3.8 Equity debt ratio

The E:D ratio is a debt management ratio as identified in Chapter 2, which expresses the ratio between equity and debt employed. The following Table 4.22 summarises the significant statistical differences identified.

Table 4.22: Wilcoxon signed-rank test decision for the equity debt ratio

Company	E:D		
	Median		Wilcoxon signed-rank test
	In E:D	Ex E:D	Significance
C1	4,180	2,365	0,018
C2	0,575	0,521	0,018
C3	1,008	0,986	0,063
C4	1,602	1,521	0,018
C5	0,440	0,458	0,116
C6	-0,190	-0,470	0,180
C7	1,045	0,976	0,310
C8	0,818	0,816	0,176
C9	1,596	1,431	0,063
C10	0,679	0,607	0,398

Source: SPSS© (2013)

It was identified that 30% of the selected sample (3 out of the 10 companies) had a significant statistical difference between the equity debt ratios including and excluding fair value adjustments. From Table 4.22 it was evident that the results of C1 (0,018), C2 (0,018) and C4 (0,018) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C1, C2 and C4 equity debt ratios (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the E:D including and excluding fair value adjustments.

4.3.9 Financial leverage

The FL ratio is a debt management ratio as identified in Chapter 2, which expresses the extent to which debt is used. The following Table 4.23 summarises the significant statistical differences identified.

Table 4.23: Wilcoxon signed-rank test decision for the financial leverage

Company	FL		
	Median		Wilcoxon signed-rank test
	In FL	Ex FL	Significance
C1	1,007	1,007	0,735
C2	0,638	1,248	0,018
C3	0,632	1,216	0,018
C4	0,896	1,055	0,018
C5	1,135	0,875	0,463
C6	0,989	0,989	0,317
C7	0,310	1,241	0,018
C8	0,758	1,081	0,018
C9	0,660	1,033	0,091
C10	0,682	1,147	0,018

Source: SPSS© (2013)

It was identified that 60% of the selected sample (6 out of the 10 companies) had a significant statistical difference between the FL ratios including and excluding fair value adjustments. From Table 4.23 it was evident that the results of C2 (0,018), C3 (0,018), C4 (0,018), C7 (0,018), C8 (0,018) and C10 (0,018) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C2, C3, C4, C7, C8 and C10 FL (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the FL including and excluding fair value adjustments.

4.3.10 Interest cover

The IC ratio is a debt management ratio as identified in Chapter 2, which expresses the number of times the earnings before interest and tax will cover Tax. The following Table 4.24 summarises the significant statistical differences identified.

Table 4.24: Wilcoxon signed-rank test decision for the interest cover

Company	IC		
	Median		Wilcoxon signed-rank test
	In IC	Ex IC	Significance
C1	-100,097	-98,038	0,735
C2	-1,764	-5,037	0,018
C3	-1,714	-5,637	0,018
C4	-8,627	-19,285	0,018
C5	3,869	2,216	0,028
C6	-0,584	-0,584	0,317
C7	-0,449	-5,150	0,018
C8	-3,127	-13,401	0,018
C9	-1,942	-11,298	0,237
C10	-2,146	-7,789	0,018

Source: SPSS© (2013)

It was identified that 70% of the selected sample (7 out of the 10 companies) had a significant statistical difference between the IC ratios including and excluding fair value adjustments. From Table 4.24 it was identified that the results of C2 (0,018), C3 (0,018), C4 (0,018), C5 (0,018), C7 (0,018), C8 (0,018) and C10 (0,018) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C2, C3, C4, C5, C7, C8 and C10 IC (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the IC including and excluding fair value adjustments.

4.3.11 Basic earnings per share

The BEPS ratio is a capital market related ratio as identified in Chapter 2, which expresses the BEPS held the following Table 4.25 summarises the significant statistical differences identified.

Table 4.25: Wilcoxon signed-rank test decision for the basic earnings per share

Company	BEPS		
	Median		Wilcoxon signed-rank test
	In BEPS	Ex BEPS	Significance
C1	103,807	100,505	1,000
C2	367,085	360,854	0,128
C3	645,836	641,065	0,612
C4	417,802	405,378	0,018
C5	-875,783	-4,417	0,463
C6	905,738	-291,476	0,317
C7	1434,418	1407,169	0,866
C8	254,921	254,921	0,317
C9	1455,663	1449,283	0,715
C10	1497,633	1562,936	0,866

Source: SPSS© (2013)

It was identified that 10% of the selected sample (1 out of the 10 companies) had a significant statistical difference between the BEPS ratios including and excluding fair value adjustments. From Table 4.25 it was evident that the results of C4 (0,018) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C4 BEPS (including and excluding fair value adjustments) is statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the BEPS including and excluding fair value adjustments.

4.3.12 Net current asset value per share

The NCAVPS ratio is a capital market related ratio as identified in Chapter 2, which expresses the NCAVPS held. The following Table 4.26 summarises the significant statistical differences identified.

Table 4.26: Wilcoxon signed-rank test decision for the net current asset value per share

Company	NCAVPS		
	Median		Wilcoxon signed-rank test
	In NCAVPS	Ex NCAVPS	Significance
C1	1328,595	1378,141	0,866
C2	-3956,380	-3956,380	0,273
C3	-0,953	0,747	0,018
C4	641,548	645,370	0,116
C5	-13365,543	2,744	0,028
C6	-10821,486	-10821,486	1,000
C7	-1703,281	1253,361	0,018
C8	0,031	0,031	1,000
C9	-2,841	-2841,469	0,018
C10	-0,691	-0,629	0,612

Source: SPSS© (2013)

It was identified that 40% of the selected sample (4 out of the 10 companies) had a significant statistical difference between the NCAVPS ratios including and excluding fair value adjustments. From Table 4.26 it was identified that the results of C3 (0,018), C5 (0,018), C7 (0,018) and C9 (0,018) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C3, C5, C7 and C9 NCAVPS (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the NCAVPS including and excluding fair value adjustments.

4.3.13 Net tangible asset value per share

The NTAVPS ratio is a capital market related ratio as identified in Chapter 2, which expresses the NTAVPS held. The following Table 4.27 summarises the significant statistical differences identified.

Table 4.27: Wilcoxon signed-rank test decision for the net tangible asset value per share

Company	NTAVPS		
	Median		Wilcoxon signed-rank test
	In NTAVPS	Ex NTAVPS	Significance
C1	707,551	707,551	1,000
C2	1028,813	1030,100	0,018
C3	0,953	0,953	1,000
C4	1444,418	1444,418	1,000
C5	23659,573	-4,094	0,028
C6	8825,704	-291,476	0,109
C7	4178,114	1100,930	0,018
C8	0,185	0,185	1,000
C9	2,630	2629,745	0,018
C10	7,683	7,683	1,000

Source: SPSS© (2013)

It was identified that 40% of the selected sample (4 out of the 10 companies) had a significant statistical difference between the NTAVPS ratios including and excluding fair value adjustments. From Table 4.27 it was evident that the results of C2 (0,018), C5 (0,018), C7 (0,018) and C9 (0,018) are below 0,05 but not less than 0,01 (as identified in Section 14.2.11). It can be concluded that C2, C5, C7 and C9 NTAVPS (including and excluding fair value adjustments) are statistically significant. The Wilcoxon signed-rank test decision indicates that there is a significant effect on decision-making when calculating the NTAVPS including and excluding fair value adjustments.

4.3.14 Conclusion on the Wilcoxon signed-rank test

The percentage of the sample influenced by the financial information including and excluding fair value adjustments resulting in a significant statistical difference per variable (financial ratio) is summarised in Table 4.28

Table 4.28: Percentage of negative correlations

Financial ratio	Percentage of sample rejected (%)
ROA	20
ROE	10
ROS	20
CR	10
ATO	20
DR	20
A:D	20
E:D	30
FL	60
IC	70
BEPS	10
NCAVPS	40
NTAVPS	40

Source: SPSS© (2013)

The overall outcome of the Wilcoxon signed-rank test can be illustrated by Figure 4.2, where the impact of financial information including and excluding fair value per variable is summarised and assists in identifying which variables (financial ratios) are more sensitive (dependent on the amount of companies impacted on) among the identified variables to the fair value adjustments made.

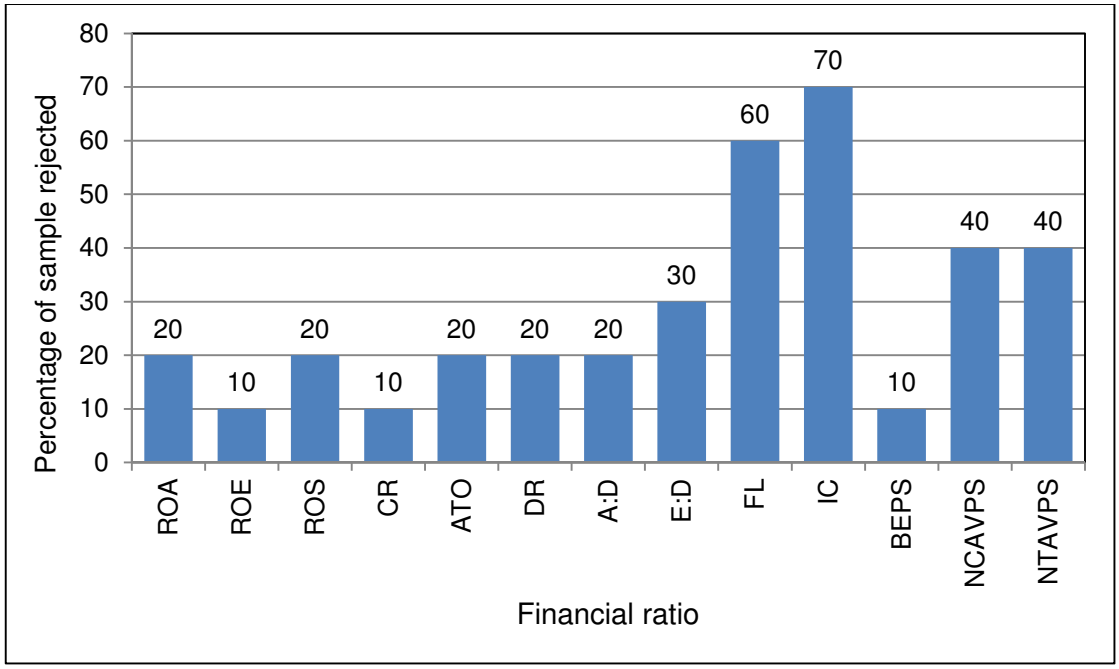


Figure 4.2: Overall Wilcoxon signed-rank test

Source: SPSS© (2013)

The variables (financial ratios) influenced which could have an impact on the user's decisions are, in descending order:

- The IC ratio that expresses the extent to which earnings before interest and tax will cover the interest expense is influenced due to the change in earnings as a result of the fair value adjustment made. This debt management ratio assists current and potential investors to identify the number of times the earnings made can cover the interest paid by the company.
- The FL ratio that expresses the financial risk of being exposed to fixed interest, since the change in earnings is a result of fair value adjustments made, especially when financial instruments bears interest that is realised through interest in profit and loss. This financial risk ratio assists current and potential shareholders or investors with the ability to identify fixed debt bearing loans made by the company, which in turn identify the ability of the company to realise a loss in earnings (sufficient to cover fixed interest costs) before reporting a loss.

- The NCAVPS and the NTAVPS ratios are both market capital ratios. These ratios are used to express the net current asset and the tangible asset value per share and can be used to compare to the BEPS, which was identified in Chapter 2 (Section 2.8) as being the most useful earnings per share category disclosed in the financial statements. This market capital ratio assists current and potential shareholders with the ability to identify the NCAVPS in relation to the price and earnings per share.
- The E:D ratio is a debt management ratio that indicates the total funds provided by creditors as a percentage of total equity held as a means to finance the operations of the company. This debt management ratio assists management, current and potential investors with the ability to identify whether the company relies on capital from debt or equity.
- The ROA ratio is a profitability ratio that expresses the earnings as a percentage on the efficient use of assets employed by management. This profitability ratio can be used by current and potential investors to assist in identifying the ROA employed by management and whether the assets value is in relation to the value the company places on the assets. This also identifies the usage of assets and the impact on earnings.
- The ROS ratio is a profitability ratio that expresses the earnings as a percentage on the revenue made by management. This profitability ratio assists current and potential investors with the ability to identify the relationship between earnings and sales that highlights the additional expenses or income that are not included in production or in the normal course of business (however, still included in operating income).
- The ATO ratio is an asset management ratio that identifies managements' efficient usage of the assets employed in relation to the sales made. This asset management ratio can assist credit providers, suppliers, current and potential investors with the ability to assess managements' efficient use of assets to realise revenue.

- The DR ratio is a debt management ratio that expresses the total funds provided by creditors as a percentage of the total assets. This debt management ratio assists current and potential investors with the ability to assess the ratio between the debt and assets of the company.
- The A:D ratio is a debt management ratio that expresses the total assets employed by management as a percentage of the funds provided by creditors. This debt management ratio can be used by current and potential investors to identify managements' assets in relation to the debt to identify if the company can sell the assets to cover all debt.
- The BEPS ratio is a capital management ratio that expresses the earnings per shareholder. This gives current and potential shareholders the ability to identify the earnings (return) per shareholder and assists in deciding whether to invest or to sell shares to seek a higher return.
- The ROE ratio is a profitability ratio that expresses the earnings as a percentage of equity invested by shareholders. This gives the current and potential shareholders the ability to identify the profitability of the equity from shareholders.
- The CR ratio is a liquidity ratio that expresses the ability of the company to settle short term with assets that can be easily converted to cash. This gives suppliers, credit providers, potential and current investors the ability to identify if their credit provided is recoverable.

4.4 IDENTIFYING THE DIFFERENCES BETWEEN THE FINANCIAL STATEMENTS INCLUDING AND EXCLUDING FAIR VALUE USING CORRELATION (SPEARMAN RANK ORDER CORRELATION)

The correlations identified for each of the financial ratios including and excluding fair value adjustments are listed per company in Table 4.29.

Table 4.29: Correlations for each ratio per company between including and excluding fair value adjustments

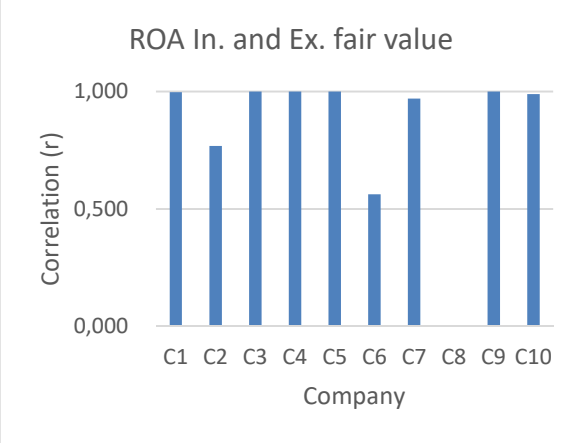
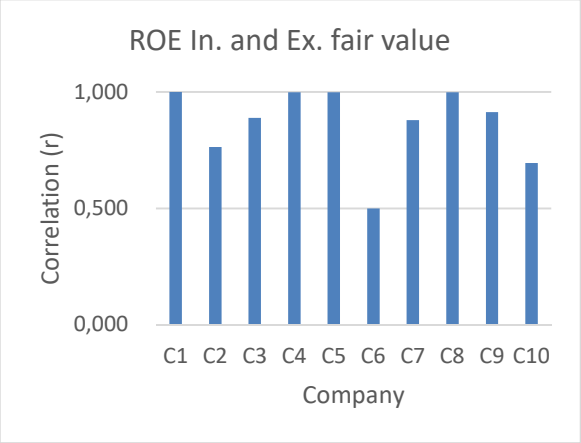
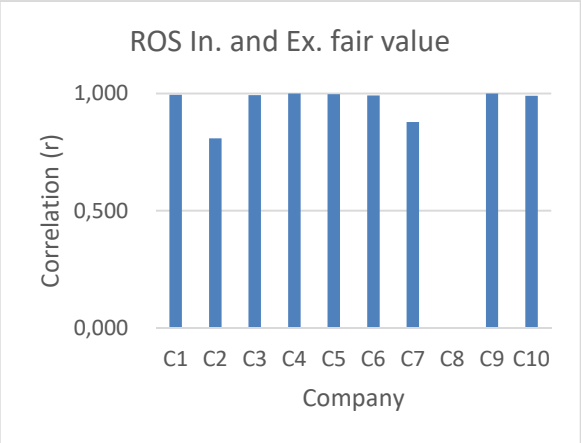
		Company									
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Financial ratio	In ROA & Ex ROA	0,997	0,768	1,000	1,000	0,999	0,562	0,970	*	1,000	0,989
	In ROE & Ex ROE	1,000	0,763	0,888	0,998	0,999	0,500	0,879	0,999	0,913	0,694
	In ROS & Ex ROS	0,994	0,808	0,992	1,000	0,997	0,991	0,878	*	1,000	0,990
	In CR & Ex CR	0,998	1,000	0,799	1,000	0,986	*	0,999	*	*	0,996
	In ATO & Ex ATO	1,000	1,000	1,000	1,000	1,000	0,846	1,000	*	1,000	1,000
	In DR & Ex DR	1,000	1,000	0,999	0,999	0,990	-0,196	1,000	*	1,000	0,994
	In A:D & Ex A:D	1,000	1,000	0,999	0,999	0,998	-0,069	0,999	*	1,000	0,994
	In E:D & Ex E:D	0,965	0,870	0,999	0,999	0,956	0,869	0,428	0,999	0,688	0,034
	In FL & Ex FL	0,997	-0,972	-0,987	-0,955	-0,970	0,972	-0,997	-0,948	-0,006	-0,963
	In IC & Ex IC	0,998	0,930	0,950	0,840	1,000	0,860	0,953	0,979	0,711	0,959
	In BEPS & Ex BEPS	0,994	0,943	0,999	0,999	0,857	-0,527	1,000	*	1,000	0,996
	In NCAVPS & Ex NCAVPS	0,997	1,000	0,653	1,000	-0,038	*	0,895	*	1,000	0,996
	In NTAVPS & Ex NTAVPS	*	1,000	*	*	-0,281	-0,930	-0,393	*	1,000	*

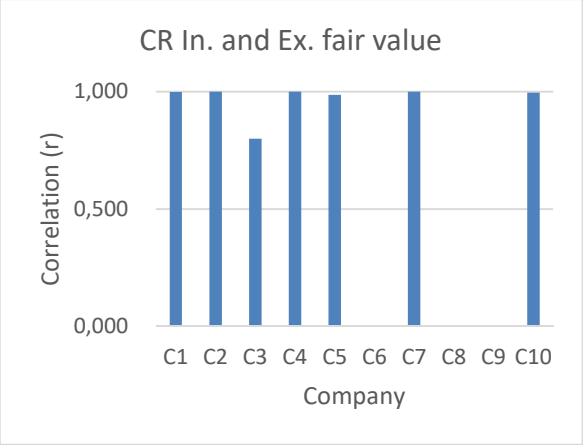
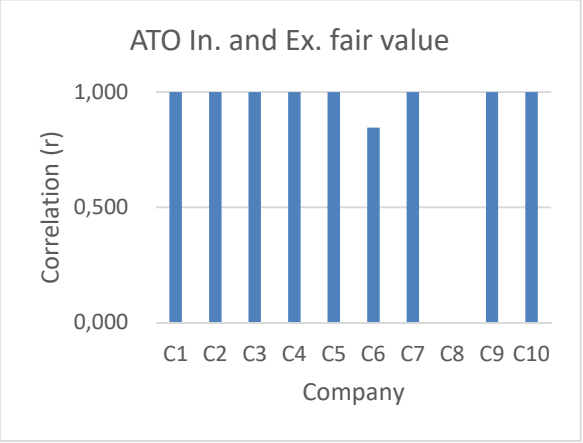
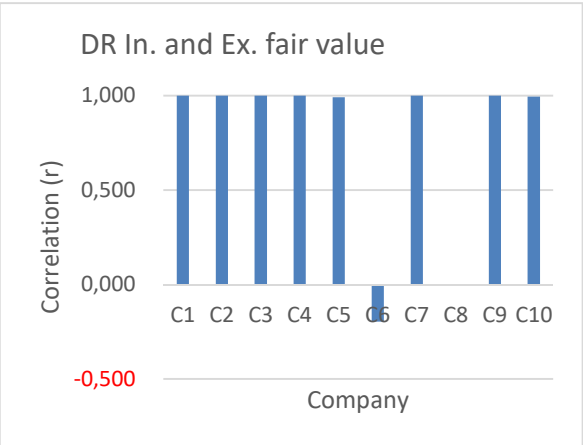
* The correlation could not be computed since the standard error of the difference is zero

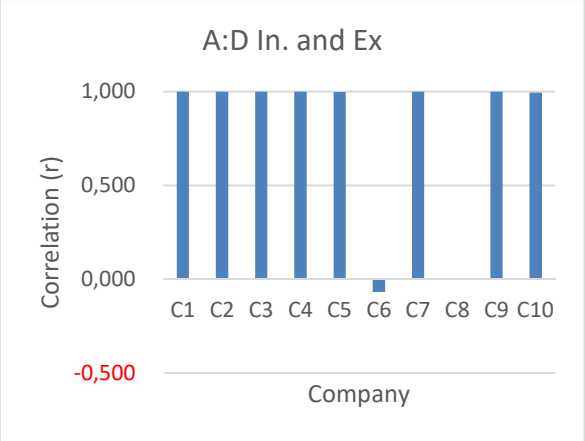
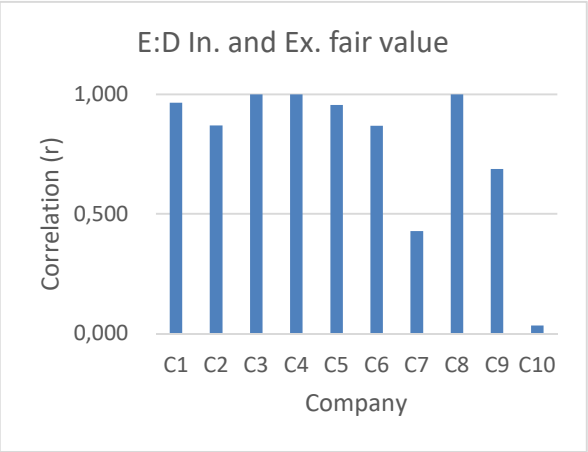
Source: SPSS© (2013)

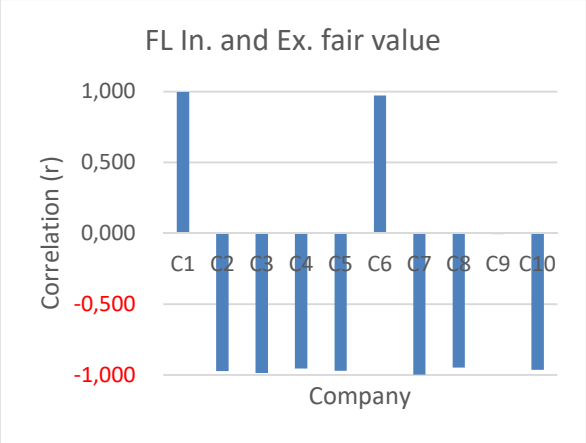
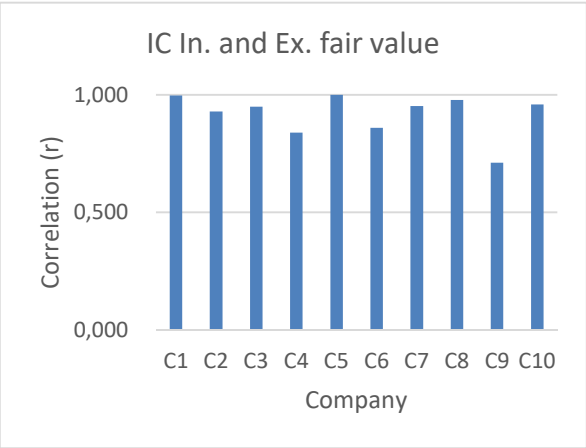
The identified correlation statistics of each financial ratio including and excluding fair value adjustments per company are summarised in Table 4.30.

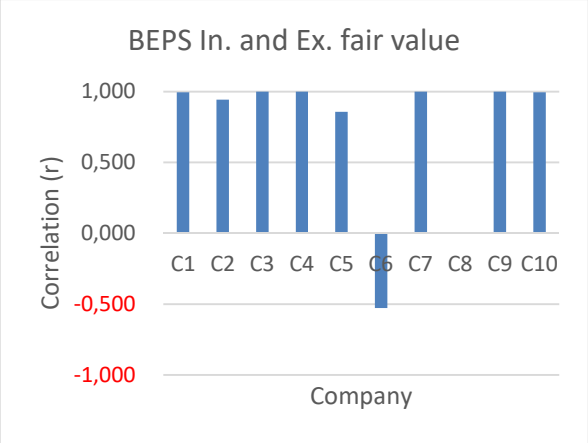
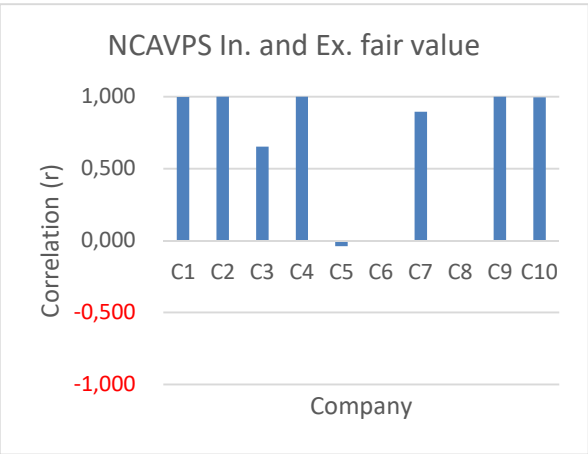
Table 4.30: Summary of correlations between financial information including and excluding fair value adjustments

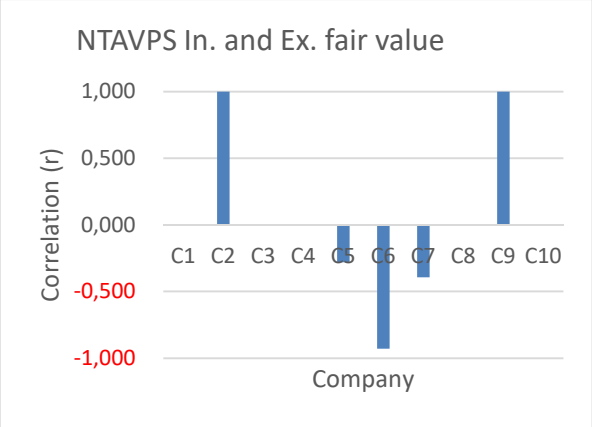
Correlation between financial information including and excluding fair value adjustments per ratio	**Interpretation of correlation graph**
	For ROA, the correlation could not be computed for C8 since the standard error of the difference is zero. A **strong positive correlation** (r=0,50 to 1,00) for all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions.
	For ROE, a **strong positive correlation** (r=0,50 to 1,00) for all the companies were identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users decisions.
	For ROS, the correlation could not be computed since the standard error of the difference is zero for C8. A **strong positive correlation** (r=0,50 to 1,00) for all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions

Correlation between financial information including and excluding fair value adjustments per ratio	Interpretation of correlation graph
	For CR, the correlation could not be computed since the standard error of the difference is zero for C6, C8 and C9. A **strong positive correlation** (r=0,50 to 1,00) for the all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions.
	For ATO, the correlation could not be computed since the standard error of the difference is zero for C8. A **strong positive correlation** (r=0,50 to 1,00) for all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions.
	For DR, the correlation could not be computed since the standard error of the difference is zero for C8. C6 resulted in a **weak negative correlation** (r=–0,10 to –0,29). A **strong positive correlation** (r=0,50 to 1,00) for all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions.

Correlation between financial information including and excluding fair value adjustments per ratio	Interpretation of correlation graph
	For AD, the correlation could not be computed since the standard error of the difference is zero for C8. C6 resulted in a **weak negative correlation** (r=–0,10 to –0,29). A **strong positive correlation** (r=0,50 to 1,00) for all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions.
	For E:D, a **strong positive correlation** (r=0,50 to 1,00) for all the companies was identified, that indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users decisions, these companies resulted in a **strong positive correlation**, except for C7 that shows a medium positive correlation (r=0,30 to 0,49) and C10 that shows a **weak positive correlation** (r=0,10 to 0,29).

Correlation between financial information including and excluding fair value adjustments per ratio	Interpretation of correlation graph
	For FL, a strong **positive correlation** (r=0,50 to 1,00) for C1 and C6 was identified, which indicates that there are **no differences identified,** the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions. A **strong negative correlation** (r=-0,50 to -1,00**)** for all the other companies was identified and the impact of the fair value adjustment has an inverse impact on the financial ratios (including and excluding fair value adjustments) that will impact users' decisions (these companies resulted in a **strong negative correlation**, except for C9 that resulted in a weak negative correlation (r=–0,10 to –0,29) and will have no impact on users' decisions).
	For IC, a **strong positive correlation** (r=0,50 to 1,00) for the all the companies was identified, that indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions.

Correlation between financial information including and excluding fair value adjustments per ratio	Interpretation of correlation graph
	For BEPS, the correlation could not be computed since the standard error of the difference is zero for C8. C6 resulted in a **strong negative correlation** (r=-0,50 to -1,00) and the impact of the fair value adjustment has an inverse insignificant impact on the financial ratios (including and excluding fair value adjustments) that will impact users' decisions. A **strong positive correlation** (r=0,50 to 1,00) for the all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions.
	For NCAVPS, the correlation could not be computed since the standard error of the difference is zero for C6 and C8. C5 resulted in a **weak negative correlation** (r=–0,10 to –0,29) and the impact of the fair value adjustment has an inverse insignificant impact on the financial ratios (including and excluding fair value adjustments) that will not impact users' decisions. A **strong positive correlation** (r=0,50 to 1,00) for the all of the other companies was identified, which indicates that there are **no differences identified** and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users decisions.

Correlation between financial information including and excluding fair value adjustments per ratio	Interpretation of correlation graph
	For NTAVPS, the correlation could not be computed since the standard error of the difference is zero for C1, C3, C4, C8 and C10. C5 resulted in a weak negative correlation (r=–0,10 to –0,29). C6 resulted in a **strong negative correlation** (r=-0,50 to -1,00) and the impact of the fair value adjustment has an inverse impact on the financial ratios (including and excluding fair value adjustments) that will impact on the users' decisions. C7 resulted in **medium negative correlation** (r=–0,30 to –0,49) that will not impact users' decisions. C2 and C9 resulted in a **strong positive correlation** (r=0,50 to 1,00) and the impact of the fair value adjustment has the same impact on the financial ratios (including and excluding fair value adjustments) that will not impact users decisions.

Source: SPSS© (2013)

Table 4.30 identifies instances with a strong relationship between the identified financial ratios including and excluding fair value adjustments. The results of the correlations made above between the financial ratios including and excluding fair value adjustments were summarised and assisted to derive Figure 4.3. The three categories of correlations as identified in Section 4.2.8 (positive, negative and none, with the exception of those that were not computed, which resulted in no correlation) are illustrated in Figure 4.3.

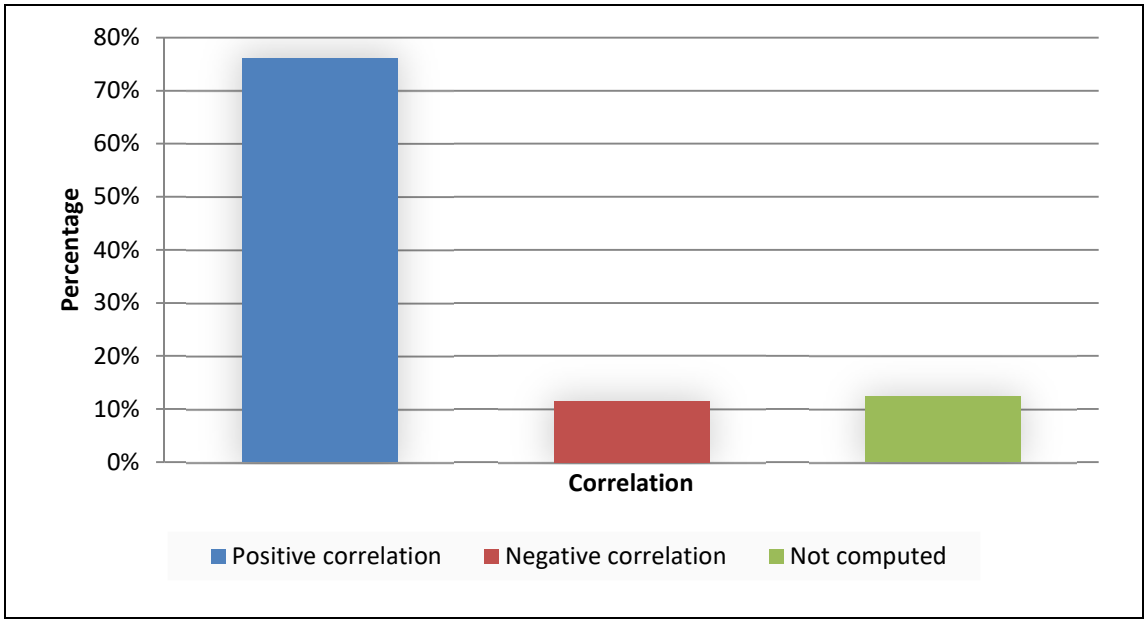


Figure 4.3: Summary of results of categories of correlation

Source: SPSS© (2013)

There are no instances identified where no correlation exists. A total of 76% of the sample resulted in a positive correlation, which indicated the fair value adjustment had a similar effect (the financial ratios results were not impacted) on both financial information including and excluding fair value adjustments. A total of 12% of the sample indicated that the correlation could not be computed since the standard error of the difference identified was zero. While 12% of the sample indicated that there was a negative correlation, thus there was an inverse reaction (the financial ratios results were impacted) as a result of the fair value adjustments in the financial information including and excluding fair value adjustments that is an indication that the fair value adjustments influence the decisions user's made. In Section 4.2.8, the significant value of the correlation was explained and identified that where the significant value is less than 0,05, the correlation is significant. Table 4.31 identifies all the significant values of the correlations made between financial ratios including and excluding fair value adjustments for each company.

Table 4.31: Significant value of the correlations

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Financial ratio	In ROA & Ex ROA	0,000	0,044	0,000	0,000	0,000	0,620	0,000	*	0,000	0,000
	In ROE & Ex ROE	0,000	0,046	0,008	0,000	0,000	0,666	0,009	0,000	0,004	0,084
	In ROS & Ex ROS	0,000	0,028	0,000	0,000	0,000	0,085	0,009	*	0,000	0,000
	In CR & Ex CR	0,000	0,000	0,031	0,000	0,000	*	0,000	*	*	0,000
	In ATO & Ex ATO	0,000	0,000	0,000	0,000	0,000	0,358	0,000	*	0,000	0,000
	In DR & Ex DR	0,000	0,000	0,000	0,000	0,000	0,875	0,000	*	0,000	0,000
	In A:D & Ex A:D	0,000	0,000	0,000	0,000	0,000	0,956	0,000	*	0,000	0,000
	In E:D & Ex E:D	0,000	0,011	0,000	0,000	0,003	0,330	0,338	0,000	0,088	0,942
	In FL & Ex FL	0,000	0,000	0,000	0,001	0,001	0,150	0,000	0,001	0,989	0,001
	In IC & Ex IC	0,000	0,002	0,001	0,018	0,000	0,341	0,001	0,000	0,073	0,001
	In BEPS & Ex BEPS	0,000	0,001	0,000	0,000	0,029	0,646	0,000	*	0,000	0,000
	In NCAVPS & Ex NCAVPS	0,000	0,000	0,111	0,000	0,944	*	0,006	*	0,000	0,000
	In NTAVPS & Ex NTAVPS	*	0,000	*	*	0,589	0,240	0,384	*	0,000	*

* The correlation could not be computed since the standard error of the difference is zero.

Source: SPSS© (2013)

Table 4.31 identified the significant values pertaining to the correlations, these values can assist in identifying the correlations that are statistically significant, Figure 4.4 identifies both positive and negative correlation significant values.

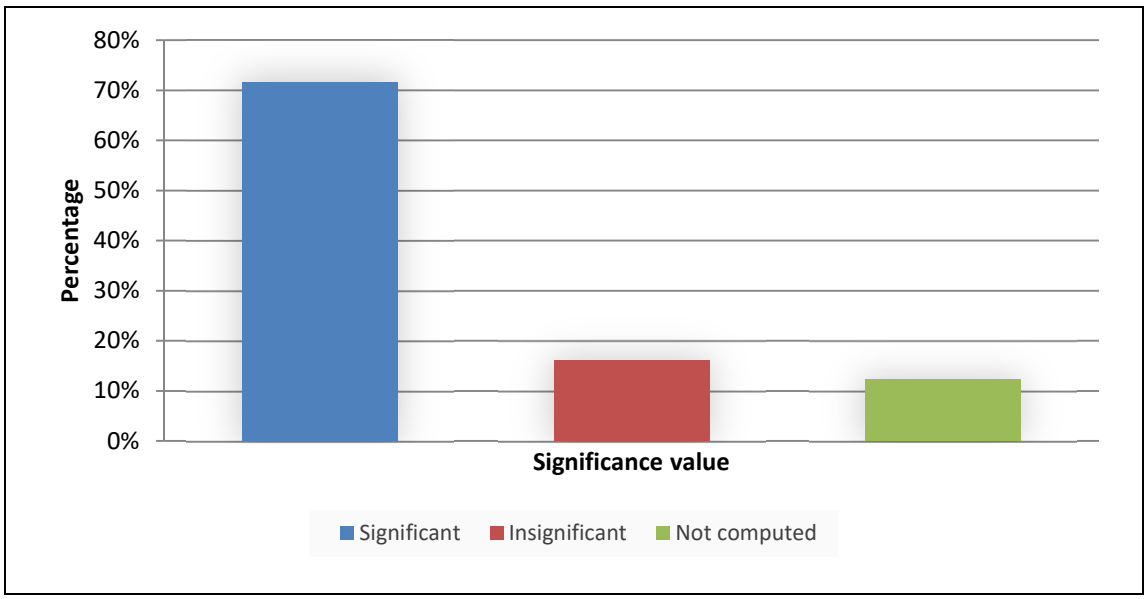


Figure 4.4: Significance value of the correlation relationship

Source: Own resource

After identifying the correlation between the financial information including and excluding fair value adjustments, the significance of the correlation was identified, of which the value is set out in Figure 4.4. A total of 12% of the sample could not be computed since the standard error of the difference identified was zero. While 72% of the sample indicated a significant correlation and 16% of the sample indicated an insignificant correlation between the financial information including and excluding fair value adjustments. Depending on whether the correlation is positive (no influence) or negative (can influence) could influence the decisions of the users of financial statements. As discussed in Section 4.2.8, there are positive and negative correlations, the significance of these correlations (correlations between the financial ratios including and excluding fair value adjustments) are summarised in Figure 4.5 (significance of positive correlations) and Figure 4.6 (significance of negative correlations). The significance of the positive correlations is first taken into consideration where

the correlation between financial information including and excluding fair value adjustments have the same response.

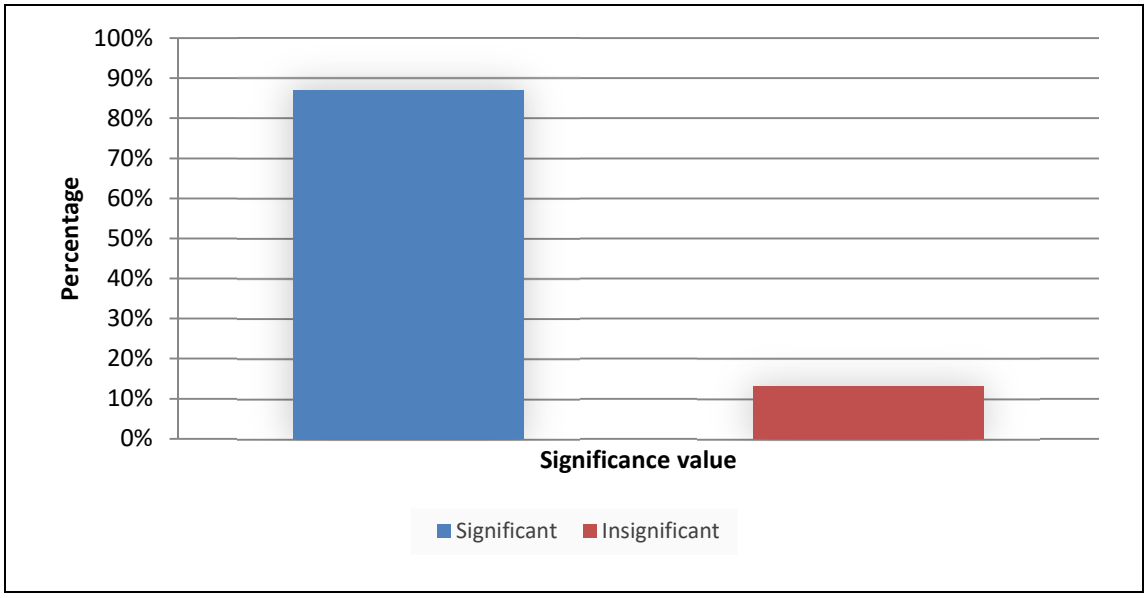


Figure 4.5: Significance value of positive correlations

Source: SPSS© (2013)

Figure 4.5 identifies the significance of the positive correlations that indicates that 87% of the correlation made was significant and 13% of the correlation was insignificant. Predominantly, the financial ratios including and excluding fair value adjustments result in a similar interpretation thereof, except for the equity debt ratio where C6, C7, C9 and C10 resulted in an insignificant positive correlation. The IC ratio indicated that C6 and C9 resulted in an insignificant positive correlation. The ROE ratio indicated that C6 and C10 resulted in an insignificant positive correlation. The NCAVPS ratio indicated that C3 resulted in an insignificant positive correlation. The ROA, ROE, DR and FL ratio indicated that C6 resulted in an insignificant positive correlation. The significance of the negative correlations are considered in Figure 4.6, where the correlation between financial information including and excluding fair value adjustments have the opposite response.

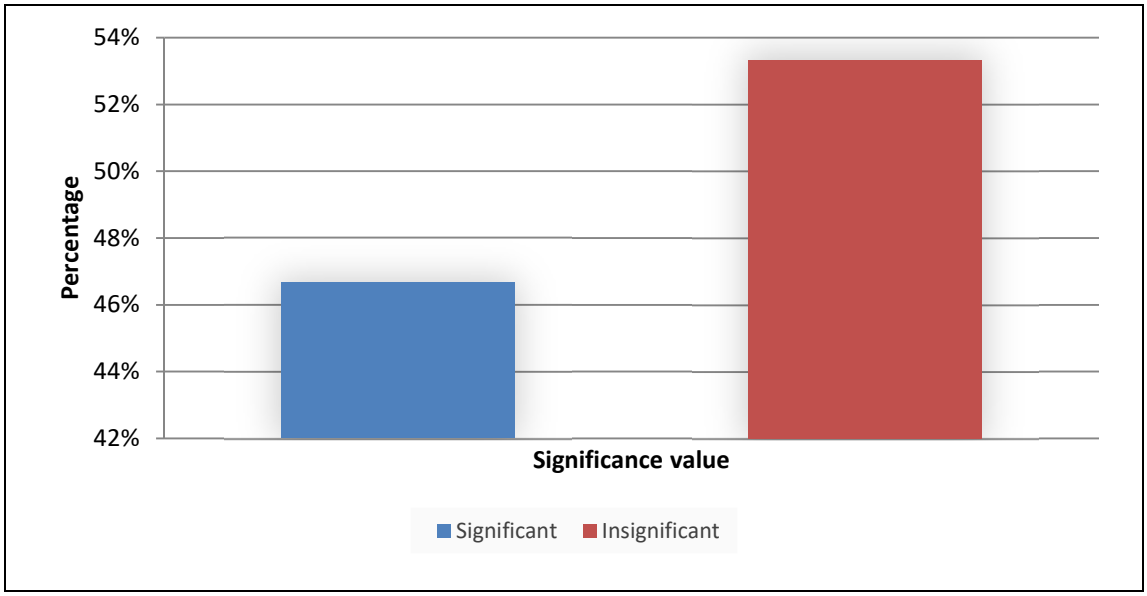


Figure 4.6: Significance value of the negative correlations

Source: SPSS© (2013)

Figure 4.6 identifies the significant value of the negative correlations that indicated that 47% of the correlations were significant and 53% were insignificant. The NTAVPS ratio indicated that C5, C6 and C7 resulted in an insignificant negative correlation. The NCAVPS ratio indicated that C5 resulted in an insignificant negative correlation. The BEPS ratio indicated that C6 resulted in an insignificant negative correlation. The FL ratio indicated that C9 resulted in an insignificant negative correlation. The DR and A:D ratio indicated that C6 resulted in an insignificant negative correlation. The significant negative correlations as identified in Section 4.2.8 were highlighted, since these instances would have an impact on the users' decisions made as the financial ratios including and excluding fair value adjustments have an opposite or inverse relationship. The only ratio that had an impact was the FL ratio (C2, C3, C4, C5, C7, C8 and C10), which indicated a statistical significant negative correlation.

4.5 CONCLUSION

The Wilcoxon signed-rank test (paired t-tests) revealed that there were instances where the impact of fair value adjustments had a significant influence on the financial ratios identified. The Wilcoxon signed-ranked test identified that

if fair value as a basis of measurement was chosen, the following ratios would impact users' decisions, since the impact on the total sample of companies were: IC ratio (70%); FL ratio (60%); NCAVPS ratio (40%); NTAVPS ratio (40%); E: D ratio (30%); ROA (20%); ROS (20%); ATO (20%); DR (20%); A:D (20%); ROE (10%); CR (10%) and BEPS (10%). The fair value measurement impact on the financial ratios based on the identified percentage of companies influenced would influence decisions made by users of the financial statements. When considering the IC ratio, FL ratio, NCAVPS ratio, NTAVPS ratio and E:D ratio, these indicate a higher probability of influencing users of financial statements who are interested in identifying and interpreting the results of the debt management ratios, financial risk ratios and market capital ratios.

The correlations revealed that the only identified ratio that indicates a significant statistical negative correlation, which could impact the decisions made by the users, is the FL ratio. This ratio is a financial risk ratio, which when interpreted, assists shareholders or investors in identifying the ability of fixed debt bearing loans made by the company, that in turn identify the ability for the company to realise a loss in earnings. This is the result of interest that the company is obligated to pay due to the loans made, regardless of the performance of the entity, which displays the ability of the company to realise a loss in earnings to investors and shareholders. Figure 4.3 revealed that 76,15% of the sample selected yielded a positive correlation, which indicates that the financial ratios react in a similar manner for both financial information including and excluding fair value adjustments. Figure 4.3 indicated that 11,54% of the correlations were negative and Figure 4.6 further identified that of the identified negative correlations only 46,67% are statistically significant, which all relates to the FL ratio. The users of financial statements' decisions would be different for 11,54% of which 46,67% of these decisions would be significantly different had the company not implemented fair value as a basis of measurement. The impact of fair value adjustments therefore only had a significant statistical impact on 5,36% (11,54%*46,47%) of the sample of companies tested. This indicates that the impact fair value measurement has, does not have a significant influence on the usefulness of financial information.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

Fair value is a basis of measurement that aims to increase the transparency of asset valuations, which in turn assists in providing investors with updated market related financial records on which decisions can be made (Goh *et al.*, 2015:4). Okamoto (2014:172) argues that the standard setters' aim pertaining to fair value as a basis of measurement, is to increase the decision usefulness of financial information for users of the financial statements.

In Chapter 2 it was determined (Section 2.7) that fair value is disclosed using the three level hierarchy of fair value measurements. Level one is the most reliable measure as it only considers related market values, whereas level three is the least reliable measurement since it only consists of management's estimates. Level two is a combination of related market values and management's estimates. In Chapter 2 it became evident that fair value as a basis of measurement increases users' decision usefulness and in essence the financial information provided is more relevant, but less reliable as it moves from level one to three.

5.2 RESEARCH OBJECTIVES

The objectives were described in Chapter 1 (Section 1.4) and the conclusions made thereon are discussed in this section. The secondary objectives are concluded on in Section 5.2.1 and the primary objective is concluded on in Section 5.2.2.

5.2.1 Secondary objectives

In Chapter 1 (Section 1.4.2) the secondary objectives were identified. These were addressed in Chapter 2, the literature review.

5.2.1.1 Secondary objective 1

The first secondary objective was to determine if and how fair value measurement can be used as a basis to manipulate financial statements through overstating assets and increasing profits. In Chapter 2 (Section 2.7) it was identified that management's influence on financial information and management's estimates made in financial information can influence the reliability thereof. The manipulation of financial information (impairing the reliability) can, to an extent, then influence the relevance of financial statements to users. The impact on reliability and relevance influences the usefulness of financial statements for both internal and external users. It was further investigated that level three of the three level hierarchy of fair value affords management the opportunity to manipulate financial information by increasing estimates made, with the intent to increase assets or decrease liabilities, thereby directly influencing the earnings of the company. Manipulation of financial information mislead users of financial statements in understanding and analysing the financial performance and position of the company on which decisions are based. It was also identified that Enron and WorldCom manipulated financial information, resulting in misled investors and shareholders. Fair value measurement can be used to manipulate financial statements by management in an attempt to make the financial performance and position more attractive to both existing and potential users of the financial statements.

It is evident from the quantitative findings that fair value measurements have an influence on a few company's financial ratios that influences the decisions users' make. An increase in manipulation of fair value measurements influence the decision usefulness of financial statements, The Wilcoxon signed-rank tests revealed that the following financial statement ratios indicated that fair value adjustments influenced:

- A total of 50% and more of the companies included in the sample for testing: IC ratio (70%) and FL ratio (60%).
- Between 30% and 50% of the companies included in the sample for testing: NTAVPS (40%), NCAVPS (40%) and E:D ratio (30%).

- Between 10% and 30% of the companies included in the sample for testing: ROA (20%); ROS (20%); ATO (20%); DR (20%); A:D (20%); ROE (10%); CR (10%) and BEPS (10%).

IC and FL have a high probability to be influenced by manipulation of fair value adjustments and in turn effect the decision usefulness of financial statements.

The Correlation tests identified that the financial ratio that had a statistical significant negative correlation is FL. The statistical significant negative correlation implies that the use of fair value in comparison to historical cost as a basis of measurement has an inverse effect on the FL ratio, which influence users' decision usefulness of financial information and impact the decisions made by the users (determinant on the basis of measurement used).

5.2.1.2 Secondary objective 2

The second secondary objective was to identify and evaluate financial risk ratios for financial statements that would assist in identifying the differences between financial information including and excluding fair value adjustments and how the differences would affect decision-making. Chapter 2 (Section 2.8) set out the financial ratios that were used to determine the impact fair value adjustments have on the usefulness of financial statements. The following financial ratios were identified: profitability ratios (ROA, ROE and ROS ratios), liquidity ratios (CR), asset management ratio (ATO ratio), debt management ratios (DR, E:D, FL, IC and A:D ratios) and capital market ratios (BEPS, NCAVPS and NTAVPS ratios).

5.2.2 Primary objective

The primary objective was to determine the usefulness of fair value measurement in the financial statements of South African listed companies. It was identified that fair value measurement increases the relevance and reliability (in the absence of manipulation) of the usefulness of financial statements. The empirical results revealed that the fair value adjustments made (when comparing the difference between financial information including and excluding fair value) identified a few companies that indicated a significant

impact on the usefulness of financial statements. The literature revealed that the use of fair value measurements display the economic reality of a company's financial performance and position. This enable users of the financial statements to make informed decisions based on values that are market related and disclosed in the financial statements.

Fair value measurements contribute to the increasing transparency, relevance and reliability of financial statements (reliability is dependent on the estimates made by management that is influenced by manipulation), which contribute to the improved usefulness of financial statements.

5.2.3 Recommendations

Fair value disclosures made should not be limited to disclosing the level of the three level hierarchy of fair value, especially when management's judgements and estimates predominately effect the fair value measurement made (level two and level three of the three level hierarchy). Additional disclosure should be required when level two and level three are used, detailing management's estimates and judgements. This will reduce the efforts to manipulate financial statements and increase the transparency, reliability and relevance of the usefulness of financial statements. The disclosures to be included should guide (does not have to be detailed calculations and explanations) the financial statement user into identifying how the fair value measurement was derived at, which can then be evaluated by users of the financial statements.

5.3 LIMITATIONS AND SHORTCOMINGS OF THE STUDY

The following limitations and the shortcomings were experienced during this study:

- The sample was selected from McGregor (2014) an online database. When selecting the largest and the smallest JSE listed companies based on their market share capitalisation per industry, it was identified that the utilities industry only had one company that was listed.

- When identifying the fair value movements and performing the data analysis, it was identified that from the thirteen selected companies, two did not have any fair value adjustments for the period 2009 to 2016.
- When collecting published audited financial statements, C5 and C6 did not have published financial statements for the periods identified in Section 3.6.2.
- The sample selected was limited to the largest and the smallest JSE listed companies based on their market share capitalisation per industry.
- The study covered seven years, as section 24 1 (b) of Companies Act 71 of 2008 requires that all companies must keep their records and other information for seven years. The findings could vary if data were collected over a longer time period.
- The data analysis and the data statistics used to analyse data are limited to the ratios identified in the literature review.
- The study only included statistical measurements of a sample selected from the JSE listed companies, which will limit the findings to JSE listed companies, limiting application to all companies.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

The following areas for further research were identified:

- Duplicate the study and select a larger sample that should include the JSE listed companies with an average market share capitalisation and investigate the differences between the results of financial information including and excluding fair valuations.
- Duplicate the study and apply the same study to companies listed on other stock exchanges.
- Determine the impact fair value measurement has on all financial risk ratios and determining which user will be effected by financial risk ratios predominantly.

- Determine whether fair value adjustments will always have an impact on debt management, financial risk and market capital ratios.

5.5 CHAPTER SUMMARY AND FINAL REMARKS

The purpose of this chapter was to provide an overview of the conclusions made based on the primary and secondary objectives initially derived at to ensure that it has been addressed. Recommendations were proposed which will assist in providing users of financial statements with an increased usefulness of financial statements. The shortcomings identified were to make readers aware of the limitations of the study before application thereof. Further research was recommended that will enhance the contributions that can be made to the improvement of the usefulness of financial statements and disclosures made in terms of fair value.

The literature review in Chapter 2 found that fair value measurements provide relevant and more reliable financial information, however, reliability can be influenced through the manipulation of financial statements (identified in Section 2.7). Chapter 2 also found that fair value increases the usefulness of financial statements through the increase in relevance, reliability and transparency. However, the usefulness of financial statements be impaired through manipulation of financial statements. Chapter 2 assisted in identifying the financial statement ratios that would be impacted as a result choosing between historical cost and fair value as a basis of measurement.

After the application of the statistical methods identified in Chapter 3 (Section 3.7) and the application thereof in Chapter 4, the primary objective was achieved. The results of the Wilcoxon signed-rank test (paired-t tests) in Chapter 4 (Section 4.3) and the correlation tests performed in Chapter 4 (Section 4.4) identified that the fair value measurements, with the exception of those summarised below, is not influenced significantly statistically by fair value measurements and does not influence the usefulness of financial statements to users.

In the correlations performed in Chapter 4 Section 4.4 the only financial ratio that indicated to have an impact on the usefulness of financial information is the

FL ratio used in the statistical measurement, which resulted in a significant statistical difference when the correlations was tested. However, this result was only 5,36% of the sample of JSE listed companies selected.

The Wilcoxon signed test (paired-t tests) in Chapter 4 Section 4.3 the IC, FL, NCAVPS, NTAVPS and the E:D financial ratios indicate evidence that fair value adjustments resulted in statistical significant negative correlations. These results impacted on 30% or more of the sample selected as indicated in Figure 4.2. Fair value measurement increases the usefulness of financial statements for users.

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APPENDIX A

Descriptive statistics

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
C1										
ln ROA	7,000	-0,0379	0,1188	0,0449	0,0671	0,0617	-0,4490	0,7940	-1,3850	1,5870
ln ROE	7,000	-0,0849	2,2307	0,4059	0,1564	0,8158	2,4940	0,7940	6,4130	1,5870
ln ROS	7,000	-0,0229	0,0759	0,0323	0,0437	0,0394	-0,8450	0,7940	-0,9690	1,5870
ln CR	7,000	3,7166	7,3324	5,1299	5,1764	1,1822	0,9330	0,7940	1,5290	1,5870
ln ATO	7,000	0,6059	1,6576	1,4514	1,5778	0,3776	-2,5120	0,7940	6,4450	1,5870
ln DR	7,000	0,0625	0,1991	0,1651	0,1844	0,0484	-2,0520	0,7940	4,2560	1,5870
ln A:D	7,000	5,0214	15,9949	7,0391	5,4225	3,9943	2,5280	0,7940	6,4860	1,5870
ln E:D	7,000	2,1269	5,8200	4,1925	4,1796	1,0930	-0,7910	0,7940	2,8560	1,5870
ln FL	7,000	0,9829	1,0124	1,0015	1,0067	0,0127	-1,1200	0,7940	-0,9020	1,5870
ln IC	7,000	-150,8972	59,3705	-69,8576	-100,0967	91,1653	0,9230	0,7940	-1,1010	1,5870
ln BEPS	7,000	-60,8565	180,5743	73,5034	103,8073	94,9970	-0,8520	0,7940	-0,9250	1,5870
ln NCAVPS	7,000	854,4413	1672,7902	1315,4065	1328,5952	311,0473	-0,4490	0,7940	-1,1370	1,5870
ln NTAVPS	7,000	444,0769	6033,7524	1562,8094	707,5514	2016,5751	2,4230	0,7940	5,9930	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ex ROA	7,000	-0,0434	0,1200	0,0440	0,0647	0,0630	-0,5010	0,7940	-1,2110	1,5870
Ex ROE	7,000	-0,0976	2,2509	0,4097	0,1522	0,8243	2,4790	0,7940	6,3540	1,5870
Ex ROS	7,000	-0,0289	0,0769	0,0326	0,0424	0,0413	-0,8640	0,7940	-0,9780	1,5870
Ex CR	7,000	3,7389	7,2994	5,1341	5,2643	1,1785	0,8650	0,7940	1,2330	1,5870
Ex ATO	7,000	0,6017	1,6586	1,4538	1,5823	0,3796	-2,5350	0,7940	6,5430	1,5870
Ex DR	7,000	0,0621	0,1997	0,1653	0,1866	0,0487	-2,0600	0,7940	4,2920	1,5870
Ex A:D	7,000	5,0071	16,1063	7,0439	5,3604	4,0402	2,5320	0,7940	6,5040	1,5870
Ex E:D	7,000	0,4714	3,3981	2,3315	2,3649	0,9132	-1,5430	0,7940	3,5640	1,5870
Ex FL	7,000	0,9828	1,0113	1,0016	1,0068	0,0122	-1,1600	0,7940	-0,8040	1,5870
Ex IC	7,000	-151,0879	67,1068	-69,3099	-98,0377	92,7092	0,9760	0,7940	-1,0160	1,5870
Ex BEPS	7,000	-74,6879	182,8656	73,8303	100,5052	99,7063	-0,8760	0,7940	-0,9250	1,5870
Ex NCAVPS	7,000	862,5819	1663,3763	1316,7037	1378,1411	311,0998	-0,4650	0,7940	-1,2660	1,5870
Ex NTAVPS	7,000	444,0769	6033,7524	1562,8094	707,5514	2016,5751	2,4230	0,7940	5,9930	1,5870
Valid N	7,000									
C2										
In ROA	7,0000	0,0504	0,1166	0,0741	0,0733	0,0219	1,1740	0,7940	2,2700	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln ROE	7,0000	0,1634	0,3280	0,2263	0,2262	0,0510	1,3440	0,7940	3,1220	1,5870
ln ROS	7,0000	0,1587	0,3824	0,2294	0,2263	0,0753	1,5710	0,7940	3,2510	1,5870
ln CR	7,0000	0,6273	1,0109	0,7507	0,7293	0,1307	1,4930	0,7940	2,5700	1,5870
ln ATO	7,0000	0,3049	0,3473	0,3249	0,3242	0,0128	0,3160	0,7940	1,7230	1,5870
ln DR	7,0000	0,6096	0,7052	0,6456	0,6349	0,0326	0,9960	0,7940	0,7970	1,5870
ln A:D	7,0000	1,4180	1,6405	1,5521	1,5750	0,0758	-0,8180	0,7940	0,3320	1,5870
ln E:D	7,0000	0,4180	0,6405	0,5521	0,5750	0,0758	-0,8180	0,7940	0,3320	1,5870
ln FL	7,0000	-0,2026	0,8094	0,4194	0,6383	0,4124	-0,9120	0,7940	-1,1010	1,5870
ln IC	7,0000	-4,2467	0,1685	-1,5886	-1,7643	1,6044	-0,5590	0,7940	-0,4230	1,5870
ln BEPS	7,0000	5,0507	897,3815	403,5922	367,0846	278,9854	0,6060	0,7940	1,2270	1,5870
ln NCAVPS	7,0000	-4340,5103	-43,9465	-3448,6214	-3956,3796	1532,8695	2,4270	0,7940	6,0990	1,5870
ln NTAVPS	7,0000	11,5702	1302,3067	946,3997	1028,8125	429,7874	-2,1890	0,7940	5,3680	1,5870
Ex ROA	7,0000	0,0366	0,0809	0,0672	0,0701	0,0151	-1,6840	0,7940	2,9980	1,5870
Ex ROE	7,0000	0,1169	0,2636	0,2124	0,2245	0,0460	-1,7270	0,7940	3,9920	1,5870
Ex ROS	7,0000	0,1153	0,2655	0,2070	0,2168	0,0482	-1,1380	0,7940	1,8500	1,5870
Ex CR	7,0000	0,6273	1,0160	0,7526	0,7319	0,1315	1,5350	0,7940	2,7260	1,5870
Ex ATO	7,0000	0,3048	0,3473	0,3248	0,3240	0,0129	0,3320	0,7940	1,7090	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ex DR	7,0000	0,6093	0,7052	0,6454	0,6349	0,0326	1,0130	0,7940	0,8680	1,5870
Ex A:D	7,0000	1,4180	1,6412	1,5527	1,5750	0,0758	-0,8340	0,7940	0,3970	1,5870
Ex E:D	7,0000	0,3812	0,5923	0,5154	0,5209	0,0718	-1,0730	0,7940	1,1870	1,5870
Ex FL	7,0000	1,1696	1,6761	1,3485	1,2477	0,2022	0,9270	0,7940	-0,8680	1,5870
Ex IC	7,0000	-6,8958	-2,4791	-4,7029	-5,0374	1,7669	0,1120	0,7940	-1,8570	1,5870
Ex BEPS	7,0000	4,8394	623,0214	357,4203	360,8542	212,0257	-0,5570	0,7940	-0,1550	1,5870
Ex NCAVPS	7,0000	-4342,5638	-43,8214	-3447,3786	-3956,3796	1532,7072	2,4240	0,7940	6,0890	1,5870
Ex NTAVPS	7,0000	11,7934	1303,9326	950,2817	1030,1001	432,4901	-2,1660	0,7940	5,2820	1,5870
Valid N	7,0000									
C3										
In ROA	7,0000	0,0588	0,2335	0,1023	0,0891	0,0601	2,2430	0,7940	5,4530	1,5870
In ROE	7,0000	0,1523	0,2752	0,1851	0,1734	0,0426	1,9640	0,7940	4,2090	1,5870
In ROS	7,0000	0,1439	0,2091	0,1794	0,1820	0,0236	-0,1450	0,7940	-0,8990	1,5870
In CR	7,0000	1,1421	1,9457	1,4978	1,4251	0,3249	0,6870	0,7940	-1,2330	1,5870
In ATO	7,0000	0,3576	1,4576	0,5825	0,4621	0,3885	2,5700	0,7940	6,7040	1,5870
In DR	7,0000	0,1515	0,6502	0,4726	0,4981	0,1602	-1,4330	0,7940	3,0270	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln A:D	7,0000	1,5380	6,6001	2,6037	2,0078	1,7811	2,5280	0,7940	6,5400	1,5870
ln E:D	7,0000	0,5380	5,6915	1,6140	1,0078	1,8170	2,5290	0,7940	6,5460	1,5870
ln FL	7,0000	0,2949	0,6984	0,5647	0,6316	0,1521	-1,2910	0,7940	0,2000	1,5870
ln IC	7,0000	-2,3152	-0,4182	-1,5004	-1,7143	0,6904	0,8060	0,7940	-0,6390	1,5870
ln BEPS	7,0000	374,5599	1139,7906	731,6333	645,8356	292,0810	0,5170	0,7940	-1,1970	1,5870
ln NCAVPS	7,0000	-4,9214	0,0172	-1,9121	-0,9532	1,9662	-1,0220	0,7940	-0,8740	1,5870
ln NTAVPS	7,0000	0,6568	1,7347	1,1658	0,9529	0,4408	0,2830	0,7940	-2,3180	1,5870
Ex ROA	7,0000	0,0604	0,2397	0,1033	0,0886	0,0620	2,3130	0,7940	5,7050	1,5870
Ex ROE	7,0000	0,1639	0,2462	0,1953	0,1908	0,0255	1,3500	0,7940	3,0540	1,5870
Ex ROS	7,0000	0,1479	0,2088	0,1802	0,1789	0,0210	-0,0980	0,7940	-0,4460	1,5870
Ex CR	7,0000	1,1157	1,9145	1,4166	1,4122	0,2533	1,2930	0,7940	2,6190	1,5870
Ex ATO	7,0000	0,3579	1,4604	0,5836	0,4660	0,3893	2,5690	0,7940	6,7020	1,5870
Ex DR	7,0000	0,1815	0,6535	0,4774	0,4949	0,1514	-1,2360	0,7940	2,4930	1,5870
Ex A:D	7,0000	1,5303	5,5091	2,4474	2,0206	1,3757	2,4390	0,7940	6,2040	1,5870
Ex E:D	7,0000	0,4755	5,3773	1,5010	0,9863	1,7282	2,5260	0,7940	6,5230	1,5870
Ex FL	7,0000	1,1724	1,4240	1,2558	1,2156	0,0971	1,2280	0,7940	-0,0960	1,5870
Ex IC	7,0000	-6,7999	-3,3586	-5,3207	-5,6372	1,2903	0,7410	0,7940	-0,9170	1,5870
Ex BEPS	7,0000	383,7729	1171,0821	739,1129	641,0652	306,9780	0,6340	0,7940	-1,1790	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ex NCAVPS	7,0000	-1,4232	2,3680	0,6166	0,7474	1,1652	-0,4270	0,7940	1,4420	1,5870
Ex NTAVPS	7,0000	0,6568	1,7347	1,1658	0,9529	0,4408	0,2830	0,7940	-2,3180	1,5870
Valid N	7,0000									
C4										
In ROA	7,0000	0,0364	0,2332	0,1362	0,1361	0,0626	-0,1110	0,7940	0,5590	1,5870
In ROE	7,0000	0,0659	0,3513	0,2290	0,2207	0,0997	-0,3050	0,7940	-0,1060	1,5870
In ROS	7,0000	0,0360	0,2661	0,1542	0,1563	0,0708	-0,1600	0,7940	1,2480	1,5870
In CR	7,0000	1,1623	2,7726	1,9734	1,8932	0,5377	0,1270	0,7940	-0,1940	1,5870
In ATO	7,0000	0,6688	1,1966	0,9046	0,8707	0,1710	0,4920	0,7940	0,5160	1,5870
In DR	7,0000	0,3135	0,4714	0,3887	0,3843	0,0608	0,0780	0,7940	-1,7550	1,5870
In A:D	7,0000	2,1213	3,1900	2,6281	2,6020	0,4144	0,2090	0,7940	-1,7430	1,5870
In E:D	7,0000	1,1213	2,1900	1,6281	1,6020	0,4144	0,2090	0,7940	-1,7430	1,5870
In FL	7,0000	-0,7478	0,9516	0,6573	0,8961	0,6217	-2,6090	0,7940	6,8480	1,5870
In IC	7,0000	-19,6784	0,4278	-8,7900	-8,6266	6,5084	-0,4090	0,7940	0,4280	1,5870
In BEPS	7,0000	117,2345	572,2958	387,6302	417,8016	139,8361	-1,1170	0,7940	2,5790	1,5870
In NCAVPS	7,0000	67,2037	931,0500	501,8214	641,5480	321,9646	-0,1830	0,7940	-1,6710	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln NTAVPS	7,0000	681,6104	1902,2300	1308,0140	1444,4177	416,5525	-0,2550	0,7940	-0,6000	1,5870
Ex ROA	7,0000	0,0342	0,2306	0,1328	0,1318	0,0629	-0,0510	0,7940	0,4360	1,5870
Ex ROE	7,0000	0,0649	0,3640	0,2277	0,2126	0,1036	-0,1220	0,7940	-0,3480	1,5870
Ex ROS	7,0000	0,0337	0,2643	0,1505	0,1517	0,0713	-0,0690	0,7940	1,0830	1,5870
Ex CR	7,0000	1,1622	2,7726	1,9734	1,8932	0,5378	0,1270	0,7940	-0,1950	1,5870
Ex ATO	7,0000	0,6686	1,1938	0,9044	0,8688	0,1703	0,4710	0,7940	0,4780	1,5870
Ex DR	7,0000	0,3128	0,4720	0,3867	0,3832	0,0620	0,1260	0,7940	-1,8380	1,5870
Ex A:D	7,0000	2,1187	3,1974	2,6438	2,6098	0,4240	0,1370	0,7940	-1,9170	1,5870
Ex E:D	7,0000	1,0276	2,1550	1,5583	1,5206	0,4305	0,2530	0,7940	-1,6460	1,5870
Ex FL	7,0000	1,0278	1,2954	1,0944	1,0547	0,0943	2,0510	0,7940	4,5040	1,5870
Ex IC	7,0000	-36,9646	-4,3858	-19,9130	-19,2850	12,3039	-0,2660	0,7940	-1,4960	1,5870
Ex BEPS	7,0000	110,0013	568,4114	377,6405	405,3780	141,4254	-0,9740	0,7940	2,1780	1,5870
Ex NCAVPS	7,0000	64,9221	954,3001	507,5338	645,3703	327,0486	-0,1420	0,7940	-1,5680	1,5870
Ex NTAVPS	7,0000	681,6104	1902,2300	1308,0140	1444,4177	416,5525	-0,2550	0,7940	-0,6000	1,5870
Valid N	7,0000									
C5										

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln ROA	6,0000	-0,7422	0,1426	-0,1452	-0,0925	0,3083	-1,8810	0,8450	4,1920	1,7410
ln ROE	6,0000	-5,5776	0,4516	-1,0633	-0,3147	2,2453	-2,2850	0,8450	5,3960	1,7410
ln ROS	6,0000	-6,5393	1,2908	-2,1239	-1,1668	3,1256	-0,6020	0,8450	-1,5160	1,7410
ln CR	6,0000	0,0451	0,3667	0,1413	0,0715	0,1312	1,3450	0,8450	0,4760	1,7410
ln ATO	6,0000	0,0167	0,3906	0,1591	0,1426	0,1430	0,7520	0,8450	-0,0620	1,7410
ln DR	6,0000	0,3828	1,0000	0,7626	0,7911	0,2391	-0,6840	0,8450	-0,3080	1,7410
ln A:D	6,0000	1,0000	2,6125	1,4644	1,2682	0,6111	1,7060	0,8450	2,9740	1,7410
ln E:D	6,0000	0,1331	0,8252	0,4452	0,4403	0,2686	0,2410	0,8450	-1,4390	1,7410
ln FL	6,0000	0,5353	1,4674	1,0554	1,1346	0,3485	-0,5080	0,8450	-0,9540	1,7410
ln IC	6,0000	-3,5982	94,6892	17,0909	3,8691	38,1639	2,4060	0,8450	5,8390	1,7410
ln BEPS	6,0000	-5923,0150	5248,3721	-1258,5873	-875,7828	4151,6508	0,4420	0,8450	-0,1500	1,7410
ln NCAVPS	6,0000	-36131,0795	-5,5031	-18052,0769	-13365,5431	14274,0840	-0,4060	0,8450	-1,3580	1,7410
ln NTAVPS	6,0000	1,7823	48662,1201	24165,2376	23659,5735	18904,3282	0,0530	0,8450	-1,4220	1,7410
Ex ROA	6,0000	-0,7673	0,1117	-0,1669	-0,1145	0,3101	-1,8860	0,8450	4,1330	1,7410
Ex ROE	6,0000	-8,7755	0,4533	-1,6729	-0,3813	3,5136	-2,3440	0,8450	5,6000	1,7410
Ex ROS	6,0000	-8,0833	1,0309	-2,6819	-1,2512	3,7774	-0,7590	0,8450	-1,5590	1,7410
Ex CR	6,0000	0,0423	0,3621	0,1433	0,0882	0,1227	1,4510	0,8450	1,4120	1,7410

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ex ATO	6,0000	0,0167	0,3906	0,1588	0,1415	0,1432	0,7590	0,8450	-0,0690	1,7410
Ex DR	6,0000	0,3997	1,1115	0,7980	0,8070	0,2561	-0,4580	0,8450	-0,1610	1,7410
Ex A:D	6,0000	0,8997	2,5021	1,4019	1,2420	0,5850	1,6860	0,8450	3,0810	1,7410
Ex E:D	6,0000	0,0863	0,6167	0,3940	0,4580	0,2301	-0,4690	0,8450	-2,1390	1,7410
Ex FL	6,0000	0,5936	1,2500	0,9300	0,8750	0,2741	0,1940	0,8450	-2,0050	1,7410
Ex IC	6,0000	-5,1981	90,7723	14,6979	2,2160	37,4608	2,3930	0,8450	5,7890	1,7410
Ex BEPS	6,0000	-7,4631	4,1916	-3,0909	-4,4168	4,7089	0,7120	0,8450	-1,0410	1,7410
Ex NCAVPS	6,0000	0,6344	3,3822	2,3678	2,7436	1,0703	-1,0050	0,8450	-0,3200	1,7410
Ex NTAVPS	6,0000	-7,2494	4,1914	-2,9326	-4,0945	4,5615	0,7410	0,8450	-0,8810	1,7410
Valid N	6,0000									
C6										
ln ROA	3,0000	-0,3492	0,2852	-0,0314	-0,0301	0,3172	-0,0180	1,2250	*	*
ln ROE	3,0000	-1,5971	0,5345	-0,3116	0,1279	1,1317	-1,4840	1,2250	*	*
ln ROS	3,0000	-2,8671	0,3520	-0,8456	-0,0216	1,7606	-1,6450	1,2250	*	*
ln CR	3,0000	0,0724	1,2171	0,8294	1,1987	0,6556	-1,7310	1,2250	*	*
ln ATO	3,0000	0,1218	1,3933	0,7752	0,8104	0,6365	-0,2480	1,2250	*	*

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln DR	3,0000	1,1786	1,6534	1,3557	1,2352	0,2593	1,6400	1,2250	*	*
ln A:D	3,0000	0,6048	0,8485	0,7543	0,8096	0,1309	-1,5620	1,2250	*	*
ln E:D	3,0000	-0,3952	-0,1515	-0,2457	-0,1904	0,1309	-1,5620	1,2250	*	*
ln FL	3,0000	-1,4066	1,0098	0,1975	0,9893	1,3892	-1,7320	1,2250	*	*
ln IC	3,0000	-102,9612	92,3004	-3,7484	-0,5845	97,6692	-0,1460	1,2250	*	*
ln BEPS	3,0000	-291,4757	3175,5388	1263,2672	905,7384	1760,9422	0,8760	1,2250	*	*
ln NCAVPS	3,0000	-11105,4703	-8929,7221	-10285,5594	-10821,4857	1182,7438	1,6200	1,2250	*	*
ln NTAVPS	3,0000	3765,8926	8833,1950	7141,5972	8825,7039	2923,4483	-1,7320	1,2250	*	*
Ex ROA	3,0000	-0,3492	-0,0301	-0,1832	-0,1702	0,1600	-0,3610	1,2250	*	*
Ex ROE	3,0000	0,1279	0,3126	0,2011	0,1630	0,0981	1,4850	1,2250	*	*
Ex ROS	3,0000	-2,8671	-0,0216	-1,0000	-0,1115	1,6175	-1,7260	1,2250	*	*
Ex CR	3,0000	0,0724	1,2171	0,8294	1,1987	0,6556	-1,7310	1,2250	*	*
Ex ATO	3,0000	0,1218	1,5274	1,0142	1,3933	0,7757	-1,6740	1,2250	*	*
Ex DR	3,0000	1,2352	2,2213	1,7033	1,6534	0,4950	0,4490	1,2250	*	*
Ex A:D	3,0000	0,4502	0,8096	0,6215	0,6048	0,1803	0,4130	1,2250	*	*
Ex E:D	3,0000	-0,9562	-0,1904	-0,5389	-0,4702	0,3875	-0,7730	1,2250	*	*
Ex FL	3,0000	-1,4066	1,7889	0,4572	0,9893	1,6629	-1,2920	1,2250	*	*

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ex IC	3,0000	-2,2675	92,3004	29,8161	-0,5845	54,1195	1,7300	1,2250	*	*
Ex BEPS	3,0000	-1005,7038	905,7384	-130,4804	-291,4757	965,8377	0,7290	1,2250	*	*
Ex NCAVPS	3,0000	-11105,4703	-8929,7221	-10285,5594	-10821,4857	1182,7438	1,6200	1,2250	*	*
Ex NTAVPS	3,0000	-1005,7038	905,7384	-130,4804	-291,4757	965,8377	0,7290	1,2250	*	*
Valid N	3,0000									
C7										
In ROA	7,0000	0,0751	0,1919	0,1290	0,1317	0,0367	0,4020	0,7940	0,9280	1,5870
In ROE	7,0000	0,1610	0,2934	0,2468	0,2656	0,0431	-1,4700	0,7940	2,6350	1,5870
In ROS	7,0000	0,1467	0,2566	0,1903	0,1952	0,0402	0,5920	0,7940	-0,6230	1,5870
In CR	7,0000	0,1295	1,3377	0,9781	1,1069	0,4040	-1,9320	0,7940	4,0500	1,5870
In ATO	7,0000	0,4686	0,8616	0,6768	0,6921	0,1248	-0,3930	0,7940	0,6770	1,5870
In DR	7,0000	0,4725	0,6757	0,5268	0,5162	0,0699	2,0120	0,7940	4,5500	1,5870
In A:D	7,0000	1,4799	2,1166	1,9229	1,9371	0,2177	-1,6260	0,7940	3,1930	1,5870
In E:D	7,0000	0,8740	1,1188	1,0170	1,0450	0,1052	-0,3110	0,7940	-2,2080	1,5870
In FL	7,0000	-6,2124	0,8407	-0,4873	0,3099	2,5346	-2,6010	0,7940	6,8270	1,5870
In IC	7,0000	-5,2794	0,8614	-1,2583	-0,4491	2,0442	-1,5230	0,7940	2,2580	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln BEPS	7,0000	1108,6151	791352,9164	224749,5377	1434,4175	381626,8375	1,2300	0,7940	-0,8360	1,5870
ln NCAVPS	7,0000	-5430,8442	-1162,3443	-2443,4613	-1703,2808	1544,5775	-1,5490	0,7940	1,6570	1,5870
ln NTAVPS	7,0000	3669,6366	22624,5787	6974,1657	4178,1135	6924,1388	2,6090	0,7940	6,8510	1,5870
Ex ROA	7,0000	0,0556	0,1891	0,1236	0,1289	0,0397	-0,1220	0,7940	2,1040	1,5870
Ex ROE	7,0000	0,1632	0,3126	0,2515	0,2574	0,0537	-0,6500	0,7940	-0,5970	1,5870
Ex ROS	7,0000	0,1176	0,2206	0,1792	0,1951	0,0387	-0,5260	0,7940	-1,0630	1,5870
Ex CR	7,0000	0,1172	1,3053	0,9644	1,1029	0,4024	-1,9570	0,7940	4,1050	1,5870
Ex ATO	7,0000	0,4728	0,8655	0,6788	0,6929	0,1240	-0,3360	0,7940	0,7550	1,5870
Ex DR	7,0000	0,4730	0,6788	0,5293	0,5209	0,0704	1,9870	0,7940	4,4470	1,5870
Ex A:D	7,0000	1,4732	2,1140	1,9138	1,9197	0,2174	-1,5950	0,7940	3,0630	1,5870
Ex E:D	7,0000	0,6694	1,1575	0,9495	0,9760	0,1538	-0,7480	0,7940	1,4610	1,5870
Ex FL	7,0000	1,0399	2,5165	1,3849	1,2410	0,5057	2,4950	0,7940	6,4360	1,5870
Ex IC	7,0000	-26,0644	-1,6594	-7,9922	-5,1501	8,1839	-2,3590	0,7940	5,8990	1,5870
Ex BEPS	7,0000	813,6995	813294,1995	229167,1820	1407,1692	389425,9035	1,2320	0,7940	-0,8280	1,5870
Ex NCAVPS	7,0000	-2306,1405	1957,1801	862,4939	1253,3608	1442,1255	-2,3020	0,7940	5,7120	1,5870
Ex NTAVPS	7,0000	813,6709	1513,6962	1101,0966	1100,9298	275,6625	0,5300	0,7940	-1,2120	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Valid N	7,0000									
C8										
In ROA	7,0000	0,0826	0,0959	0,0900	0,09048	0,0046	-0,2970	0,7940	-0,2680	1,5870
In ROE	7,0000	0,1537	0,2482	0,2038	0,20450	0,0296	-0,2860	0,7940	0,9410	1,5870
In ROS	7,0000	0,0604	0,0711	0,0640	0,06124	0,0042	0,9400	0,7940	-0,7400	1,5870
In CR	7,0000	1,0968	1,6547	1,3119	1,30709	0,1922	0,7800	0,7940	0,5520	1,5870
In ATO	7,0000	1,1626	1,5685	1,4128	1,47123	0,1426	-1,1140	0,7940	0,2220	1,5870
In DR	7,0000	0,4615	0,6361	0,5518	0,55006	0,0531	-0,1920	0,7940	1,5390	1,5870
In A:D	7,0000	1,5721	2,1668	1,8271	1,81800	0,1821	0,8300	0,7940	2,1010	1,5870
In E:D	7,0000	0,5721	1,1668	0,8271	0,81800	0,1821	0,8300	0,7940	2,1010	1,5870
In FL	7,0000	0,7252	0,9238	0,8072	0,75767	0,0827	0,4600	0,7940	-2,2050	1,5870
In IC	7,0000	-12,1173	-2,6386	-5,4474	-3,12656	3,5854	-1,2160	0,7940	0,7440	1,5870
In BEPS	7,0000	120,7175	561,3967	297,2976	254,92143	161,8455	0,6880	0,7940	-0,7490	1,5870
In NCAVPS	7,0000	-0,0920	0,3778	0,0738	0,03092	0,1503	1,5880	0,7940	3,1490	1,5870
In NTAVPS	7,0000	0,0594	0,4608	0,2239	0,18513	0,1701	0,8390	0,7940	-1,1680	1,5870
Ex ROA	7,0000	0,0826	0,0959	0,0900	0,09048	0,0046	-0,2970	0,7940	-0,2680	1,5870
Ex ROE	7,0000	0,1554	0,2491	0,2042	0,20485	0,0289	-0,2170	0,7940	1,2330	1,5870
Ex ROS	7,0000	0,0604	0,0711	0,0640	0,06124	0,0042	0,9400	0,7940	-0,7400	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ex CR	7,0000	1,0968	1,6547	1,3119	1,30709	0,1922	0,7800	0,7940	0,5520	1,5870
Ex ATO	7,0000	1,1626	1,5685	1,4128	1,47123	0,1426	-1,1140	0,7940	0,2220	1,5870
Ex DR	7,0000	0,4615	0,6361	0,5518	0,55006	0,0531	-0,1920	0,7940	1,5390	1,5870
Ex A:D	7,0000	1,5721	2,1668	1,8271	1,81800	0,1821	0,8300	0,7940	2,1010	1,5870
Ex E:D	7,0000	0,5686	1,1521	0,8237	0,81577	0,1772	0,7580	0,7940	2,1430	1,5870
Ex FL	7,0000	1,0239	1,1242	1,0748	1,08064	0,0423	-0,0460	0,7940	-2,2330	1,5870
Ex IC	7,0000	-42,8248	-9,0505	-20,3853	-13,40089	13,2193	-0,8960	0,7940	-0,6220	1,5870
Ex BEPS	7,0000	120,7175	561,3967	297,2976	254,92143	161,8455	0,6880	0,7940	-0,7490	1,5870
Ex NCAVPS	7,0000	-0,0920	0,3778	0,0738	0,03092	0,1503	1,5880	0,7940	3,1490	1,5870
Ex NTAVPS	7,0000	0,0594	0,4608	0,2239	0,18513	0,1701	0,8390	0,7940	-1,1680	1,5870
Valid N	7,0000									
C9										
In ROA	7,0000	0,0428	0,1179	0,0743	0,0688	0,0255	0,6010	0,7940	0,0930	1,5870
In ROE	7,0000	0,0733	0,1915	0,1323	0,1256	0,0414	0,1060	0,7940	-0,8500	1,5870
In ROS	7,0000	0,0882	0,2410	0,1543	0,1412	0,0533	0,4510	0,7940	-0,5120	1,5870
In CR	7,0000	1,1996	11,8886	2,8397	1,3579	3,9913	2,6430	0,7940	6,9880	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln ATO	7,0000	0,4654	0,4892	0,4821	0,4858	0,0090	-1,4300	0,7940	0,8150	1,5870
ln DR	7,0000	0,3028	0,4663	0,3913	0,3853	0,0574	0,0080	0,7940	-0,3360	1,5870
ln A:D	7,0000	2,1444	3,3028	2,6044	2,5956	0,3950	0,6520	0,7940	0,7360	1,5870
ln E:D	7,0000	1,1444	1,8207	1,5256	1,5956	0,2667	-0,7510	0,7940	-1,0420	1,5870
ln FL	7,0000	0,1062	0,9442	0,6702	0,6601	0,2858	-1,3890	0,7940	2,4140	1,5870
ln IC	7,0000	-16,9180	-0,1188	-5,6431	-1,9417	6,4983	-1,2070	0,7940	-0,1210	1,5870
ln BEPS	7,0000	770,3928	3474,6881	1584,1290	1455,6634	893,7328	1,9130	0,7940	4,4520	1,5870
ln NCAVPS	7,0000	-9,8224	-1,3989	-3,9169	-2,8415	2,8416	-1,8730	0,7940	3,6830	1,5870
ln NTAVPS	7,0000	1,3591	5,0135	3,1567	2,6297	1,4935	0,2990	0,7940	-1,9390	1,5870
Ex ROA	7,0000	0,0433	0,1179	0,0743	0,0688	0,0255	0,6130	0,7940	0,0700	1,5870
Ex ROE	7,0000	0,0728	0,2617	0,1438	0,1294	0,0591	1,4100	0,7940	3,0180	1,5870
Ex ROS	7,0000	0,0891	0,2410	0,1544	0,1412	0,0532	0,4630	0,7940	-0,5380	1,5870
Ex CR	7,0000	1,1996	11,8886	2,8397	1,3579	3,9913	2,6430	0,7940	6,9880	1,5870
Ex ATO	7,0000	0,4654	0,4892	0,4820	0,4858	0,0090	-1,4290	0,7940	0,8140	1,5870
Ex DR	7,0000	0,3028	0,4663	0,3913	0,3853	0,0574	0,0080	0,7940	-0,3350	1,5870
Ex A:D	7,0000	2,1443	3,3030	2,6044	2,5956	0,3951	0,6520	0,7940	0,7360	1,5870
Ex E:D	7,0000	1,1260	1,6086	1,3854	1,4310	0,1907	-0,3810	0,7940	-1,7130	1,5870
Ex FL	7,0000	0,3888	1,1300	0,9510	1,0330	0,2583	-2,2440	0,7940	5,2690	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Ex IC	7,0000	-58,3092	9,6981	-16,0141	-11,2983	22,5297	-1,1640	0,7940	1,4310	1,5870
Ex BEPS	7,0000	778,7953	3480,7337	1584,6767	1449,2833	894,7675	1,9300	0,7940	4,5040	1,5870
Ex NCAVPS	7,0000	-9822,3685	-1398,9424	-3916,9018	-2841,4694	2841,6272	-1,8730	0,7940	3,6830	1,5870
Ex NTAVPS	7,0000	1359,1211	5013,5240	3156,6560	2629,7451	1493,5492	0,2990	0,7940	-1,9390	1,5870
Valid N	7,0000									
C10										
In ROA	7,0000	0,0597	0,0848	0,0747	0,0758	0,0082	-0,9910	0,7940	0,9870	1,5870
In ROE	7,0000	0,1522	0,2190	0,1943	0,2058	0,0249	-0,9600	0,7940	-0,4310	1,5870
In ROS	7,0000	0,0258	0,0355	0,0306	0,0314	0,0035	-0,2500	0,7940	-0,8210	1,5870
In CR	7,0000	1,1002	1,2540	1,1350	1,1176	0,0531	2,5090	0,7940	6,4770	1,5870
In ATO	7,0000	2,2679	2,9278	2,4537	2,3890	0,2323	1,7050	0,7940	3,1300	1,5870
In DR	7,0000	0,5804	0,6285	0,5995	0,5957	0,0166	0,9220	0,7940	0,2580	1,5870
In A:D	7,0000	1,5911	1,7231	1,6691	1,6788	0,0454	-0,8360	0,7940	0,1040	1,5870
In E:D	7,0000	0,5911	0,7231	0,6691	0,6788	0,0454	-0,8360	0,7940	0,1040	1,5870
In FL	7,0000	0,4252	0,7426	0,6369	0,6821	0,1092	-1,3540	0,7940	1,8710	1,5870
In IC	7,0000	-2,8857	-0,7398	-1,9406	-2,1460	0,7470	0,3890	0,7940	-0,5280	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ln BEPS	7,0000	141,2642	2100,5564	1354,4258	1497,6329	642,5006	-1,1850	0,7940	1,5840	1,5870
ln NCAVPS	7,0000	-1,6563	-0,4050	-0,9193	-0,6915	0,4624	-0,6750	0,7940	-1,0480	1,5870
ln NTAVPS	7,0000	5,7500	10,6202	7,9257	7,6827	1,8524	0,3200	0,7940	-1,3910	1,5870
Ex ROA	7,0000	0,0576	0,0873	0,0755	0,0791	0,0099	-0,9890	0,7940	0,7760	1,5870
Ex ROE	7,0000	0,1671	0,2485	0,2009	0,1916	0,0328	0,3550	0,7940	-1,8370	1,5870
Ex ROS	7,0000	0,0253	0,0367	0,0309	0,0314	0,0043	-0,2190	0,7940	-1,3290	1,5870
Ex CR	7,0000	1,1074	1,2642	1,1374	1,1152	0,0565	2,5360	0,7940	6,5470	1,5870
Ex ATO	7,0000	2,2742	2,9297	2,4510	2,3808	0,2332	1,7570	0,7940	3,2860	1,5870
Ex DR	7,0000	0,5811	0,6289	0,5988	0,5940	0,0166	1,0370	0,7940	0,7370	1,5870
Ex A:D	7,0000	1,5901	1,7209	1,6710	1,6836	0,0453	-0,9460	0,7940	0,5170	1,5870
Ex E:D	7,0000	0,5439	0,8081	0,6413	0,6074	0,0942	0,9150	0,7940	0,1660	1,5870
Ex FL	7,0000	1,1142	1,2891	1,1629	1,1473	0,0598	1,9570	0,7940	4,1930	1,5870
Ex IC	7,0000	-9,7555	-4,4595	-7,6777	-7,7886	1,7837	0,8830	0,7940	0,7240	1,5870
Ex BEPS	7,0000	141,2364	2020,6314	1366,2367	1562,9360	634,7309	-1,4130	0,7940	1,8120	1,5870
Ex NCAVPS	7,0000	-1,6912	-0,3064	-0,9025	-0,6295	0,5035	-0,6590	0,7940	-0,9500	1,5870
Ex NTAVPS	7,0000	5,7500	10,6202	7,9257	7,6827	1,8524	0,3200	0,7940	-1,3910	1,5870

	N	Minimum	Maximum	Mean	Medium	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Valid N	7,0000									

***The kurtosis could not be determined because of missing data, the N is too small**