The impact of the deferred tax adjustment on the EVA measure for JSE-listed Food producers and Retailers in South Africa

Submitted in fulfillment of the requirements of the degree of Master of Technology: Cost and Management Accounting in the Faculty of Accounting and Informatics at Durban University of Technology

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DECLARATION

I declare that this dissertation is my own work and that all sources I have used or quoted have been indicated and acknowledged by means of complete references. Also, this work has not been previously accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Student: _____ Date: _____

Approved for Final submission

Supervisor: _____ Date: _____

Co-supervisor: _____ Date: _____

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"I can do all things through Christ who strengthens me" Philippians 4:13

"With God all things are possible" Matthew 19:26

To the Lord Jesus Christ, for providing me with grace, strength and wisdom to complete this study.

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ABSTRACT

Economic Value Added (EVA) is a value based accounting measure used by companies to measure the amount of value created for shareholders.

Accounting values derived from company annual financial statements (AFS), are used to calculate EVA. EVA requires the conversion of accounting values to economic values. This conversion process is known as the EVA adjustment. If accounting values are not converted to economic values, the value of the EVA can be distorted.

Previous studies have shown that companies are experiencing difficulties in implementing EVA adjustments. To reduce these difficulties, companies have decided to limit their EVA adjustments to ten or even fewer. The problem is that if the appropriate adjustments are not made, an inaccurate EVA measure will be calculated.

The aim of the research was to measure the impact of deferred taxes on the EVA measure. The study was conducted within a quantitative research paradigm. Secondary data analysis was carried out on JSE-listed Food producers and Retailers over a seven-year period, from 2004 to 2010. The unadjusted EVA was compared to the adjusted EVA measure to determine the before and after effects of deferred taxes on EVA.

The findings of the study revealed that deferred taxes either understated or overstated the value of the EVA during 2004 to 2010. In addition, the results from the regression analysis revealed an overall significance for all deferred tax predictors. The regression results showed that deferred taxes significantly impacted the value of EVA. The study recommends that companies implement the deferred tax adjustment on the EVA measure.

KEYWORDS:

Unadjusted EVA
Adjusted EVA
Deferred tax adjustment

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CHAPTER 1 : INTRODUCTION AND OVERVIEW OF STUDY

1.1 INTRODUCTION

This chapter introduces the development of the research topic under investigation. The research topic investigates the impact of the deferred tax adjustment on the Economic Value Added (EVA) measure. Thereafter, an explanation into the background of the study is given. The background of the study provides a foundation for the establishment of the research problem and the purpose of the research. The research questions are stated. The aim and objectives are described in conjunction with an overview of the research methodology. The de-limitation is highlighted. The chapter concludes with the research contribution, followed by a brief explanation into the structure and the content of the chapters to follow.

1.2 DEVELOPMENT OF THE RESEARCH TOPIC

The recent economic recession has impacted the creation of shareholder value. This section explains the importance of EVA as a reliable measure for value creation.

The global recession began in 2007 (Svirina, 2012:95). The economic decline has negatively impacted the corporate world, with many industries experiencing difficulties in the creation of value for stakeholders (Berthon, 2010:354). Many businesses have realised the importance of value creation, and its implications on the future development of a company.

To add, the concept of value creation has proved to be an important one, especially for investors. In particular, shareholders are viewed as one of the most important stakeholders in any business, as shareholder investment is the primary source of capital for a business. As a result, companies have recognised that shareholders require an adequate return on investment and the creation of value to their investment.

According to Drury (2011:6), shareholders are external users of a company's annual financial statements (AFS). Shareholders examine a company's financial position and a company's performance, to determine the sustainability of the company in the long-run. If the shareholder perceives that a company is not sustainable, then disinvestment will occur or there will be low levels of investment in that particular company. However, if the shareholder perceives that the company is sustainable, then this perception will be followed by an increase in investment activity. An examination of the company's financial information also serves as an indicator of the company's ability to provide an adequate return on investment.

In addition, potential and current shareholders also focus on profitability measures calculated by a company. Shareholders use profitability measures to determine if a company is able to pay out the required return on an investment. Mackenzie, Coetsee, Njikizana, Chamboko, Colyvas and Hanekom (2012:789) stated that investors are devoted to earnings per share (EPS) data. This implies that shareholders pay much attention to EPS, which indicates how much investors earn for each share held.

However, EPS may not be the best measure for investors to look at when making a decision to invest in shares. Mackenzie *et al.* (2012:789) stated that the EPS measure runs the risk of being incomplete and misleading. This means that EPS is calculated on company profit, which runs a risk of being manipulated by managers. Managers can inflate company profits. For example, if managers defer company expenses, the profits would be inflated. If company profits are manipulated, it also means that the accuracy of the EPS measure is compromised since the EPS measure is based on company profits.

A review of literature by Sharma and Kumar (2010:200); Abdeen and Haight (2002) and Lin and Zhilin (2008:41) revealed the drawbacks of financial measures. Financial measures may also be referred to as traditional accounting measures. EPS is a common example of a traditional accounting measure.

The above scholars documented the drawbacks of traditional accounting measures. The drawbacks of traditional accounting measures imply that the reliability of such measures is questionable. As a result of further research on other accounting measures, the EVA was identified as one measure that has the potential to indicate returns delivered to shareholders.

Reddy and Rajesh (2011:19) indicated that the EVA reflects a picture of the true return the company delivers to its shareholders. In other words, the EVA measure is calculated in a manner that reflects an accurate return delivered to shareholders. Whereas, the EPS measure runs the risk of being inaccurate as it is based on profits, the EVA measure is likely to be more reliable measure than the EPS. To conclude, the investor can rely on EVA, as EVA reflects the return delivered to shareholders and also indicates the amount of shareholder wealth created.

1.3 BACKGROUND AND CONTEXT OF RESEARCH

The success of a business depends on managerial decision-making. Accounting information is used for decision-making purposes. This section describes the use of EVA to make informed decisions and explains the problems encountered by companies when using EVA.

Company annual financial statements (AFS) provide a basis by which companies calculate accounting ratios. These accounting ratios provide companies with information during the decision making process (Collier, 2012:125,135).

Managers and proprietors rely on accounting ratios to make decisions, which, in turn, must create value for shareholders. It is, therefore, essential for managers to act in the best interests of shareholders, by making decisions that will benefit the shareholder (Collier, 2012:125). As a result, the primary goal of management is to increase shareholder wealth by aligning the interests of management with that of shareholders (Lovata and Costigan, 2002:215). In addition, Sharma and Kumar (2010:200) stated that maximizing shareholder value has become the new corporate paradigm.

In order to maximise shareholder value, a tool is required to measure shareholder value. Many companies use EVA as a tool to measure shareholder value. The EVA measure is the registered trademark of a New York based consulting company called Stern Stewart and Company. During the late 1980's, Bennett Stewart and Joel Stern pioneered the EVA measure as one of the value-based accounting measures (Stewart, 1991:110).

EVA is a tool used by many companies to measure the amount of shareholder value created. Ray (2001:66) has pointed out that EVA has been used increasingly and successfully in the corporate world by corporate giants such as Coca-Cola, AT&T, Briggs-Stratton, DuPont, Eli Lilly and Quaker Oats. The EVA measure indicates the amount of value created for shareholders (Latha, 2009:49). A positive EVA indicates value creation whilst a negative EVA represents value destruction (Young 1997:335).

The original inventor, Stern Stewart and Company, created the following formulae to calculate EVA:

Net operating profit after taxes–(total capital employed x weighted average cost of capital) (Correia, Langfield-Smith, Thorne and Hilton, 2008:628)

The computation of the EVA measure requires the extraction of accounting information from company AFS. AFS are prepared according to accounting standards and, therefore, reflect accounting values. Burksaitiene (2009:711) makes an important point by stating that accounting values are distorted due to the application of Generally Accepted Accounting Practices (GAAP). Furthermore, accounting values need to be adjusted to reflect an economic value for the purposes of calculating EVA. For example, the 'profit for the period', as reflected on the statement of comprehensive income, and 'capital', as reflected on the statement of financial position, are accounting values. These accounting values need to be converted to economic values. The 'profit for the period' is converted to an economic value called net operating profit after taxes (NOPAT). Likewise, 'capital' is converted to an economic value called total capital employed (TCE). The conversion of accounting values to economic values is referred to as an adjustment (Burksaitiene, 2009:711).

Converting accounting values to economic values is important for the purposes of calculating EVA. Economic values must be reflected in the EVA measure, hence, the term 'Economic Value Added'. According to Stewart (1991:112), the EVA must also be adjusted for other accounting transactions that take place during the year. The accounting transactions include research and development; operating leases, depreciation and deferred taxes. The EVA must be adjusted for accounting transactions because these transactions are accounting values that affect the values of NOPAT and TCE. The NOPAT and TCE are components of EVA. Therefore, adjustments to NOPAT and TCE are synonymous to adjusting the EVA measure.

However, Sharma and Kumar (2010:205) were of the view that companies are experiencing difficulties in understanding and implementing adjustments. In addition, Young (1997:338) stated that companies have decided to keep their adjustments to ten or fewer in order to prevent the EVA system from becoming complicated. Furthermore, Young (1997:338) indicated that some companies prefer not to make any adjustments, so that the system is easier to administer and comprehend. The research problem is that the accuracy of the EVA measure is affected for companies that are not prepared to implement the appropriate adjustments. The current research study seeks to make a contribution towards improving the accuracy of the EVA measure. This will be achieved by investigating the impact of the deferred tax adjustment on the EVA measure.

To date, various studies have been conducted on EVA. However, very few studies have been conducted on EVA and accounting adjustments (Latha, 2009:53). A database search showed that there was only one study that examined the role of adjustments on EVA. A study by Anderson, Bey and Weaver (2005:2) investigated the impact of accounting adjustments on the EVA measure. The study was found to be the most relevant piece of literature in relation to this research.

The study conducted by Anderson Bey and Weaver (2005:16) compared the value of the EVA measure before accounting adjustments and then compared the value of the EVA measure after accounting adjustments. The results of the study determined the impact of accounting adjustments on EVA. However, the study was unable to determine the statistical significance of the relationship between accounting adjustments and EVA.

The reason for the lack of statistical significance was due to the selection of the number and type of adjustments. The number and types of adjustments resulted in a lack of commonality. The lack of commonality resulted in the lack of comparability. As a result, the overall results could not determine the material affect of accounting adjustments on EVA (Anderson, Bey and Weaver, 2005:16).

In order to prevent the difficulties experienced by Anderson, Bey and Weaver, the researcher has chosen only one adjustment. Deferred tax has been chosen, as it is an adjustment that occurs every year for each company and is also a common adjustment between companies. This is evident as a review of the companies' AFS showed that each sample company recognised deferred tax. The deferred tax values were reflected on each company's statement of financial position and on the statement of comprehensive income. In addition, deferred taxes were reflected on each company's AFS for each year starting from 2004 to 2010 (sample period). As a result, the deferred tax adjustment facilitates comparability for each of the sample years for a single company and between each company.

According to Latha (2009:53), there is much room for studies to be conducted on the importance and significance of accounting adjustments on EVA within a different sector and under different GAAP settings.

The researcher conducted the research under a different GAAP setting, as the research is being done within a South African context. It is important to note that the accounting standards, that govern the preparation of company AFS, have undergone many changes over the past decade.

In 2003, the Accounting Practices Board (APB) decided to harmonise South African Statements of Generally Accepted Accounting Practice (SA GAAP) with International Financial Reporting Standards (IFRS). Since 2003, the APB had issued IFRS standards as SA GAAP. At that point in time, the regulations permitted companies to use either IFRS or IFRS for Small Medium Enterprises (SMEs) or SA GAAP. In order to reduce the burden of issuing each IFRS standard as SA GAAP, a decision was made to discontinue SA GAAP. As a result, SA GAAP ceased to apply in respect of financial years commencing on or after 01 December 2012. This means that entities previously applying SA GAAP will be required to comply either with IFRS or IFRS for SMEs (SAICA: 2012).

In the context of this study, it is also important to note the applicable financial reporting framework for JSE-listed companies, since JSE-listed companies constitute the sample population for the current study. Prior to 2005, the JSE-listed South African companies could choose to comply either with IFRS or SA GAAP. As of 2005, all South African listed companies are compelled by the JSE-listing requirements to comply with IFRS when preparing their AFS. This means that all listed companies are required to record and report all transactions in accordance with the standards set out in the IFRS (Vorster, Koornhof, Oberholster and Koppeschaar, 2010:778).

The applicable accounting standard under the IFRS, for the current study is the deferred tax standard, which is referred to as the International Accounting Standard 12 (IAS 12). It is important to explain the relevance of IAS 12, as deferred tax is the independent variable of the current study. IAS 12 specifies the accounting treatment for deferred taxes and requires the recognition of deferred tax assets and deferred tax liabilities together with the disclosure thereof on the face of the company AFS (Deliotte and Touche, 2011).

The transition from SA GAAP to IRFS does not impact the research under investigation, as SA GAAP practices have been aligned with the IFRS standards (Vorster *et al*., 2010: 778). In other words, SA GAAP has converged with IFRS. This was confirmed by a review of the sample companys' AFS for the sample period 2004-2010. The review showed that the accounting treatment for deferred taxes is the same under both the South African GAAP and IFRS. The AFS of sample companies showed the recognition and disclosure of deferred taxes from 2004 to 2010.

Both Latha and the inventors of EVA (Stewart Bennett and Joel Stern) have discussed the accounting adjustments for EVA under a GAAP setting. Latha mentions the use of GAAP, because GAAP was the applicable accounting standard at that point in time. The adjustment for deferred taxes is still applicable because all sample companies have recognised and disclosed deferred taxes as set out in accordance with IAS 12. Therefore, the current study will focus on implementing the deferred tax adjustment when computing EVA.

To the best of the researcher's knowledge, no research has been done on the impact of deferred tax adjustments on EVA within a South African context. As a result, the current study will investigate the impact of the deferred tax adjustment on EVA for JSE-listed Food producers and Retailers.

1.4 RESEARCH PROBLEM

One of the sources of accounting information is the company AFS. Accounting information is used to calculate EVA. However, accounting information does not reflect economic values, as accounting information is prepared according to IFRS. In contrast, economic values are cash values that are required for the purposes of calculating EVA. As a result, the accounting values that are reflected on company AFS must be converted to economic values. This conversion process is called an adjustment. Young (1997:338) states that there are more than one hundred adjustments that can be made to EVA.

Sharma and Kumar also agreed that there are several EVA adjustments. Furthermore, many companies are experiencing difficulties in understanding EVA adjustments. The lack of understandability presents a challenge to companies during the implementation process (Sharma and Kumar, 2010:205).

Young (1997:338) stated that the problems experienced during the implementation process have resulted in a reduction in the number of adjustments to ten or even fewer, with some companies that are not prepared to implement any adjustments to EVA.

The current study will investigate the implementation of the deferred tax adjustment on EVA. Deferred tax represents the difference between taxes expensed and taxes paid. In other words, deferred tax does not represent cash flows between a company and the Receiver of Revenue (Worthington and West, 2001:74). Furthermore, deferred taxes are identified, measured and disclosed in accordance with IAS 12 (Mackenzie *et al.,* 2012:759). Therefore, deferred tax values are classified as accounting values as deferred taxes are prepared according to accounting standards.

Consequently, deferred taxes are removed from EVA because deferred taxes are not economic values. As a result, the researcher considers the deferred tax adjustment to be one of the appropriate adjustments for EVA. If the appropriate adjustments are not made, the EVA would be inaccurate.

The current study focuses on bridging the knowledge gap. Latha (2009:53) stated that there is much room for research to be done on the role and significance of adjustments in EVA. The current study bridges the knowledge gap by investigating the impact of the deferred tax adjustment on EVA.

1.5 RESEARCH AIM

The aim of this research is to determine the impact of the deferred tax adjustment on EVA for JSE-listed Food producers and Retailers in South Africa.

1.6 RESEARCH OBJECTIVES

In order to achieve the above aim, the following objectives will be addressed:

1.6.1 To calculate the unadjusted EVA and adjusted EVA. To achieve this objective, the following sub-objectives will be addressed:

1.6.1.1 To calculate the unadjusted NOPAT and adjusted NOPAT; and

1.6.1.2 To calculate the unadjusted TCE and adjusted TCE.

1.6.2 To evaluate the impact of deferred taxes on EVA. To achieve this objective, the following sub-objectives will be addressed:

1.6.2.1 To evaluate the impact of deferred taxes on the unadjusted and the adjusted NOPAT; and

1.6.2.2 To evaluate the impact of deferred taxes on the unadjusted and the adjusted TCE.

1.6.3 To compute a regression model to evaluate the statistical significance of deferred taxes on EVA; and

1.6.4 To show the impact of deferred taxes on EVA based on the statistical significance of the regression model.

1.7 RESEARCH QUESTIONS

The research questions developed for this study were adapted to form the major themes in the literature review. As a result, the research questions guide the research study. This study is based on the following research questions:

1.7.1 What is the unadjusted EVA and adjusted EVA?

1.7.1.1 What is the unadjusted NOPAT and adjusted NOPAT?

1.7.1.2 What is the unadjusted TCE and adjusted TCE?

1.7.2 What is the impact of deferred taxes on EVA?

1.7.2.1 What is the impact of deferred taxes on the unadjusted and adjusted NOPAT?

1.7.2.2 What is the impact of deferred taxes on the unadjusted and adjusted TCE?

1.7.3 How would the impact of deferred taxes on EVA be evaluated?

1.7.4 Does the deferred tax adjustment significantly impact EVA?

The research questions, stated in 1.7.1 and 1.7.2 were specifically addressed in the literature review. In addition, all research questions were answered during the data analysis phase of the current research study in Chapter 4. These questions were developed to achieve the research aim.

1.8 RESEARCH HYPOTHESES

The null and alternate hypotheses were developed to achieve the research aim. The following hypotheses were statistically tested during the data analysis phase of the research study:

1.8.1 Null hypothesis

Ho = The deferred tax adjustment has no significant impact on the EVA measure.

1.8.2 Alternate hypothesis

H1 = The deferred tax adjustment has a significant impact on the EVA measure.

1.9 RATIONALE FOR THE STUDY

The purpose of this research is to investigate the impact of the deferred tax adjustment on EVA. This research will inform companies about the importance of making the deferred tax adjustment to their EVA measure. The results of this research study will determine the impact of deferred taxes on EVA. Furthermore, the current research study will determine if the deferred tax adjustment is appropriate when calculating EVA. Appropriate adjustments are considered to be significant adjustments, which impact the accuracy of EVA. The accuracy of the EVA measure is important because managers use EVA to make decisions. These managerial decisions impact the creation of shareholder value.

1.10 RESEARCH METHODOLOGY

The following section provides an overview of the salient aspects of the research methodology for the current study.

1.10.1 Research design

This research was conducted within a quantitative research paradigm. This research makes use of the secondary data collection method. The current study is an explanatory study and is longitudinal in nature.

1.10.2 Target population

The target population for this study constituted a total of 346 JSE-listed companies. JSE-listed companies were chosen because these companies trade shares on the stock market and are, therefore, more likely to adopt EVA (Drury, 2011:48).

1.10.3 Sampling method

A purposive sampling method was used to select companies that adopt EVA. The study by Alzawahreh and Khasawneh (2011:518) showed that companies in the Food producer and Retail sector used a defender strategy. Furthermore, Lovata and Costigan (2002:218) stated that companies, which used a defender strategy, adopted EVA. Therefore, a sample of 34 JSE-listed Food producers and Retailers were chosen out of the 346 JSE-listed companies. However, due to missing data on the McGregor's database, the final sample constituted a total of 21 JSE-listed Food producer and Retail companies.

1.10.4 Measuring instrument

The researcher conducted an EVA and deferred tax analysis on company AFS. The values from the company AFS were used for the EVA and deferred tax analysis. The EVA and deferred tax analysis were performed using EVA formulae and the deferred tax adjustment procedure as specified by Stern Stewart and Company.

1.10.5 Data collection

AFS, together with other financial information, was downloaded from the McGregor's BFA database (www.mcgregorsbfa.com).

1.10.6 Data analysis

In the context of the current study, the data analysis refers to an EVA and deferred tax analysis. The EVA and deferred tax analysis encompass the computation of the unadjusted EVA, deferred taxes and the adjusted EVA.

The EVA and deferred tax analysis were computed on pre-formatted Microsoft Excel spreadsheet. Thereafter, the EVA and deferred tax computations were sent for statistical analysis. The data was statistically analysed using SPSS 20.0 and Statgraphics Centurion 15.0.

The research hypotheses were statistically tested via a multiple regression analysis. A two-tailed significance test at the 0.01 significance level was calculated. The significance of the regression statistic was used to determine the rejection/acceptance of the null hypothesis. In addition, other statistics such as bar charts, the Pearson's product-moment correlation statistics and scattergrams were used.

1.10.7 Ethical considerations

The researcher was granted permission to download secondary data from McGregor's BFA database. A consultant from McGregor's granted the researcher access via a username and password (Refer to Appendix A). The names of companies together with the results from the data analysis are disclosed in Chapter 4.

The units of analysis for the current study constitute JSE-listed Food producer and Retail companies. This study does not involve data collection and analysis from humans. For this reason, the Institutional Research Ethics Committee (IREC) required no ethical consideration.

1.10.8 Validity and reliability

The current study was an experimental research study. The independent and dependent variables were subject to a laboratory experiment. Also, this study used EVA formulae that were developed by Bennett Stewart and Joel Stern. The use of the unadjusted and adjusted EVA formulae was applied when conducting the EVA and deferred tax analysis. In this way, construct

validity was achieved, as the EVA formulae measured what it supposed to measure.

Reliability was achieved during the data analysis phase by using the parallel forms reliability test. This study used two different types of EVA formulae to calculate the unadjusted and adjusted EVA values. The values of the unadjusted and adjusted EVA were correlated under the two types of EVA formulae. The comparison under both EVA formulae yielded the same result. In this way, reliability was achieved.

1.10.9 De-limitations of research study

This study was delimited to JSE-listed companies in the Food producer and Retail sector of South Africa to meet the criteria for those companies that adopt EVA.

1.11 VALUE OF RESEARCH

The current research study makes an attempt to reduce the burden faced by companies when deciding on the types of adjustments to implement when calculating EVA. It is known that companies face difficulties in deciding which adjustments to implement (Sharma and Kumar, 2010:205).

This study determines the importance of implementing the deferred tax adjustment, in order to improve the accuracy of the EVA measure. This is important, as EVA must be calculated with a reasonable degree of accuracy to ensure that companies make good decisions, which, in turn, affect shareholder wealth.

The present study seeks to make a contribution to the JSE-listed Food producer and Retail companies. The current study hopes to make a contribution toward improving the accuracy of the EVA measure. This was done, by providing a recommendation to companies on the importance of implementing the deferred tax adjustment when calculating EVA.

1.12 OUTLINE OF STUDY

The outline of the current study are as follows:

Chapter 1: Introduction - The first chapter explained the background, research objectives, significance and scope of the study.

Chapter 2: Literature Review – The literature review guides the research questions stated in Chapter 1. The research questions are adapted to form the research themes. The review of relevant literature pertaining to the unadjusted and adjusted EVA is discussed. The latter part of the review focuses on the relationship between the components of EVA and deferred tax.

Chapter 3: Research Methodology - This chapter discusses the research methodology, research design, data collection and analyses, and delimitations of this study.

Chapter 4: Analysis of Results - Analysis of results and a discussion of the findings are presented in this chapter.

Chapter 5: Conclusions and Recommendations - The last chapter presents the research conclusions and will make recommendations for further research.

1.13 CONCLUSION

This chapter explained the development of the research topic. Thereafter, the background of the study was discussed, which was then followed by the research problem and the purpose of the research. The aim and objectives were described. The research methodology was explained. The de-limitation was highlighted. The chapter also explained the research contribution. The chapter ended with an outline of the structure and content of the chapters to follow.

The next chapter will focus on a review of literature. The literature review will present and evaluate empirical evidence relating to the two research questions stated in 1.7.1 and 1.7.2.

CHAPTER 2 : LITERATURE REVIEW

2.1 INTRODUCTION

Chapter 1 presented the introductory aspects for the current study under investigation. Chapter 2 will focus on the presentation of empirical findings for each of the research themes. The literature review starts by presenting empirical findings relating to the components of EVA. In particular, the review relates to the impact of accounting adjustments on NOPAT and TCE. More specifically, the review explores the impact of accounting adjustments in relation to the unadjusted and adjusted values of NOPAT and TCE. Thereafter, the review progressively narrows in scope, to show how deferred tax impacts and relates to EVA. This is done by reviewing evidence, which shows a relationship between deferred tax, NOPAT and TCE. The latter part of the review concludes with a presentation of previous empirical findings relating to accounting adjustments and EVA.

The following segment will explain the key concepts for the current study.

2.2 EXPLANATION OF KEY CONCEPTS

Deferred tax - is the tax on temporary differences that is recognised and measured in accordance with IAS 12. It is the difference between the current tax expense (based on taxable profits, determined by tax authorities) and the tax expense (based on accounting profits, determined according to IFRS) Mackenzie *et al.* (2012:757-758).

EVA - is a tool used to measure the amount of wealth created for shareholders. EVA is calculated using a predetermined formula. The NOPAT and TCE are the two major components of the EVA formula (Ray, 2012:262).

Deferred tax adjustment – is a type of accounting adjustment which entails the removal of deferred taxes from NOPAT and TCE. The deferred tax adjustment will remove the distorting effect that deferred taxes have on NOPAT and TCE (Ray, 2012:263).

NOPAT - is the value of the company's net operating profit after the payment of taxes (Ray, 2012:262).

The unadjusted NOPAT - is NOPAT before accounting adjustments (Ray, 2012:262).

The adjusted NOPAT - is NOPAT after accounting adjustments (Ray, 2012:262).

TCE - is the value of a company's capital employed which constitutes shareholder capital, long-term debt and short-term debt (Ray, 2012:262).

The unadjusted TCE - is TCE before accounting adjustments (Ray, 2012:262).

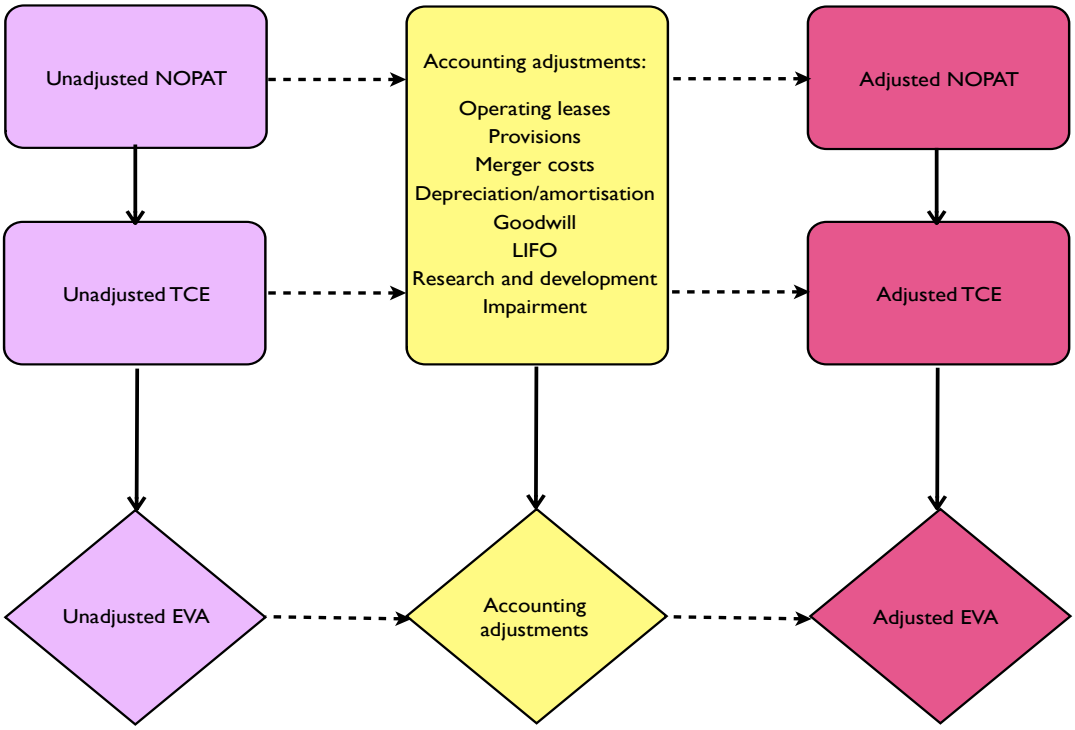
The adjusted TCE - is TCE after accounting adjustments (Ray, 2012:262).

2.3 RELATIONSHIP BETWEEN EVA AND ACCOUNTING ADJUSTMENTS

The next section focuses on the conceptual framework for the unadjusted EVA, the adjusted EVA and accounting adjustments.

Figure 2.1 presents the conceptual framework for the unadjusted EVA, adjusted EVA and accounting adjustments

Figure 2:1 The unadjusted EVA, the adjusted EVA and accounting adjustments



Source: Self generated

Young (1997:338) and Stewart (1991:112) stated that there are over one hundred EVA adjustments. To date, Stewart (2013:50) stated that there are still many different types of accounting transactions, such as operating leases, provisions and depreciation that causes a distorting effect on the value of EVA.

Stewart (1991:113) documented the removal of accounting distortions to EVA, by the implementation of accounting adjustments. A more recent source by Bennett Stewart also documented the implementation of accounting adjustments.

Stewart (2013:52) stated that the distortions to EVA can be removed by implementing accounting adjustments for EVA, namely, NOPAT and TCE.

The unadjusted NOPAT is the value of NOPAT before the implementation of accounting adjustments. In addition, the adjusted NOPAT is the value of NOPAT after the implementation of accounting adjustments. Furthermore, the unadjusted TCE is the value of TCE before the implementation of accounting adjustments. To add, the adjusted TCE is the value of TCE after the implementation of accounting adjustments (Larrabee and Voss, 2013:42).

As a result, the review of previous literature findings are divided into two main themes in 2.4 and 2.5. The unadjusted NOPAT and adjusted NOPAT theme is reviewed in 2.4. The review in 2.4 discusses the impact of accounting adjustments in relation to the unadjusted NOPAT and the adjusted NOPAT. This is followed by a review unadjusted TCE and adjusted TCE theme in 2.5. The review in 2.5 discusses the impact of accounting adjustments in relation to the unadjusted TCE and the adjusted TCE.

2.4 THE UNADJUSTED NOPAT AND ADJUSTED NOPAT

This theme focuses on the presentation of empirical evidence for the unadjusted NOPAT and adjusted NOPAT in relation to other types of accounting adjustments. It is important to note that the current study focuses on the deferred tax adjustment in relation to the unadjusted NOPAT and the adjusted NOPAT. The review on the impact of the deferred tax adjustment on the unadjusted and adjusted NOPAT is presented in the latter part of the literature review.

This theme provides a broad overview, by specifically presenting empirical evidence for the unadjusted NOPAT and the adjusted NOPAT in relation to different types of accounting adjustments. The following studies show that accounting transactions (such as operating leases, depreciation, merger costs) distort the value of NOPAT. The implementation of accounting adjustments entails removing the accounting transactions from NOPAT. To elaborate, the accounting transaction is removed from the unadjusted NOPAT, to arrive at the adjusted NOPAT value. The following studies show that accounting adjustments will remove the distorting affect of accounting transactions and, in turn, will produce an accurate NOPAT value.

A study by Nichols, Gray and Street (2005:29,30) investigated the unadjusted NOPAT in relation to the adjusted NOPAT. A company's NOPAT that takes into account GAAP principles are referred to as the unadjusted NOPAT. The study examined the types of accounting adjustments made to the unadjusted NOPAT. The frequency and magnitude of accounting adjustments were also examined (Nichols, Gray and Street, 2005:29).

Nichols, Gray and Street (2005:31,33) conducted a longitudinal analysis of NOPAT from listed U.S companies, starting from year 1999 to 2004. The analysis addressed the types of adjustments, which caused a difference between unadjusted NOPAT and adjusted NOPAT. The difference between the unadjusted NOPAT and adjusted NOPAT were due to adjustments made to the value of NOPAT (Nichols, Gray and Street, 2005:37).

During 1999 through 2004, sample companies made accounting adjustments to convert the unadjusted NOPAT to the adjusted NOPAT. The findings revealed the most frequently occurring accounting adjustments were amortization, non-cash compensation, restructuring, research and development (R&D) and impairment (Nichols, Gray and Street, 2005:38-39).

The results showed that the accounting adjustments caused the adjusted NOPAT to be significantly higher than the unadjusted NOPAT. In other words, the magnitude between the adjusted NOPAT and the unadjusted NOPAT proved to be highly material (Nichols, Gray and Street, 2005:29).

In addition, the study assessed the materiality of the accounting adjustments. Nichols, Gray and Street (2005:41) stated that the rule of thumb for assessing materiality is when the accounting adjustment is greater than 5% of unadjusted NOPAT. In other words, the accounting adjustment is considered to be significant, when the difference between unadjusted NOPAT and adjusted NOPAT is greater than 5%.

The overall results showed that the majority of the accounting adjustments fall in the category of 5% or more relative to the unadjusted and adjusted NOPAT (Nichols, Gray and Street, 2005:42). Therefore, all accounting adjustments made by sample companies during 1999 to 2004 significantly impacted the company's NOPAT.

The empirical evidence showed an overall increase in the mean adjusted NOPAT during 1999 to 2001. The adjusted NOPAT during years 1999, 2000 and 2001 increased by 133.8%, 197.0% and 85.4%, respectively. The empirical evidence illustrated that the accounting transactions understated NOPAT. The study found that the implementation of accounting adjustments produced an accurate NOPAT value (Nichols, Gray and Street, 2005:49).

Furthermore, the inferential statistics revealed that the accounting adjustments were statistically significant (Nichols, Gray and Street, 2005:38-40). Also, the study found that the adjusted NOPAT was statistically significant (Nichols, Gray and Street, 2005:38). The study concluded that accounting adjustments significantly impacted the adjusted NOPAT.

Similarly, the study by Bhattacharya, Black, Christensen and Larson (2003:285) also investigated the relationship between the adjusted NOPAT and the unadjusted NOPAT. The study examined whether the adjusted NOPAT is more informative than the unadjusted NOPAT.

The study analyzed a sample of 1 149 unadjusted and adjusted NOPAT values from the LexisNexis database. The study focused on the adjusted NOPAT in relation to the unadjusted NOPAT over a sample period from 1998 to year 2000. The adjusted NOPAT and the unadjusted NOPAT were examined to determine the type and nature of accounting adjustments made to NOPAT (Bhattacharya *et al*., 2003:287).

The study examined the impact of adjustments on NOPAT and the differences between the adjusted NOPAT and unadjusted NOPAT (Bhattacharya *et al*., 2003:287). The study found the most common adjustments made by companies during the sample period were depreciation/amortization, merger and acquisitions, research and development costs, gains and losses on asset dispositions, stock based compensation costs and extraordinary items (Bhattacharya *et al*., 2003:292).

Bhattacharya *et al.* (2003:293) found that the frequency of accounting adjustments differed during the sample period. Bhattacharya *et al.* elaborated that some adjustments have become more common over time, whilst other adjustments have become less frequent over the sample period. For example, depreciation/amortization accounted for only 4% of total adjustments during 1998 but increased to 26% during 2000.

The findings showed that the adjusted NOPAT was higher than the unadjusted NOPAT. Evidence was found that the values for the adjusted NOPAT reported profits, whilst the values for the unadjusted NOPAT values reported losses. A total of 66% of adjusted NOPAT values reported a profit, whereas only 52% of unadjusted NOPAT values reported profitability figures. These results indicated that accounting transactions for research and development, gains/losses on asset disposals and extraordinary items understated the company's NOPAT (Bhattacharya *et al.,* 2003:314,317).

The overall inferential results concluded that three adjustments were statistically significant. The three adjustments were research and development, gains/losses on asset disposals and extraordinary items. These adjustments were found to be the most significant adjustments made to convert the unadjusted NOPAT to the adjusted NOPAT (Bhattacharya *et al.,* 2003:313). In addition, the inferential results showed that the adjusted NOPAT was statistically significant (Bhattacharya *et al.,* 2003:287).

The study concluded that the adjusted NOPAT was more informative and representative of core earnings than the unadjusted NOPAT. As a result, investors found that the adjusted NOPAT to be more value relevant than the unadjusted NOPAT (Bhattacharya *et al.,* 2003:288,314,317).

The findings presented by Bhattacharya *et al*. agreed with the findings produced by Black and Christensen. The study by Black and Christensen (2009:297) investigated the extent to which different types of accounting adjustments affect the spread between adjusted NOPAT and the unadjusted NOPAT. The study aimed to prove the theory that the value of the adjusted NOPAT is always higher than the value of the unadjusted NOPAT. As a result, an examination was carried out to determine the types of adjustments that managers make to convert the unadjusted NOPAT to the adjusted NOPAT (Black and Christensen, 2009:298-299).

Black and Christensen (2009:302) extracted actual adjusted NOPAT values from the LexisNexis database. The adjusted NOPAT was analyzed over the sample period from 1998 to 2003. The analysis identified the types of adjustments made by companies to convert the unadjusted NOPAT to the adjusted NOPAT. The adjustments were put into nine categories, namely, restructuring charges, depreciation/amortization, stock based compensation, research and development, gains and losses on asset disposals, mergers, debt charges, interest expenses and tax related adjustments (Black and Christensen, 2009:315).

The empirical findings showed that some adjustments were made more often than other adjustments during the sample period. A regression analysis revealed that research and development, depreciation/amortization and stock based compensation were found to be the most frequently occurring adjustments during the sample period (Black and Christensen, 2009:299).

The above findings also showed that accounting adjustments enabled companies to achieve NOPAT benchmarks. The accounting adjustments assisted in converting negative unadjusted NOPAT values into positive adjusted NOPAT values. These empirical results proved the theory that the adjusted NOPAT is higher than the unadjusted NOPAT. The study concluded that accounting transactions understated the company's NOPAT (Black and Christensen, 2009:324).

In addition, the regression analysis revealed the accounting adjustments, which had the most impact on the adjusted NOPAT. The study found that restructuring charges, depreciation/amortization, stock based compensation and tax-related adjustments were statistically significant. The regression results also suggested that the adjusted NOPAT was statistically significant (Black and Christensen, 2009:312).

In addition, Aubert (2009:3) investigated the effectiveness of the adjusted NOPAT in relation to the unadjusted NOPAT. Aubert (2009:12) also examined whether the adjusted NOPAT is more informative than the unadjusted NOPAT.

The sample constituted 116 companies that traded in Euronext Paris. The company's financial information together with adjusted NOPAT values were collected over a 10-year period from 1996-2006 (Aubert, 2009:13).

The analysis of adjusted NOPAT values indicated that companies calculated the adjusted NOPAT by making multiple adjustments to the unadjusted NOPAT. Upon examination, goodwill amortization had been the most popular adjustment made by French listed companies (Aubert, 2009:14).

During the analysis, Aubert (2009:17) noted that the there was a lack of consistency and comparability in the calculation of the adjusted NOPAT amongst sample companies. The lack of consistency was due to the fact that there was no regulatory guidance for the calculation of the adjusted NOPAT. Also, the accounting items, that are excluded from the unadjusted NOPAT to arrive at the value for the adjusted NOPAT, depend on what management decided to exclude. As a result, accounting adjustments to NOPAT varied from company to company, and from one financial period to the next.

The descriptive evidence showed that 79% of companies reported a higher adjusted NOPAT value than those companies who decided to report an unadjusted NOPAT value. The statistics also showed that 82% of companies had a negative unadjusted NOPAT value and, therefore, chose to report the adjusted NOPAT value (Aubert, 2009: 20-21).

The above results showed that managers would rather opt for a positive adjusted NOPAT value than a negative unadjusted NOPAT value. The results also suggested that the adjusted NOPAT was higher than the unadjusted NOPAT. Consequently, the goodwill transaction caused a distortion in a company's NOPAT. A higher adjusted NOPAT revealed that the goodwill transaction understated the company's NOPAT (Aubert, 2009:20).

In addition, the results from the regression analysis showed that the goodwill adjustment and the adjusted NOPAT were statistically significant (Aubert, 2009:24-25). From the above evidence, the study concluded that the adjusted NOPAT was more informative than the unadjusted NOPAT (Aubert, 2009:26).

In contrast, the study by Eames and Sepe (2005:62) provided mixed results when compared to the previous studies reviewed above. These authors studied the relationship between the value of the unadjusted NOPAT and the value of the adjusted NOPAT. A comparative analysis was carried out to determine the extent to which the unadjusted NOPAT differed from the adjusted NOPAT.

Eames and Sepe (2005:63) extracted financial information from all companies listed in the Compustat database. The sample data was collected for years 1994 through 1999. The accounting adjustments were categorized into restructuring charges, research and development, merger costs, impairment losses, abnormal gains and losses and inventory write-downs.

The sample data yielded 191 observations for the unadjusted NOPAT and adjusted NOPAT. The study found that 130 observations yielded equal values for both the unadjusted NOPAT and adjusted NOPAT. The remaining 61 observations showed that the adjusted NOPAT was higher than the unadjusted NOPAT. From the 61 observations, only three

observations yielded a substantial difference between the unadjusted NOPAT and the adjusted NOPAT (Eames and Sepe, 2005:63).

The study by Eames and Sepe differed from previous studies, as previous studies did not have the unadjusted NOPAT value equal to the adjusted NOPAT value. However, the empirical finding which showed the value of the adjusted NOPAT being higher than the value of the unadjusted NOPAT was comparable with previous studies.

The overall results concluded that the adjusted NOPAT was higher than the unadjusted NOPAT. This result showed that the accounting transactions for merger costs and research and development costs understated the value of the company's NOPAT (Eames and Sepe, 2005:61).

Furthermore, the study computed a regression analysis to determine which accounting adjustment had the most impact on NOPAT. The results from the regression analysis revealed that merger costs adjustment and the research and development adjustment were statistically significant. The inferential statistics also showed that the adjusted NOPAT was statistically significant (Eames and Sepe, 2005:68). The study concluded that the adjusted NOPAT was more value relevant than the unadjusted NOPAT.

In addition, a study done by Marques also provided mixed empirical evidence regarding the values for the unadjusted NOPAT and the adjusted NOPAT. Marques (2010:119) described the disclosure strategies used by companies in their AFS. The study examined whether companies were disclosing the unadjusted NOPAT or the adjusted NOPAT or both of the NOPAT values. In particular, the study focused on whether companies preferred the unadjusted NOPAT or the adjusted NOPAT.

Marques (2010:121) obtained financial data from Business Wire for the calendar years, 2001, 2002 and 2003. The final sample constituted 361 companies from the Standard and Poor (S&P) 500 firms.

The results from the study showed that 186 (52%) companies disclosed the adjusted NOPAT in each of the three years. The findings from the study showed support of the adjusted NOPAT. This finding also suggested that managers gave prominence to adjusted NOPAT because it was higher, and also because the value of the unadjusted NOPAT produced a loss during the period. Moreover, the results showed that managers preferred the adjusted NOPAT disclosure, as it met the strategic benchmark of NOPAT (Marques, 2010:122,125,131).

In contrast, the other 175 companies representing 48% of the sample, showed a preferential disclosure of unadjusted NOPAT over adjusted NOPAT. This result revealed that the unadjusted NOPAT was higher than adjusted NOPAT during the sample period (Marques, 2010:122).

Marques (2010:119) stated that the difference between unadjusted NOPAT and the adjusted NOPAT was due to the implementation of accounting adjustments. The accounting transactions caused the company's NOPAT to be either understated or overstated.

As a result, the descriptive results concluded that accounting transactions understated the NOPAT value for 52% of companies. To elaborate, the understated NOPAT value was caused by the lower unadjusted NOPAT value, in comparison to a higher adjusted NOPAT value (Marques, 2010:131). Furthermore, the descriptive results concluded that accounting transactions overstated the NOPAT value for 48% of companies. An overstated NOPAT value was caused by a higher unadjusted NOPAT value, in comparison to a lower adjusted NOPAT value (Marques, 2010:131).

The above statistics showed a set of mixed empirical evidence. However, the majority of the empirical results showed that accounting transactions understated NOPAT. The regression statistics showed the statistical significance for the adjusted NOPAT for 52% of sample companies (Marques, 2010:125,129). The study concluded that a majority of managers preferred the adjusted NOPAT and, therefore, chose to disclose the adjusted NOPAT.

To summarise, the majority of empirical findings from previous studies showed that the adjusted NOPAT was higher than the unadjusted NOPAT. The majority of empirical findings indicated that a lack of accounting adjustments understated NOPAT.

Also, the results from previous studies showed that accounting transactions (such as R&D, operating leases, goodwill) distorted the value of a company's NOPAT. The distortion was indicated by either an understated NOPAT or an overstated NOPAT. The above studies showed that the implementation of accounting adjustments resulted in a reflection of a company's true NOPAT value. The company's true NOPAT value is the adjusted NOPAT value.

Having presented the empirical findings on NOPAT, the next theme will focus on the impact that accounting adjustments have on a company's TCE.

2.5 THE UNADJUSTED TCE AND ADJUSTED TCE

This theme focuses on the presentation of empirical evidence for the unadjusted TCE and adjusted TCE in relation to accounting adjustments. It is important to note that the current study shows the impact of the deferred tax adjustment on TCE. The review on the impact of the deferred tax adjustment on the unadjusted TCE and the adjusted TCE is presented in the latter part of the literature review.

This theme provides a broad overview of empirical evidence for the unadjusted TCE and adjusted TCE, in relation to different types of accounting adjustments. The following studies show that the accounting transactions (such as depreciation, research costs and merger costs) distort the value of TCE. These studies suggest the implementation of accounting adjustments to remove the distorting effect on TCE. The following studies show that the implementation of accounting adjustments results in an accurate TCE value.

A comprehensive study by Damodaran (2007:2) provided a significant amount of empirical evidence on the unadjusted TCE and adjusted TCE. Damodaran noted that a company's balance sheet capital is used to calculate the unadjusted TCE and the adjusted TCE. The study examined how accounting adjustments impact the unadjusted TCE and the adjusted TCE. Subsequently, the study examined the before and after effects of accounting adjustments on the company's TCE.

Damodaran (2007:12,14) believed that unadjusted TCE is distorted and misleading. Therefore, accounting adjustments must be made so that an accurate TCE is reflected. To elaborate, the unadjusted TCE is distorted and must be converted by means of an adjustment. The implementation of the accounting adjustment results in the calculation of the adjusted TCE. The adjusted TCE reflects the true value of the company's TCE (Damodaran, 2007:7,14).

Damodaran (2007:15) proved the above theory by computing and comparing the unadjusted TCE with the adjusted TCE. The study showed how the different types of accounting adjustments impact the unadjusted TCE and the adjusted TCE. The following empirical findings show the impact of depreciation, research and development (R&D), operating leases and goodwill transactions on TCE.

The first empirical finding showed the impact of the depreciation adjustment on TCE. In order to determine the impact, the unadjusted TCE and adjusted TCE were computed. The computation and comparison were implemented for all industry sectors in the United States of America (U.S.A.) during the 2006 financial year. The empirical results showed that the adjusted TCE yielded a higher value than the unadjusted TCE for 60% of all industry sectors (Damodaran, 2007:15-16).

With reference to the first empirical finding, the adjusted TCE was higher than the adjusted TCE. The study showed that the transaction for depreciation distorted the company's TCE. The accounting distortion was present, as the adjusted TCE had a higher value when compared to the unadjusted TCE. The first empirical finding concluded that the depreciation transaction understated the company's TCE. The study stated that the implementation of the depreciation adjustment removed the distorting effect of depreciation and resulted in an accurate TCE value (Damodaran, 2007:16).

The second empirical finding focused on the impact of the R&D adjustment on TCE. Damodaran (2007:21) theorises that the R&D adjustment will either increase or decrease the company's TCE and will bring a variation of results upon comparison. Damodaran (2007:21) expected the variation of results when interpreting the empirical evidence for the study.

Damodaran explains that the variation would be attributable to the amortizable life and growth in R&D that is specific to the company concerned. For the R&D analysis, a sample of companies was taken from the pharmaceuticals, biotechnology, software and computer hardware industry. These companies were analyzed over a 10-year period to determine the before and after effects of the R&D adjustment on the company's TCE (Damodaran, 2007:22).

The second empirical finding showed that the value of the adjusted TCE was lower than the unadjusted TCE for the pharmaceuticals, software and computer hardware industry sectors. As expected, the variation of empirical evidence occurred in the biotechnology industry, where the adjusted TCE yielded a higher value than the unadjusted TCE (Damodaran, 2007:22).

Upon comparison of the unadjusted and adjusted TCE, Damodaran (2007:21,25-27) showed that the R&D transaction either increased or decreased the company's TCE. The empirical results found that the R&D transaction overstated the company's TCE in the pharmaceuticals, software and computer hardware sectors. On the other hand, R&D understated the company's TCE in the biotechnology sector. This finding indicated that the implementation of the R&D adjustment produced an accurate TCE.

The third empirical finding showed the impact of operating leases on TCE. The unadjusted TCE and adjusted TCE was computed to determine the before and after effects of the operating lease adjustment. All industry sectors in the U.S.A. were analyzed over a 5-year period for the operating lease adjustment. The descriptive statistics revealed an unadjusted TCE of 10.74% whilst the adjusted TCE was 8.80%.

Damodaran (2007:34) explained that a comparison of the adjusted TCE and the unadjusted TCE showed the impact of operating leases on the company's TCE. The results revealed that the operating lease transaction understated the value of the company's TCE. The study showed that the implementation of the operating lease adjustment removes the distorting effect of operating leases on TCE.

The fourth empirical finding showed the impact of goodwill on the unadjusted TCE and adjusted TCE. The sample company selected for the goodwill adjustment was Procter and Gamble. The analysis was carried out for the financial year ending 2006 (Damodaran, 2007:43). The findings showed a lower adjusted TCE of 10.63%, when compared to the unadjusted TCE of 26.15%. The TCE before the goodwill adjustment was, $37,880 billion. The TCE after the goodwill adjustment was, $93,186 billion. The results suggested that the goodwill transaction understated the value of the company's TCE. The study showed that the implementation of the goodwill adjustment, which entails removing goodwill from TCE, will produce an accurate TCE value (Damodaran, 2007:44).

Similar to the R&D findings by Damodaran, the study by Callimaci and Landry (2004:33) also provided empirical evidence on the R&D adjustment. These authors investigated the impact of the R&D adjustment on a company's TCE. In particular, the study investigated the difference between expensing R&D and capitalizing R&D, and the impact they have on the company's TCE. The expensing of R&D (not implementing the R&D adjustment) represents a company's unadjusted TCE, whereas the capitalizing of R&D (implementing the R&D adjustment) represents the company's adjusted TCE.

The sample constituted Canadian-listed companies that had a large R&D density. Companies from the biotechnology, pharmaceutical, hardware, software and electronics industry sectors were selected. An analysis was conducted over a three-year period from 1997-1999. The final sample produced 109 firm year observations (Callimaci and Landry, 2004:41).

Callimaci and Landry (2004:48) provided one calculation from Architel (Ltd) to show the methodology used to compute the impact of the R&D adjustment on TCE. For the financial year ending 1999, the unadjusted TCE was $16,958,434. The adjusted TCE was $17,948,880. This finding indicated that the R&D transaction understated the company's TCE.

In addition, the regression results showed that the unadjusted TCE was not statistically significant, whereas the adjusted TCE was positive and statistically significant. The inferential statistics also suggested that the capitalizing the R&D adjustment was significant (Callimaci and Landry, 2004:45). The study concluded that capitalizing R&D (implementing R&D adjustment) resulted in a reflection of the company's true TCE (Callimaci and Landry, 2004:47).

To contrast, the study by Cazavan-Jeny and Jeanjean provided empirical findings that differ from the R&D findings produced by Damodaran, Callimaci and Landry. Cazavan-Jeny and Jeanjean (2006:37) investigated the impact of the R&D adjustment on TCE. The study identified companies that capitalize R&D (implement the R&D adjustment) and companies that expensed R&D (do not implement the R&D adjustment).

The study by Cazavan-Jeny and Jeanjean (2006:59) was conducted in France, and differs from previous studies. The study produced different results because the accounting treatment of R&D in France is different when compared to other countries. Cazavan-Jeny and Jeanjean (2006:37) found that France allows companies to either capitalize R&D or expend R&D. This means that managers can choose between capitalizing or expensing of R&D (Cazavan-Jeny and Jeanjean, 2006:38).

The sample constituted 197 French listed companies, which yielded 770 observations. The sample data was analyzed over a 10-year period from 1992-2002 (Cazavan-Jeny and Jeanjean, 2006:39). Financial information for sample companies was extracted from the Extel database and the Worldscope-Thomson database. Thereafter, the study grouped companies that capitalized R&D from companies that expensed R&D (Cazavan-Jeny and Jeanjean, 2006:44).

The analysis showed that one-third of the sample capitalized R&D. This finding indicated that companies capitalized 250 observations out of a total of 770 observations. The remaining 520 observations indicated that companies expensed R&D (Cazavan-Jeny and Jeanjean, 2006:44). The first empirical finding showed a negative association between capitalized R&D and TCE. The second empirical finding also showed a negative association between expensing R&D and TCE (Cazavan-Jeny and Jeanjean, 2006:55).

It is important to note that the first empirical finding differs from previous empirical findings, which showed favourable results for those companies that capitalize R&D. The second empirical finding is consistent with previous studies (Cazavan-Jeny and Jeanjean, 2006:59).

The first empirical finding showed that capitalizing R&D negatively impacted TCE. To elaborate, capitalizing R&D (implementing R&D adjustment) in France suggested that a company's TCE was overstated. The first empirical finding is contradictory to the findings by Callimaci and Landry who found that implementing the R&D adjustment understated TCE. However, the second finding suggested that the expensing of R&D in France understated TCE. The second empirical finding was consistent with previous empirical evidence (Cazavan-Jeny and Jeanjean, 2006:57-59).

In addition, Cazavan-Jeny and Jeanjean (2006:55) conducted a regression analysis, to investigate the difference in empirical findings with that from previous studies. The results from the regression showed a lack of statistical significance for the R&D adjustment and the adjusted TCE.

The results from the regression are due to the opportunistic capitalization of R&D by French managers. Cazavan and Jeanjean (2006:59) state that the opportunistic use was due to weak legal enforcement of GAAP in France. Consequently, the opportunistic use of capitalizing R&D (manner in which R&D was capitalized) led to a negative association between TCE and capitalizing R&D. Therefore, capitalizing R&D resulted in the value of TCE being overstated.

Another study conducted by Damodaran examined the impact of operating leases on TCE. Companies with significant lease commitments were selected for the study. As a result, Abercombie and Fitch (A&F), Target and Starbucks constituted the sample companies. An analysis was conducted using information from financial statements. The company financials regarding lease commitments for the next five years were obtained from the 2008 annual report. The operating lease adjustment spanned a five-year period from 2008 to 2012 (Damodaran, 2009:17).

The results from the analysis showed that the unadjusted TCE for A&F, Target and Starbucks was $29,947 million, $1,013 million and $3,106 million, respectively. The adjusted TCE for the three companies stated above was $32,210 million, $3,011 million and $7,040 million, respectively. These empirical findings show that the operating leases distorted the value of TCE. Damodaran explained that operating leases substantially changed the value of company capital for all three companies. The study concluded that the operating leases' transaction understated the value of the company's TCE (Damodaran, 2009:19).

Similarly, a case study by Bryan, Lilien and Martin produced similar results to the above study by Damodaran. Bryan, Lilien and Martin (2010:37) investigated the impact of the operating lease adjustment on a company's TCE. More specifically, the study examined the company's TCE before the operating lease adjustment and the company's TCE after the operating lease adjustment.

The case study resulted in the selection of one company from U.S.A. Walgreens (Ltd) was selected for the implementation of the operating lease adjustment for the financial year ending 2008. The financial statements together with note disclosures of Walgreens (Ltd) were used to draw up the analysis (Bryan, Lilien and Martin, 2010:37).

The analysis showed computations for the unadjusted TCE and the adjusted TCE. The results of the analysis showed an unadjusted TCE amount of $14,289 million. The adjusted TCE amounted to $31,932 million. The empirical findings showed that the operating lease transaction understated the company's TCE (Bryan, Lilien and Martin, 2010:39).

The above results suggested that the operating lease transaction distorted the company's TCE. The study concluded that implementing the operating lease adjustment results in measuring economic reality. In other words, the study recommended the implementation of the operating lease adjustment, to produce an accurate TCE (Bryan, Lilien and Martin, 2010:40).

However, the study by Coffee, Roig, Lirely and Little is the only study to provide empirical evidence on the LIFO adjustment. Coffee *et al.* (2010:1) believe that the use of a LIFO inventory system resulted in a distorted inventory value. Coffee *et al.* (2010:2) cited Jennings, Simko and Thompson that distorted inventory values impact a company's balance sheet capital.

Consequently, the study examined the impact of the LIFO distortion on a company's TCE. Moreover, the study measured the magnitude of the LIFO adjustment on the company's TCE. In order to measure the impact of the LIFO adjustment, companies that implemented LIFO valuations were selected (Coffee *et al.,* 2010:2).

The financial data for 20 U.S.A. companies was acquired from the S&P Compustat North American database. Data was extracted during 2007, as this was a period in which most companies used the LIFO valuation method. The LIFO adjustment compared the percentage differences between the unadjusted TCE and the adjusted TCE (Coffee *et al.,* 2010:3).

The descriptive statistics ranked the highest LIFO value to the lowest LIFO value for each of the 20 companies. The LIFO values were analysed and compared to the company's TCE values. The analysis provided information on the unadjusted TCE (before the LIFO adjustment) and the adjusted TCE (after the LIFO adjustment).

The percentage differences between the unadjusted TCE and the adjusted TCE showed the magnitude of LIFO on a company's TCE. During the 2007 financial year, the value of LIFO for Sunoco Incorporated resulted in the highest impact on TCE. This was shown by a 31.13% change in the company's TCE. The unadjusted TCE of Sunoco Inc. was $12,246 million, whilst the adjusted TCE was $16,294 million. The results revealed that the transaction for LIFO understated the TCE value of Sunoco Inc. (Coffee *et al*., 2010:7). Furthermore, the results for all 20 companies showed that the unadjusted TCE was lower than the adjusted TCE. These results suggested that the LIFO transaction understated the value of TCE for all 20 companies (Coffee *et al.,* 2010:7).

Coffee *et al.* (2010:11) provided empirical evidence that LIFO produced material distortions for a company's TCE value. Inferential statistics showed that the LIFO adjustment and the adjusted TCE were statistically significant. The study recommended the implementation of the LIFO adjustment. The study concluded that the implementation of the LIFO adjustment produced improved financial information and a more accurate value for TCE.

The above studies provided evidence that accounting transactions distorted the value of a company's TCE. The distortion was shown by either an understated TCE or overstated TCE value. A majority of empirical evidence showed that the lack of accounting adjustments understated the TCE value. Previous studies also indicated that the implementation of accounting adjustments would result in a reflection of the company's true TCE.

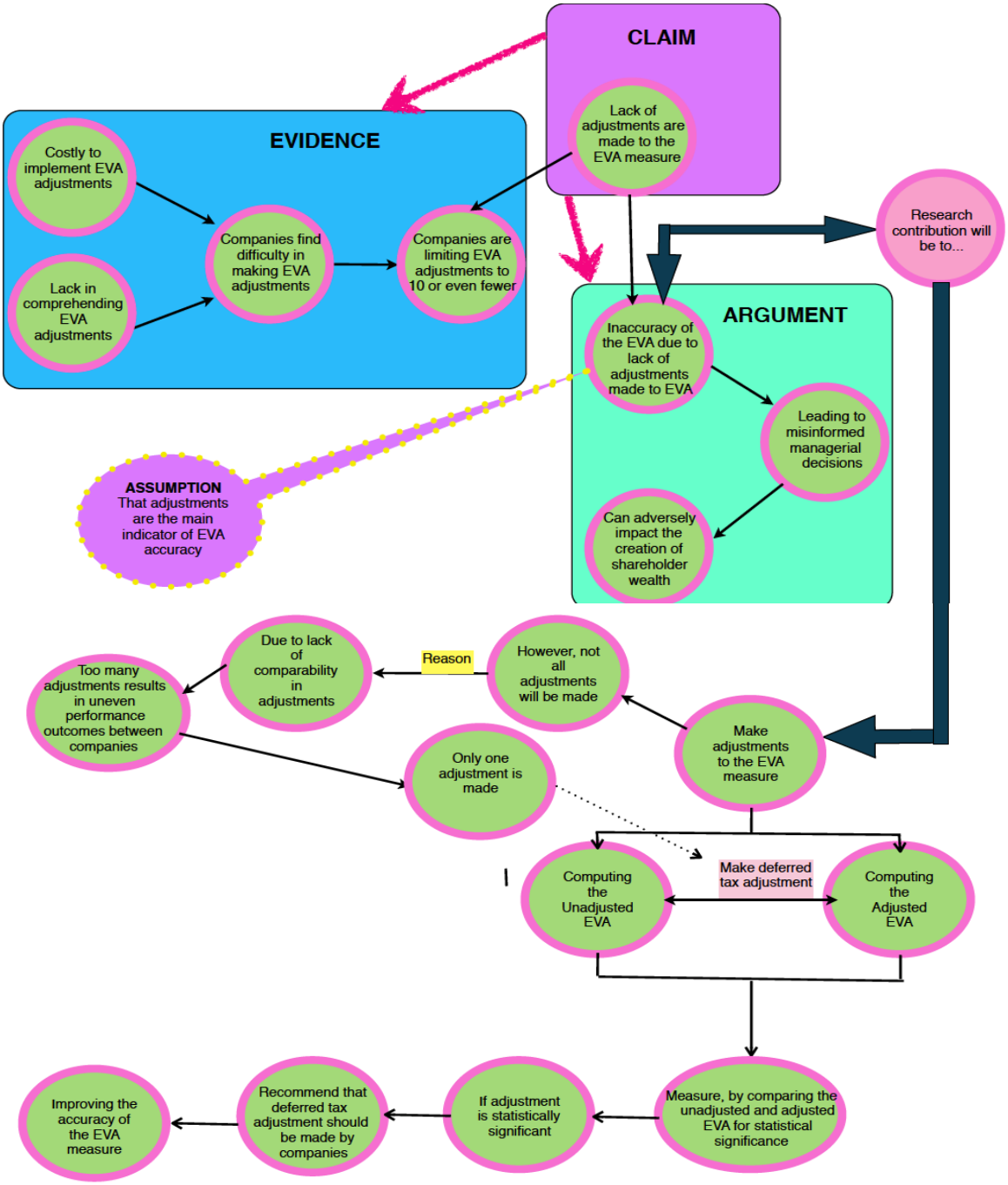
The review of empirical evidence shown in 2.4 and 2.5 indicated that accounting transactions distorted the value of NOPAT and TCE. As a result, many studies recommended the implementation of accounting adjustments to NOPAT and TCE. These studies have also shown the implementation of accounting adjustments by computing both unadjusted and adjusted values for NOPAT and TCE.

The next section presents the theoretical framework that was developed by the researcher for the current study.

2.6 THEORETICAL FRAMEWORK

The theoretical framework of this study is illustrated in Figure 2.2

Figure 2:2 Theoretical framework for the current study



Source: Self generated

Figure 2.2 illustrates the theory behind this research study. The following paragraphs explain the evidence gathered, and shows the existence of the research problem.

There are many positive attributes associated with the EVA measure. However, there are also downsides experienced during EVA implementation. Lovata and Constigan (2002:216) mentioned that implementing the EVA measure does have its problems. The calculation of EVA is not a simple task, which results in significant costs during design and measurement, which means high implementation costs. Also, additional training is necessary since managers must thoroughly understand this new metric before it can change performance in the desired manner. Similarly, Hamilton, Rahman and Lee cited Weaver (2009:285) that EVA is a complex and expensive system to implement and convey. This is especially true when the EVA adjustments have to be implemented.

Therefore, all accounting adjustments listed by Stern Stewart and company cannot be made by companies. A study by Latha (2009:53) concluded that the nature and number of adjustments differ from one company to another based on factors such as sector and accounting policy followed by a company. Latha (2009:53) further mentioned that there is no universal set of adjustments or method followed in practice for the calculation of EVA, as each company is different and operates under a different set of circumstances.

As a result, each company's calculation of the EVA measure would be different. According to Stern, Stewart and Chew (1996:239), coming up with the right definition of EVA is time-consuming and complicated. Hamilton *et al.* (2009:285) stated that the number and differences in the types of accounting adjustments across firms leads to difficulties in comparison and results in uneven performance outcomes.

There are many problems encountered by companies when dealing with accounting adjustments. A study by Sharma and Kumar (2010:205) suggested that accounting adjustments comprised the most unique and debatable aspect of EVA. Furthermore, some companies found that the adjustments are difficult to understand and implement. The difficulty in understanding accounting adjustments is exacerbated, as Young (1997:338) stated that there are more than one hundred adjustments that can be made to EVA. As a result, some companies are limiting the number of adjustments to ten or even fewer, while other companies are not prepared to make any adjustments to EVA (Young, 1997:338).

The evidence gathered from the above research studies provided a solid basis for the claim being made. The lack of adjustments made to the EVA measure is the claim made for this study. The claim then leads onto the development of the argument for this study.

It can be argued that a lack of adjustments made to the EVA measure will result the inaccuracy of the EVA measure. An inaccurate EVA will impact on managerial decision-making, as managers use these accounting metrics to make decisions. The decisions made by managers can impact on the future creation of shareholder value.

To date, there are not many research studies on the role of adjustments on EVA. Therefore, the contribution of this research study is to improve the accuracy of the EVA measure. It is assumed that the EVA adjustments form a crucial element in determining the accuracy of the EVA. As a result, the researcher will focus on the impact of the deferred tax adjustment on the EVA measure.

This study also focuses on overcoming the shortcomings of the empirical study done by Anderson, Bey and Weaver. This will be achieved by examining the impact of one adjustment on the EVA measure. The deferred tax adjustment is chosen as it is an adjustment that occurs for every company every year. This enables comparability between companies. The unadjusted EVA and the adjusted EVA values will be computed. Thereafter the EVA values, together with the predictors of EVA, will be measured for statistical significance. If the EVA measure is statistically significant, companies will be encouraged to implement the deferred tax adjustment. This will provide a starting point for improvement in the accuracy of the EVA measure.

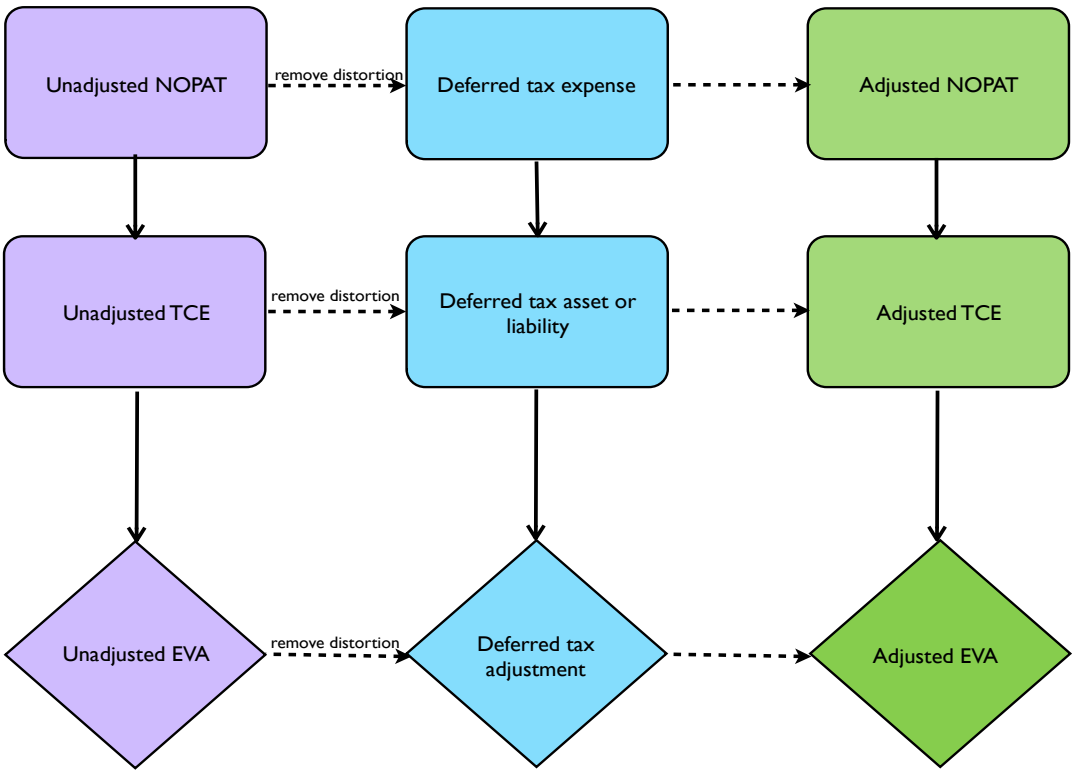
The theoretical framework resulted in the narrowing of the literature review to focus on the presentation of previous findings on EVA (NOPAT, TCE) and deferred taxes.

The next section presents a conceptual framework for EVA and deferred taxes. The discussion of the conceptual framework is followed by the provision of empirical evidence on NOPAT, TCE and deferred taxes.

2.7 RELATIONSHIP BETWEEN EVA AND THE DEFERRED TAX ADJUSTMENT

Figure 2.3 presents the conceptual framework for the unadjusted EVA, the adjusted EVA and the deferred tax adjustment.

Figure 2:3 The unadjusted EVA, the adjusted EVA and the deferred tax adjustment



Source: Self generated

Figure 2.3 shows the relationship between EVA and deferred taxes. According to Bennett Stewart, the deferred tax transaction distorts the value of EVA. Stewart (1991:118) documented the distorting effect of deferred taxes on EVA. A more recent source by Stewart (2013:70-71) also explained the distortion effect of deferred taxes and the implementation of the deferred tax adjustment for EVA.

To remove the distortion, the deferred tax adjustment must be implemented for EVA. The implementation of the deferred tax adjustment requires the removal of deferred taxes from each of the components of EVA, namely, NOPAT and TCE. To elaborate, the deferred tax expense must be removed from NOPAT, and the deferred tax asset/liability must be removed from TCE (Stewart, 2013:70-71).

The unadjusted NOPAT represents the value of NOPAT before the implementation of the deferred tax adjustment. In addition, the adjusted NOPAT represents the value of NOPAT after the deferred tax adjustment. Furthermore, the unadjusted TCE represents the value of TCE before the implementation of the deferred tax adjustment. To add, the adjusted TCE represents the value of TCE after the implementation of the deferred tax adjustment (Stewart, 2013:70-71).

Consequently, the next section is divided into two main themes in 2.8 and 2.9. The review in 2.8 examines the impact of deferred taxes on the unadjusted NOPAT and the adjusted NOPAT. This is followed by a review in 2.9, which discusses the impact of deferred taxes on the unadjusted and the adjusted TCE.

2.8 THE IMPACT OF DEFERRED TAXES ON THE UNADJUSTED NOPAT AND ADJUSTED NOPAT

From an accounting perspective, the statement of comprehensive income takes into account deferred tax expenses in the calculation of company NOPAT. The statement of comprehensive income reflects the profit before tax, the income tax expense and ultimately the NOPAT. Deferred tax expenses form part of a company's income tax expense and are deducted from the profit before tax value. If the company inflates or deflates its deferred tax expense, the value of NOPAT will change.

Previous studies support the above accounting theory by the provision of empirical evidence. The following descriptive studies provide evidence that deferred tax expenses impact NOPAT.

A study by Noor, Mastuki and Aziz (2007:1-15) investigated whether deferred tax expenses played a role in managing NOPAT. In particular, the study aimed to find out if deferred tax expenses were used to avoid a decline in profits or to avoid a loss (Noor, Mastuki and Aziz, 2007:2).

Noor, Mastuki and Aziz (2007:2) analysed the annual financial statements of listed Malaysian companies in the industrial and consumer product sector. Data was collected over a three-year period, between 2001 to 2003. The final sample yielded 493 firm observations.

The above study provided empirical evidence of how companies used deferred tax expenses to manage NOPAT. In particular, the study showed how the usage of deferred tax expenses affected a company's NOPAT. The findings by Noor, Mastuki and Aziz (2007:15) revealed a widening gap between profit before taxes and taxable income. The widening gap implied that companies were deferring taxes into the future.

The study found an increasing trend that companies used deferred tax expenses to manage NOPAT. The results of the study showed that companies were decreasing the provision of deferred tax expenses. The usage of deferred tax expenses to manage NOPAT translated into higher incomes reported to shareholders and lower taxable incomes reported to tax authorities. A decrease in the provision of deferred tax expenses resulted in companies reporting inflated NOPAT values. The decrease in deferred tax expenses resulted in a higher unadjusted NOPAT when compared to the adjusted NOPAT, resulting in an overstated NOPAT value (Noor *et al.,* 2007:15).

In addition, the inferential statistics showed that deferred tax expenses and the unadjusted NOPAT were statistically significant (Noor *et al.,* 2007:10,15). The study concluded that companies used deferred tax expenses to avoid a loss.

Herbohn, Tutticci and Khor agreed that companies used deferred tax expenses to manage NOPAT. According to the study, there had been a change in the methodology when accounting for deferred taxes. Australian companies have changed from using the income statement approach to the balance sheet approach when accounting for deferred taxes. The change had created a substantial amount of discretion that could be exercised by managers when recognising deferred tax expenses. The increased level of judgement resulted in managers manipulating a company's NOPAT (Herbohn, Tutticci and Khor, 2010:763-764).

Furthermore, Herbohn, Tutticci and Khor (2010:764) recognised that managers used their judgement to determine the amount of recognised deferred taxes and the amount of unrecognised deferred taxes. The study examined if managers used deferred tax expenses to manage NOPAT. The sample comprised of all firms listed on the Australian Stock Exchange. The data was collected over a seven-year period starting from 1999 to 2005 (Herbohn, Tutticci and Khor, 2010:766).

The study provided evidence that the sample companies engaged in the upward management of NOPAT by bringing into account unrecognised deferred taxes (Herbohn, Tutticci and Khor, 2010:766). The management of deferred tax expenses showed a lower value of the profit before taxation and a higher value for NOPAT. In other words, the decrease in the provision of deferred tax expenses achieved a higher unadjusted NOPAT and a lower adjusted NOPAT. The decrease in deferred tax expenses resulted in an overstated NOPAT value (Herbohn, Tutticci and Khor, 2010:766,769).

Inferential results showed that deferred tax expenses and the adjusted NOPAT were statistically significant. The above results revealed that opportunistic financial statement management (in the form of managing deferred taxes) was used to achieve the NOPAT target (Herbohn, Tutticci and Khor, 2010:766,788,790).

In addition, a study by Phillips, Pincus and Rego (2002:1-2), examined the usefulness of deferred tax expenses to manage NOPAT. Phillips, Pincus and Rego found that managers have more discretion under accounting-based methods than under taxation methods. As a result, managers exploited their discretion to manage profit before tax upwards without affecting the taxable income. Phillips, Pincus and Rego theorised that the upward management of profit before tax also results in the upward management of NOPAT. Furthermore, the upward management of NOPAT suggested that managers were decreasing the value of deferred tax expenses.

However, Phillips, Pincus and Rego (2002:2-3) argued that deferred tax expenses cannot be used in all instances to trace the management of NOPAT. There are two actions that affect the management of NOPAT and deferred tax expenses. The first instance is where a company manages the profit before tax to exclude temporary differences. Managers limit the transactions to include only permanent differences. If this is so, permanent differences do not result in deferred tax expense, and if there are no temporary differences, there will be no deferred tax expenses. The second instance is where managers use accruals to manage cash flows that affect both taxable income and the profit before tax. If management executes these actions, it would be difficult to measure management of NOPAT using deferred tax expenses.

As a result, the study investigated the usefulness of deferred tax expenses to meet three profitability targets. The three profitability targets were to avoid a decline in profits, to avoid reporting a loss and to meet the forecasted NOPAT (Phillips, Pincus and Rego, 2002:1). In addition, the study aimed to answer the empirical question of whether deferred tax expenses are useful in detecting the management of NOPAT (Phillips, Pincus and Rego, 2002:2-3).

Phillips, Pincus and Rego analysed data of companies situated in the U.S.A. from 1994-2000. The empirical findings revealed that a decrease in deferred tax expenses increased the probability of managing NOPAT to avoid reporting a loss. The decrease in deferred tax expenses also increased the probability of avoiding a decline in NOPAT. The study showed that a decrease in deferred tax expenses produced a higher unadjusted NOPAT value when compared to the adjusted NOPAT. The decrease in deferred tax expenses resulted in an overstated NOPAT value. The study also suggested that if companies reported an increase in deferred tax expenses, companies would have an understated NOPAT value (Phillips, Pincus and Rego, 2002:3-4).

Furthermore, the study found no evidence that deferred tax expenses met the forecasted NOPAT. However, the overall results of the study showed an incremental usefulness of deferred tax expenses in detecting the management of NOPAT. In addition, the inferential statistics showed that deferred tax expenses, the unadjusted NOPAT and the adjusted NOPAT were statistically significant. Therefore, the study concluded that deferred tax expenses were used to manage NOPAT (Phillips, Pincus and Rego, 2002,13,37).

Similarly, Chang, Herbohn and Tutticci (2009:665,672) reported descriptive statistics that unrecognised deferred tax expenses are used by companies for the management of NOPAT. The study showed that companies used

deferred tax expenses to produce an overstated NOPAT value. The results from the study also mention that an increase in deferred tax expenses resulted in an understated NOPAT value. Furthermore, the regression statistics showed statistical significance for deferred tax expenses and the unadjusted NOPAT.

In addition, Lynn, Seethamraju and Seetharaman (2008:108) concurred that deferred tax expenses provided a pathway for the opportunistic management of NOPAT. The study indicated that the management of deferred tax expenses resulted in a higher unadjusted NOPAT when compared to the adjusted NOPAT. Also, the regression results revealed statistical significance for deferred tax expenses and the unadjusted NOPAT (Lynn, Seethamraju and Seetharaman, 2008:117).

The empirical findings from the above studies showed how companies used deferred tax expenses to manage NOPAT. These findings indicated that companies had manipulated NOPAT to their own advantage. The use of deferred taxes to manage NOPAT implied that deferred tax expenses distorted a company's NOPAT in a negative manner. It is important for companies to take corrective steps to convert the distorted NOPAT value into an accurate NOPAT value. An accurate NOPAT value is required to calculate EVA.

The computation of EVA requires the value of NOPAT. A company's NOPAT must reflect the true cash position of a company. However, previous literature showed that deferred tax expense unnecessarily inflated the value of NOPAT. Previous empirical evidence provided a motivation for the removal of deferred tax expenses from NOPAT. The removal of deferred tax expenses is also referred to as the deferred tax adjustment. The implementation of the deferred adjustment will produce an accurate NOPAT value for the purposes of calculating EVA. The above section

focused on how deferred tax expenses impacted NOPAT. The next section will focus on how deferred tax impacts TCE.

2.9 THE IMPACT OF DEFERRED TAXES ON THE UNADJUSTED TCE AND ADJUSTED TCE

From an accounting point of view, the statement of financial position shows how deferred tax assets (DTA) and deferred tax liabilities (DTL) impact TCE. A company's DTA and DTL are classified as a non-current asset and non-current liability, respectively. Accounting theory shows that non-current assets and non-current liabilities are taken into account during the computation of a company's TCE. As a result, the size and magnitude of DTA and DTL impacts on the value of TCE. In other words, if the level of a company's DTA or DTL changes, the level of the company's TCE will also change (Stewart, 2013:69).

Previous studies provide evidence in support of the above accounting theory. The following descriptive studies provide empirical evidence on the impact of deferred taxes on TCE.

According to Gee and Mano (2006:1-2), TCE refers to the amount of capital held by banks. The study explained that banks should maintain an adequate level of TCE to operate internationally. More specifically, Japanese banks must have a TCE equal to 8% of its risk-weighted assets.

The study examined the importance of TCE in the Japanese banking sector. In addition, the study focused on the relationship between deferred tax assets and TCE (Gee and Mano, 2006:1-2). The recognition of deferred tax assets suggests that the value of TCE will be at a higher amount than before (Gee and Mano, 2006:1).

Gee and Mano indicated that changes in taxation, realisation of irrecoverable debts suffered by Japanese banks and the introduction of the deferred tax standard resulted in the realisation of large deferred tax assets (Gee and Mano, 2006:1). The study examined the extent to which banks recognised deferred tax assets as part of TCE. The sample population constituted five major banking groups. The data was collected from 2002 to 2004 (Gee and Mano, 2006:1,7).

The study found that deferred tax assets constituted 70% of TCE in the banking sector (Gee and Mano, 2006:11). The study also showed that banks used deferred tax assets to maintain an adequate level of TCE. In other words, deferred tax assets were utilised by banks to manage the level of TCE to ensure ongoing international operations. The empirical results revealed that all five banking groups met the regulatory TCE requirement of 8% of risk-weighted assets. Three banking groups showed an increase in the adequacy of TCE ratios whilst the other two banking groups showed a decrease in the TCE adequacy ratio. The overall results showed that deferred tax assets inflated TCE.

The banking groups used deferred tax assets to produce a higher unadjusted TCE when compared to the adjusted TCE. The management of deferred tax assets resulted in an overstated TCE value. The study also indicated that the value of deferred tax liabilities would produce a lower unadjusted TCE and a higher adjusted TCE, resulting in an understated TCE (Gee and Mano, 2006:12).

Similarly, a study by Gallermore focused on the relationship between deferred tax assets and TCE. The study investigated the association between DTA and TCE within the banking sector (Gallermore, 2012:2).

Gallermore mentioned an ongoing debate amongst regulators and banks, regarding the appropriateness of using DTA as part of TCE. Banks in the U.S.A. were also permitted to include DTA as part of TCE. Gallermore cited Kim and Santemoro (2012:2) that banks are required to maintain a certain level of TCE to prevent the occurrence of a loss.

However, Gallermore (2012:2) argued that the benefits of DTA are only realised if the banks have an amount of taxable income against which the DTA can be set-off. In other words, if the bank generates a tax loss, the company will not be able to utilize the DTA.

The study examined whether the probability of bank failure is related to the level of DTA as part of the banks' TCE (Gallermore, 2012:3). Gallermore (2012:4) sampled all the large commercial banks in the U.S.A. The study investigated if a larger proportion of capital composed of DTA is positively associated with the risk of bank failure. The study was carried out during the financial crisis to test if DTA was used to prevent banks from failing. It is during the financial crisis that bank failure is most likely to occur. Gallermore (2012:4) isolated other factors of bank failure to test if DTA prevented bank failure. The study found that the risk of bank failure increased in direct proportion to an increase in DTA. In other words, DTA was used to produce a higher unadjusted TCE and a lower adjusted TCE.

The study also revealed that poorly capitalised banks had engaged in risk-taking behaviour due to incentives provided by an increase in DTA in relation to TCE. The study provided empirical evidence that DTA was used by the banking sector to overstate the value of TCE. The study suggested that the reporting of deferred tax liabilities would result in a lower unadjusted TCE when compared to the adjusted TCE, which will produce an understated TCE value (Gallermore, 2012:4-5).

In addition to the descriptive evidence explained above, Gallermore (2012:24,25,49) provided inferential statistics that deferred tax assets were used by the banking sector to manage TCE. Furthermore, the regression statistics revealed that the deferred tax asset and the adjusted TCE were statistically significant. Similar to Gee and Mano, the study by Gallermore also found that DTA overstated TCE.

The empirical evidence from the above studies showed how the banking industry used DTA to manage TCE. The findings from the above studies also showed that DTA significantly changed TCE as the value of DTA had overstated the value of TCE. It is also important to note that these studies suggested that the value of deferred tax liabilities would result in an understated TCE.

Although DTA prevented bank failure, the use of DTA had a negative impact on TCE. The incentives provided through the use of DTA resulted in increased risk-taking for some bank corporations, which resulted in a distorted TCE. Furthermore, a distorted TCE negatively impacts decision-making, as company financials and accounting ratios are used to make decisions that affect the future of the company. The implementation of the deferred tax adjustment would produce an accurate TCE value.

To summarise, the empirical evidence shown in 2.8 and 2.9 provide adequate motivation for the removal of deferred taxes from NOPAT and TCE. The majority of empirical evidence from previous studies revealed that deferred taxes overstated NOPAT and TCE. The removal of deferred tax from NOPAT and TCE is also known as the deferred tax adjustment. The deferred tax adjustment will remove the distorting effect that deferred tax has on NOPAT and TCE. This will bring the NOPAT and TCE to an amount that reflects the true cash or financial position, as required for the purposes of calculating EVA.

At this point, the literature review presented empirical evidence on the accounting adjustments, the unadjusted NOPAT/TCE and the adjusted NOPAT/TCE. Thereafter, previous empirical evidence was presented on the deferred tax adjustment and the unadjusted NOPAT/TCE and the adjusted NOPAT/TCE. In other words, the above studies showed the impact of accounting adjustments (deferred tax adjustment, being one of the accounting adjustments) on the individual components of EVA. The next section reviews a study on accounting adjustments and the EVA measure.

2.10 EMPIRICAL EVIDENCE ON ACCOUNTING ADJUSTMENTS AND EVA

The study conducted by Anderson, Bey and Weaver was found to be the most relevant research study in relation to the current research under investigation. Previous studies reviewed above provided empirical evidence on accounting adjustments, NOPAT and TCE (NOPAT and TCE are the major components of EVA). The study by Anderson *et al*. (2005:1) directly addressed the relationship between accounting adjustments and the EVA measure.

Anderson *et al.* (2005:1) examined the impact of accounting adjustments on the EVA measure. The aim of the study was to determine which EVA adjustments had the most critical impact on EVA. The study evaluated the impact of the following accounting adjustments on the EVA measure:

a) Research and development adjustment;
b) Operating leases adjustment;
c) Advertising adjustment;
d) Last-in-first-out adjustment; and
e) Bad debts adjustment.

The impact of the above adjustments on EVA was examined over a ten-year period from 1987 to 1997. A sample of 317 companies was taken. The sample was extracted from the Journal of Applied Corporate Finance. The EVA values were calculated in accordance with the model set out by Stern Stewart and Company. The unadjusted EVA was compared with the adjusted EVA for each of the five accounting adjustments (Anderson *et al.,* 2005:5).

The results of the study showed that R&D and LIFO were the two out of the five adjustments which accounted for a major change in the value of the EVA. The study found that the R&D adjustment together with the LIFO adjustment yielded a 92% change in the EVA value. In addition, regression statistics were computed to determine the magnitude of accounting adjustments on EVA. The regression findings showed a lack of statistical significance. The lack of statistical significance was due to the lack of comparability in accounting adjustments over the ten-year period (Anderson *et al.,* 2005:16).

The study by Anderson *et al.* partially relates to the current research study. However, the study done by Anderson *et al.* had some methodological flaws. The methodological flaws were evident as no mention was made about the nature of sample companies and sample selection.

In addition, Anderson *et al.* (2005:12,15) experienced difficulties during the data analysis phase of the study. There was a lack of consistency and comparability of data between companies. Also, there was a lack of empirical evidence regarding the components of the unadjusted EVA and the adjusted EVA. Furthermore, no evidence was given regarding the statistical significance of individual variables.

The current study makes an attempt to overcome the lack of comparability. The deferred tax adjustment was chosen, as it is a common adjustment amongst all sample companies for the current study. The selection of a common adjustment will achieve comparability between companies and amongst companies.

In the light of the above review, a considerable amount of empirical evidence was presented on the impact of accounting adjustments on NOPAT and TCE (components of EVA). More specifically, evidence was also presented on the relationship between deferred taxes, NOPAT and TCE. However, there is not much empirical evidence between deferred taxes and the EVA measure. The current research study will attempt to determine the impact of deferred taxes on the EVA measure. This will be done through the implementation of the deferred tax adjustment on EVA.

2.11 CONCLUSION

This chapter has discussed and analysed the relevant literature for research questions 1.7.1 and 1.7.2 as stated in Chapter 1. To add, all research questions stated in Chapter 1 will also be addressed in Chapter 4. The empirical evidence for this chapter showed that the accounting transactions either understated or overstated NOPAT and TCE. It is important to note that the nature of the accounting adjustments varied from one company to next. For this reason, accounting transactions understated NOPAT and TCE, whilst, in other cases, accounting transactions had overstated NOPAT and TCE. The literature review narrowed in scope to provide evidence on the relationship between deferred taxes, NOPAT and TCE. Majority of the previous studies showed that deferred taxes overstated the values for NOPAT and TCE. The latter part of the review provided evidence on the impact of accounting adjustments and the EVA measure.

The overall empirical results provided a justification for the implementation of the deferred tax adjustment. The chapter concludes with the need to conduct an investigation on the impact of deferred taxes on EVA.

The next chapter will focus on the research design, developed specifically for the purposes of this study.

CHAPTER 3 : RESEARCH METHODOLOGY

3.1 INTRODUCTION

Chapter 2 provided empirical evidence pertaining to the research questions stated in Chapter 1. This chapter starts by explaining the research design, which encompasses the quantitiative approach, time horizon, type of investigation and research strategy. The research design is followed by the identification of the target population, sampling method, data collection, data analysis and formulation of hypotheses. Thereafter, validity and reliability are discussed together with how they were achieved. The chapter concludes with an explanation into the types of statistical tests that will be done on the collected data.

3.2 RESEARCH DESIGN

3.2.1 Quantitative versus qualitative

Curwin, Slater and Eadson (2013:65) stated that it is important to identify the range of information related to the business problems, and also to determine the extent to which that information is numerical or non-numerical by nature.

The qualitative method is used for non-numerical data. The qualitative approach focuses on the description of behaviour in individuals or organisations. To contrast, the quantitative method is used for numerical data. The quantitative approach is about using numbers to define, describe and resolve a range of problems (Bryman and Bell, 2011:410).

Furthermore, Curwin, Slater and Eadson (2013:65) indicated that some problems can be described almost entirely in numerical terms. This statement holds true as this research study will measure the unadjusted EVA and the adjusted EVA values. Both the unadjusted EVA and the adjusted EVA values are expressed in Rand values and, therefore, constitute numerical values.

The research problem will be examined using numerical information only. It is important to note that this study does not involve the examination or use of any non-numerical information. As a result, the study is classified as a quantitative research study.

3.2.2 Time horizon

The study of a particular phenomenon at a particular time is referred to as a cross sectional study, whereas, a longitudinal study is a study of a particular phenomenon over an extended period of time (Zikmund, Babin, Carr and Griffin, 2013:195-196). The current study calculated and analysed the independent variables and the dependent variables over a seven-year period, starting from 2004 to 2010. For this reason, the current research study is longitudinal in nature.

3.2.3 Type of investigation

The researcher would like to determine if the deferred tax adjustment causes a major change in the EVA measure. Therefore, a causal study was undertaken. Sekaran and Bougie (2010:110) stated that a causal study is one where the researcher intends on finding out if variable X causes variable Y. Saunders and Lewis (2012:113) also stated that causal studies that establish causal relationships are known as an explanatory studies.

Furthermore, Saunders and Lewis (2012:113) stated that the emphasis is on studying the situation or problem in order to explain the relationships between variables. This study focuses on establishing causal links between variables. Hence, correlational statistics were generated to establish/measure the level of the impact of the independent variable on the dependent variable.

3.2.4 Research strategy

The purpose of an experimental design is to study causal links between variables and, therefore, an experimental design had been chosen for this study. Cortinhas and Black (2012:424) state that the experimental design looks at whether a change in one independent variable produces a change in the dependent variable.

An experimental design focuses on the pre-measurement of the dependent variable and post-measurement of the dependent variable (Abbott and McKinney, 2013:40). In the context of this study, the pre-measurement of the dependent variable constituted the EVA measure without the deferred tax adjustment, whereas the post-measurement of the dependent variable constituted the EVA measure with the implementation of the deferred tax adjustment.

Another element of an experimental design is the control variable and the experimental variable. The control variable is the variable without any intervention, whilst the experimental variable is the variable with intervention (Quinlan, 2011:398). In this study, the control variable (unadjusted EVA) was the EVA measure without the deferred tax adjustment, which was the dependent variable without any intervention. The experimental variable (adjusted EVA) was the EVA measure with deferred tax adjustment, which was the dependent variable with planned intervention.

3.3 TARGET POPULATION

Weathington, Cunningham and Pittenger (2012:46) defined the target population as the population to which the researcher ideally would like to generalise the results. There are a total of 346 JSE-listed companies. The target population, for this study constituted a total of 34 JSE-listed companies from the Food producer and Retail sectors. The JSE-listed companies were chosen because these companies trade shares on the stock market and are, therefore, more likely to adopt EVA (Drury, 2011:48).

3.4 SAMPLING METHOD

According to Blumberg, Cooper and Schindler (2008:239), the sampling frame is a complete and correct list of population members. The sampling frame was taken from the official JSE website (http://www.jse.co.za/How-To-List-A-Company/Main-Board/Main-Board-Listed-companies.aspx).

The current research study used the purposive sampling method. The purposive sampling method is a type of non-probability sampling method which relies on the judgement of the researcher when selecting units of analysis. The aim of purposive sampling is to focus on particular characteristics of a population that are of interest to the researcher (Quinlan, 2011:213).

The aim of the current study was to investigate the impact of deferred taxes on EVA. The selection of sample companies depended on which companies adopted EVA. Therefore, the purposive sampling method was used to select JSE-listed companies that adopt EVA. The study by Alzawahreh and Khasawneh (2011:518) presented an empirical finding which showed that companies in the Food producer and Retail sector used a defender strategy.

Furthermore, Lovata and Costigan (2002:218) stated that companies which adopted EVA used a defender strategy. For this reason, all Food producers and Retailers listed on the JSE were selected for the purposes of this study.

There was a total of 34 JSE-listed Food producers and Retailers. The researcher carried out a review on all 34 JSE-listed Food producers and Retailers. The review was done to determine the numerical completeness of downloaded data from the McGregors BFA database. The review showed that there was missing numerical data for 13 JSE-listed Food producers and Retailers. As a result, the final sample constituted 21 JSE-listed Food producers and Retailers.

The data analysis (EVA and deferred tax analysis) was conducted on the final sample. Table 3.1 constitutes the sample companies that were analysed for the purposes of this research.

Table 3.1 List of sample companies

Table 3.1 shows that there are nine Food producers and twelve Retailers.

FOOD PRODUCERS	**RETAILERS**
1. AFGRI	1. Cashbuild
2. ASTRAL	2. Clicks
3. AVI	3. Combined Motor Holdings
4. Crookes	4. Foschini Group Limited
5. Illovo	5. Italtile
6. Intertrading	6. JD Group
7. Rainbow Chicken	7. Massmart
8. Sovereign foods	8. Mr Price Group Limited
9. Tigerbrands	9. Nictus Beperk
	10. PNP Stores Limited
	11. Shoprite Holdings
	12. Woolworths Holdings Limited

3.5 DATA COLLECTION

Three types of data sets were downloaded from the McGregor's BFA database. The first data set constituted the statement of comprehensive income, the second data set was the statement of financial position and the third data set was the weighted average cost of capital (WACC) calculation. In addition, other data such as the taxation rates (Refer to Appendix B) was obtained from the South African Revenue Services (SARS) website (*SARS-guide for tax rates/duties/levies 2011/12 and prior years,* 2012:5).

These data sets constituted the secondary data for this research study. Blumberg, Cooper and Schindler (2008:315) indicated that "Secondary data is information or data that has already been collected and recorded by someone else, usually for other purposes". For example, the statement of comprehensive income and the statement of financial position forms part of the company's AFS.

The company financial statements were prepared by a third party for both internal users and external users of AFS. Therefore, the company financial statements are viewed as secondary data for the current research study, because the researcher used the financial statements to conduct a data analysis. The data analysis for this study is explained in the next section.

3.6 DATA ANALYSIS

The three data sets, together with the taxation rates were used to conduct the data analysis. The statement of comprehensive income was used to calculate the unadjusted NOPAT, and was used to locate the values of the deferred tax expense to calculate the adjusted NOPAT. To note, the taxation rates were required to calculate the NOPAT values. The statement of financial position was used to calculate the unadjusted TCE, and was used to locate the values of the deferred tax liability to calculate the adjusted TCE.

In order to determine the impact of deferred taxes on EVA, two computations were done. The first computation was the unadjusted EVA. The second computation was the adjusted EVA. The adjusted EVA encompasses the deferred tax adjustment. The unadjusted EVA and the adjusted EVA were computed in accordance with the Stern Stewart EVA model, and are discussed in the following subsections.

3.6.1 The Unadjusted EVA

Larrabee and Voss (2012:47,50) explained that the unadjusted EVA is the EVA value with deferred tax. The unadjusted EVA value has the value of deferred tax inherent within the components of EVA. To elaborate, the unadjusted NOPAT, included an amount for deferred tax expense. Also, the unadjusted TCE included an amount for a deferred tax asset/liability. (Appendix C is an extract of sample data which contains a detailed calculation of the unadjusted EVA).

The current study used the following formula to calculate the value of the unadjusted EVA:

Unadjusted EVA = Unadjusted NOPAT – (Unadjusted TCE x WACC%)
***Unadjusted EVA = Unadjusted NOPAT – Unadjusted Cost of capital**

Arabsalehi and Mahmoodi cited Stern Stewart (2011:53-54) on the unadjusted EVA formula (shown above). *The unadjusted EVA formula can be mathematically reduced by multiplying TCE by WACC% to yield the cost of capital.

3.6.2 The deferred tax adjustment

The deferred tax adjustment entails the removal of deferred taxes from EVA. The removal of deferred taxes from EVA requires the removal of deferred tax expenses from NOPAT and the removal of deferred tax assets/liabilities from TCE (Johnson and Bamber, 2007:42). The implementation of the deferred tax adjustment is explained below:

3.6.2.1 The deferred tax adjustment on NOPAT

The deferred tax adjustment on NOPAT focuses on the impact of deferred tax expenses on NOPAT. The value of deferred tax expenses that impacts NOPAT must be removed from NOPAT. A decrease in deferred tax expenses is subtracted from the unadjusted NOPAT, whilst an increase in deferred tax expenses is added to the unadjusted NOPAT (Stewart, 2013:70-71). Appendix C provides an extract of sample data which contains the calculation of the deferred tax adjustment on NOPAT.

3.6.2.2 The deferred tax adjustment for TCE

The deferred tax adjustment on TCE focuses on the impact of the deferred tax asset/liability on TCE. The value of the deferred tax asset/liability that impacts TCE must be removed from TCE. A deferred tax liability is added to the value of the unadjusted TCE. (Note: The current study refers to deferred tax liabilities, as all sample companies reported deferred tax liabilities throughout the sample period, 2004-2010). If there is a deferred tax asset, the value of the deferred tax asset is subtracted from the unadjusted TCE (Stewart, 2013:70-71). Appendix C is an extract of sample data which contains the calculation of the deferred tax adjustment on TCE.

The deferred tax adjustment on NOPAT and the deferred tax adjustment on TCE constitute the deferred tax adjustment for EVA.

3.6.3 The Adjusted EVA

The adjusted EVA is the EVA value without deferred taxes. To calculate the adjusted EVA, the adjusted NOPAT was calculated first and thereafter the adjusted TCE was calculated. The adjusted values for NOPAT and TCE required the removal of deferred taxes from the unadjusted NOPAT and the unadjusted TCE.

When deferred tax expenses are removed from the unadjusted NOPAT, the value of the NOPAT is then referred to as the adjusted NOPAT. Also, when the deferred tax asset/liability is removed from the unadjusted TCE, the values of the TCE is then referred to as the adjusted TCE. To yield the value of the adjusted EVA, the adjusted NOPAT and adjusted TCE are entered into the formula shown below (Wang, 2013:631). (Appendix C is an extract of sample data, which contains a detailed calculation of the adjusted EVA).

The current study used the following formula to calculate the value of the adjusted EVA:

Adjusted EVA = Adjusted NOPAT – (Adjusted TCE x WACC%)
***Adjusted EVA = Adjusted NOPAT – Adjusted Cost of capital**

Arabsalehi and Mahmoodi cited Stern Stewart (2011:53-54) on the adjusted EVA formula (shown above). *The adjusted EVA formula can be mathematically reduced by multiplying TCE by WACC% to yield the cost of capital.

All of the above computations constitute the EVA and deferred tax analysis, which was done on a pre-formatted Excel spreadsheet (Refer to Appendix C). Subsequently, the EVA and deferred tax analysis was sent for statistical analysis.

3.7 FORMULATION OF THE HYPOTHESIS

It is important to create meaningful research hypotheses within the context of the research problem. Many scholars believe that deferred taxes distort the true value of the EVA measure. This constitutes the research problem. Consequently, the study will investigate whether deferred taxes distort the true value of EVA. The investigation will determine the impact of the deferred tax adjustment on the value of EVA. To determine the impact, it is important to observe the EVA value before the removal of deferred taxes (unadjusted EVA) and the EVA value after the removal of deferred taxes (adjusted EVA). The research problem was used to formulate the stated hypotheses (as shown below).

Black (2011:290) stated that hypotheses testing is important as it enables business researchers to structure problems in such a way that they can use statistical evidence to test various theories about business phenomena. Statistical significance testing was used to determine the rejection or acceptance of the null hypothesis.

3.7.1 Research hypotheses

A research hypothesis is a statement which indicates the outcome of an experiment or a study that the researcher aims to prove (Black, 2011:291).

3.7.1.1 Null hypothesis

A null hypothesis states that there is no difference between two groups in relation to some variable The null hypothesis is a hypothesis that the researcher would like to disprove/reject (Curwin, Slater and Eadson, 2013:368).

The null hypothesis for this study is:

*H0 = The deferred tax adjustment has no significant impact on the EVA measure.

3.7.1.2 Alternate hypothesis

An alternate hypothesis is the opposite of the null hypothesis. The researcher is usually interested in proving the alternate hypothesis (Black, 2011:815).

The alternate hypothesis for this study is:

*H1= The deferred tax adjustment has a significant impact on the EVA measure.

*A non-directional hypothesis is selected as the researcher does not know the direction of the independent and dependent variables through the seven-year period for all 21 sample companies. As a result, the researcher would like to determine the relationship between the variables.

3.7.2 Statistical hypothesis

Business researchers need to convert their research hypothesis into a statistical hypothesis. A statistical hypothesis is a formal hypothesis structure that enables the researcher to scientifically test the research hypothesis (Black, 2011:292).

Conventionally, t-test statistics are used to determine the rejection or acceptance of the research hypothesis. More specifically, a t-test statistic depends on the nature of the hypothesis. A t-test statistic is appropriate when the hypothesis is a claim that the researcher would either reject or accept. Furthermore, t-test statistics utilises mean values, where the researcher aims to determine the proximity to the mean value (Anderson, Sweeney, Williams, Freeman and Shoesmith, 2010:286).

However, the researcher found that a t-test statistic was not suitable for testing the research hypothesis. A t-test statistic was not done because the stated hypothesis was not a claim. In addition, if the t-test statistic was done, the mean values would have been the EVA mean values. At this point, it is important to note that the value of EVA differs from one company to the next, due to the size of each company. Therefore, a claim cannot be made on the value of EVA for each company. In other words, the hypothesis was not designed to statistically test the validation of a claim.

Instead, the research hypothesis was developed to determine if there is a relationship between the dependent variable (Y) and the independent variable (X). A regression analysis is a mathematical model that shows the relationship between the dependent variable and the independent variable (Anderson *et al*., 2010:556). As a result, the computation of a regression analysis was chosen for the rejection/acceptance of the hypothesis.

Subsequently, significance tests were carried out on the regression equation. According to Anderson *et al.* (2010:556), significance tests enable the researcher to determine whether there is a significant relationship amongst variables. The current study mainly focused on determining the statistical significance between the dependent variable and the independent variable.

To elaborate, the significance tests on the regression model determined if deferred tax significantly impacted the EVA measure. The outcome of the regression analysis together with significance tests determined the rejection of the null hypothesis or the acceptance of the alternate hypothesis (Refer to Chapter 4 on the outcome of the significance test).

3.8 VALIDITY

Stokes (2011:131) defined validity as the extent to which the research findings accurately represent what is really happening in a situation. The validity of this research study was ensured, as the research took place under a controlled setting by using a laboratory experiment. Sekaran and Bougie (2010:228) defined a laboratory experiment as one where control and manipulation are introduced to establish cause-and-effect relationships in an artificial setting.

Abbott and McKinney (2012:40) stated that a laboratory experiment allows for maximum control over accidental nuisance variables by eliminating them. In this way, construct validity can be achieved. Farquhar (2012:101) stated that construct validity refers to the degree to which the measuring instrument measures what it supposed to measure. The EVA values for each company were calculated using the Stern Stewart EVA formulae. The Stern Stewart EVA formula was the measuring instrument/model and, therefore, ensured that the appropriate constructs were measured.

In addition, White and McBurney (2012:181) stated that an experiment conducted within a laboratory ensures internal validity as the research findings can be attributed to the interventions rather than any flaws within the research design. Since a laboratory experiment was used, internal validity was achieved during this study.

Face validity was achieved by comparing and verifying the figures in the excel spreadsheet (EVA and deferred tax analysis), with the accounting data reflected on the McGregor's BFA database (company AFS and WACC calculations).

3.9 RELIABILITY

Stokes (2011:110) confirmed that reliability refers to the extent to which one's data collection techniques or analysis procedures will yield consistent findings. This was achieved because the deferred tax adjustment was implemented for all sample companies during the EVA analysis. Therefore, empirical results can be generalised for other companies in the Food producer and Retail sector, provided the same methodology is applied for future studies.

Jackson (2012:69-70) explained that the parallel forms reliability measurement/test are determined by using interchangeable versions of a measurement/test that have been compiled to measure the same construct equally well but by means of different content. The different versions are administered to the same representative sample and the obtained scores are correlated. Parallel forms reliability were achieved by calculating the value of EVA using two different approaches/methods.

Method 1

EVA = NOPAT – (TCE x WACC%)

Unadjusted EVA = Unadjusted NOPAT – (Unadjusted TCE x WACC%)

Adjusted EVA = Adjusted NOPAT – (Adjusted TCE x WACC%)

The EVA formulae shown in Method 1 had been documented by Bennett Stewart (Stewart: 2013:58).

Method 2

EVA = (ROC% – WACC%) ÷100 x TCE

Unadjusted EVA= (Unadjusted ROCE %- WACC%)÷100 x Unadjusted TCE

Adjusted EVA = (Adjusted ROCE% - WACC%) ÷ 100 x Adjusted TCE

The EVA formulae shown in Method 2 had also been documented by Bennett Stewart (Stewart, 2009:78). The EVA formulae under Method 2 are also called the 'return spread' and are the same formulae quoted by the McGregor's BFA database.

As mentioned by Bennett Stewart, the standard EVA formulae (Method 1 and Method 2) can be modified to create the unadjusted EVA and the adjusted EVA formulae (shown above). The researcher used the unadjusted EVA and adjusted EVA formulae for the purposes of the current study. The EVA values obtained from both methods were correlated to obtain a reliability score.

In addition, the validity and reliability of this study were guaranteed as information was obtained from the McGregor BFA database. The McGregor’s BFA database is a trusted source as it uses state of the art technology to deliver research data in real time.

3.10 HOW VALIDITY AND RELIABILITY WAS ACHIEVED

The following paragraphs explain how validity and reliability was achieved during the current study.

3.10.1 Validity

This study was conducted under laboratory experiment conditions. This means that all nuisance variables had been controlled (Zikmund, Babin, Carr and Griffin, 2013:268). The nuisance variables included all other accounting adjustments and non-accounting adjustments. The unadjusted EVA and adjusted EVA models, measured what they intended to measure, as all other variables that would affect EVA were controlled.

Also, the unadjusted and adjusted EVA regression models were based on the principles of the EVA measure. Therefore, the methodology used for this experimental study ensured the achievement of construct validity and internal validity.

In addition, face validity was achieved as the EVA and deferred tax analysis reflected on the excel spreadsheet were verified with the raw data collected from the McGregor's BFA database. This verification was performed on several occasions, both before and during the data analysis and the statistical analysis.

3.10.2 Reliability

The current study used a parallel forms reliability test to examine the reliability of the empirical findings. Parallel forms reliability is a method that focused on using two different methods to arrive at the same answer (Jackson, 2012:69-70). The current study used two different types of EVA formulae (Method 1 and Method 2), to calculate the unadjusted EVA and the adjusted EVA. The Pearson's correlation coefficient determined a 100% reliability score on the calculated EVA results. Therefore, reliability of the current empirical results has been achieved.

3.11 STATISTICAL TESTS ON THE DATA ANALYSIS

3.11.1 Descriptive statistics

McClave, Benson and Sincich (2011:3) explained that descriptive statistics utilises numerical and graphical methods to look for patterns in a data set, to summarise the information revealed in a data set, and to present the information in a convenient form. For this study, descriptive statistics is a quantitative summary of the sample data set. There are two categories of measures that can be used to describe a data set. The first category is named measures of central tendency and the second category comprises of measures of dispersion.

Black (2011:47) stated that measures of central tendency yields information relating to the central group of observations. The three measures of central tendency are the mean, the mode and the median. The measure of central tendency used for the current study was the mean. The mean is computed by summing all observations and dividing it by the number of observations. In other words, the mean is the average value amongst the group of observations (Black, 2011:49).

The measures of dispersion describe the spread or the dispersion for a set of data. The measures of dispersion include the range, quartiles, the variance and the standard deviation (Black, 2011:55). The measure of dispersion used for the current study was the standard deviation.

The current study computed the mean and the standard deviation for all dependent variables (all components of EVA) and for all independent variables (all components of deferred tax). The descriptive statistics are important as it will form the basis on which inferential statistics are computed.

3.11.2 Inferential statistics

Inferential statistics utilises sample data to make estimates, decisions, predictions, or other generalisations about a larger set of data (McClave, Benson and Sincich, 2011:3). In other words, the sample data is used to draw conclusions or make inferences about the population. The current study focuses on two types of inferential statistics, namely, the correlational statistics and the regression analysis. The inferential statistics used in the current study are explained in the following sections.

3.11.2.1 Correlational statistic

Correlations describe relationships between variables. Correlations estimate the extent to which the changes in one variable are associated with changes in the other variable (Curwin, Slater and Eadson, 2013:440). Furthermore, Weiers (2011:86) stated that the coefficient of correlation is a number that indicates both the direction and the strength of the linear relationship between the dependent variable (Y) and the independent variable (X).

For this study, the Pearson product-moment correlation was chosen due to the nature of the data measurement. The data was classified as a ratio measurement. This makes the Pearson product-moment correlation as the best correlation measurement due to the nature of the data being measured on a ratio basis. Cortinhas and Black (2012:489) also stated that the Pearson's product-moment correlation is a statistic used to measure the degree of association between two interval or ratio variables. Correlations were computed to determine the relatedness of deferred taxes and EVA values.

3.11.2.2 Regression analysis

This study focused on one of the most interesting statistical techniques called the regression analysis. Black (2011:467) stated that regression analysis is the process of constructing a mathematical model or function that can be used to predict or determine one variable by another variable or other variables.

A regression analysis with two or more independent variables is called a multiple regression analysis (Black, 2011:518). A multiple regression model was chosen, as the study under investigation had more than one independent variable (predictors) that impacted the dependent variable. There are two levels of deferred taxes (deferred tax expenses and deferred tax liabilities) that impacted the value of the adjusted EVA. In addition, the deferred tax values that impacted NOPAT and TCE also constituted the predictors of the dependent variable (EVA).

The aim of designing a regression model is to ascertain if the regression statistic is significant in predicting the value of the dependent variable (Anderson *et al.,* 2010:556). The significance of the regression statistic was used to determine the rejection/acceptance of the null hypotheses.

3.12 ETHICAL CONSIDERATIONS

The researcher was granted permission to download secondary data from McGregor's BFA database. A consultant from McGregor's granted the researcher access via a username and password (Appendix A).

The sample population constituted JSE-listed Food producers and Retailers. This study does not involve data collection and analysis from humans. For this reason, the researcher did not require ethical clearance

from the Institutional Research Ethics Committee (IREC) of the Durban University of Technology.

3.13 CONCLUSION

This chapter provided a detailed account of the research methodology to be used. The research design, target population, sampling method, data collection and data analysis have been explained. The concepts of validity and reliability were explained in conjunction with how they were attained during the research study. The chapter concluded with an outline of the types of statistical tests to be used during the data analysis stage.

The next chapter will focus on the empirical findings that relate to the data collected for the purposes of this research study.

CHAPTER 4 : PRESENTATION, INTERPRETATION AND DISCUSSION OF EMPIRICAL FINDINGS

4.1 INTRODUCTION

The previous chapter presented the research methodology. This chapter focuses on the presentation, interpretation and discussion of current empirical findings. In particular, the current study presents and analyses the empirical evidence concerning the relationship between EVA and deferred tax. The data for the current study was analysed using SPSS version 20.0 and Statgraphics Centurion version 15.0. The empirical results are presented in the form of graphs, cross tabulations and other figures. The presentation and interpretation of the empirical findings will begin with the descriptive statistics. This will be followed by an interpretation and discussion of the inferential statistics.

4.2. DESCRIPTIVE STATISTICS

The descriptive statistics for the current study are shown in Table 4.1. The descriptive statistics are calculated for the 21 JSE-listed Food producers and Retailers over the seven-year sample period from 2004 to 2010. The mean and the standard deviation statistics constitute the descriptive statistics for the current study. The mean and standard deviation statistics are computed for all components of EVA and for all components of deferred tax.

Table 4.1 shows the mean and standard deviation for all independent variables and dependent variables relating to the study.

Table 4.1 Descriptive statistics for Food producers and Retailers for the sample period 2004 to 2010 (Rand values in 000's)

	Food Producers		Retailers	
	Mean	Std. Deviation	Mean	Std. Deviation
Unadjusted NOPAT	563621	706643	702263	575659
Adjusted NOPAT	564757	707876	694299	576182
Deferred tax expenses impacting NOPAT	1136	35165	-7965	46017
The deferred tax liabilities impacting TCE	196385	188931	88580	149073
Unadjusted TCE	2750120	2660591	2788479	2399984
Adjusted TCE	2946505	2773263	2877059	2481833
Unadjusted Cost of capital	340480	354728	312713	277186
Adjusted Cost of capital	364216	368979	322741	286364
Unadjusted EVA (Method 1)	223141	453889	389550	378557
Adjusted EVA (Method 1)	200541	450429	371557	380214
Unadjusted EVA (Method 2)	223141	453889	389550	378557
Adjusted EVA (Method 2)	200541	450429	371557	380214
Return capital employed	0,1708	0,1358	0,2671	0,1056
Less cost of capital	0,1119	0,0902	0,1121	0,0210
Unadjusted Return spread	0,0589	0,1615	0,1551	0,1094
Unadjusted Return spread %	5,89	16,15	15,51	10,94
Return on capital employed	0,1551	0,1269	0,2578	0,1082
Less cost of capital	0,1119	0,0902	0,1121	0,0210
Adjusted Return spread	0,0432	0,1546	0,1457	0,1121
Adjusted Return spread %	4,32	15,46	14,57	11,21

With reference to Table 4.1, each of the mean values shown represents the average Rand values/percentages for the sample period 2004 to 2010. To illustrate, the unadjusted NOPAT of R 563 621 000 (Food producers) and unadjusted NOPAT of R702 263 000 (Retailers) represent the average values of NOPAT before the implementation of the deferred tax adjustment. Similarly, the unadjusted TCE of R2 750 120 000 (Food producers) and unadjusted TCE of R2 788 479 000 for (Retailers) represent the average values of TCE before the implementation of the deferred tax adjustment.

Furthermore, the adjusted NOPAT of R564 757 000 (Food producers) and adjusted NOPAT of R694 299 000 (Retailers) represent the average values of NOPAT, after the implementation of the deferred tax adjustment. Similarly, the adjusted TCE of R2 946 505 000 (Food producers) and adjusted TCE of R2 877 059 000 for (Retailers) represent the average values of TCE after the implementation of the deferred tax adjustment.

The mean unadjusted cost of capital and the mean adjusted cost of capital are similar to the mean value of the unadjusted TCE and adjusted TCE. The unadjusted values for NOPAT, TCE and cost of capital are the components for the unadjusted EVA value. Therefore, the unadjusted EVA of R223 141 000 (Food producers) and the unadjusted EVA of
R389 550 000 (Retailers) represent the average values of EVA before the implementation of the deferred tax adjustment. In addition, the adjusted values for NOPAT, TCE and cost of capital are the components for the adjusted EVA value. Therefore, the adjusted EVA of R200 541 000 (Food producers) and adjusted EVA of R371 557 000 (Retailers) represent the average values of EVA after the implementation of the deferred tax adjustment.

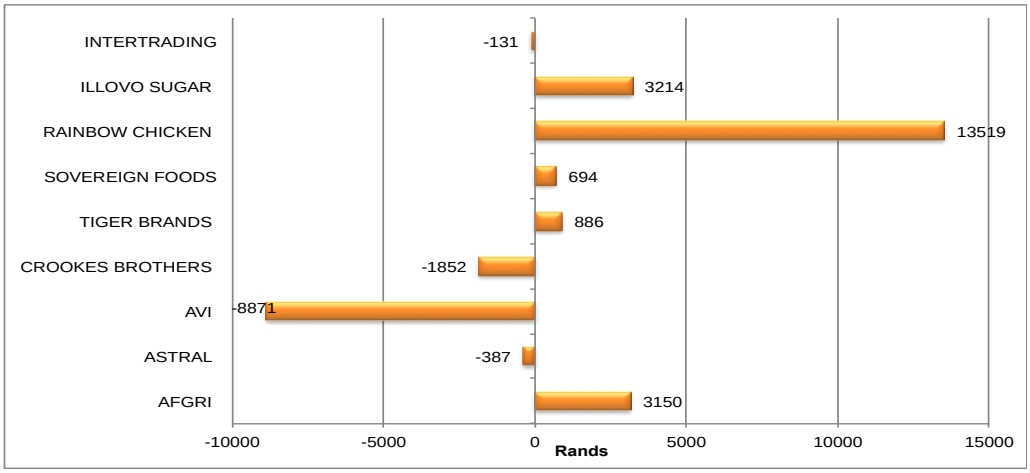
In addition, the unadjusted EVA and adjusted EVA values are calculated under Method 1 and Method 2. The researcher used two different methods to calculate EVA for the computation of a reliability test. The unadjusted and adjusted return spreads are the values of EVA expressed as percentages. The return spread percentages are useful as they enable comparability of EVA values between companies and sectors. The unadjusted return spread of 5.89% for Food producers and 15.51% for Retailers represent the percentages of EVA before the deferred tax adjustment. In the same manner, the adjusted return spread of 4.32% for Food producers and 14.57% for Retailers represent the percentages of EVA after the deferred tax adjustment. The next section explains the descriptive statistics (in the form of bar charts) for each of the constructs of the study.

4.2.1 The unadjusted NOPAT and adjusted NOPAT

The empirical findings for the unadjusted NOPAT and the adjusted NOPAT are presented, interpreted and compared to previous empirical findings for the Food producer sector. Thereafter, the empirical findings for the unadjusted NOPAT and the adjusted NOPAT are presented, interpreted and compared to previous empirical findings for the Retail sector.

Figure 4.1 shows the mean value of deferred tax expenses for each of the nine companies in the Food producer sector.

Figure 4:1 Increases and decreases in deferred tax expenses for Food producers (Rand values in 000's)

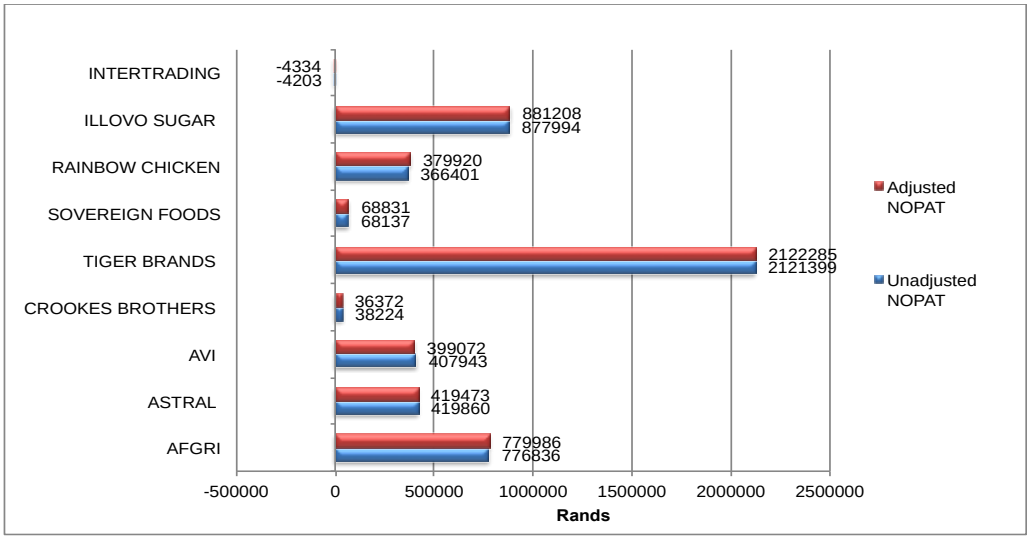


With reference to Figure 4.1, the mean value of deferred taxes for each company is the average value of deferred tax expenses over the sample period (2004 to 2010). For example, Afgri Limited has a deferred tax expense of R3 150 000, which represents the average value of deferred taxes for that particular company over the seven-year period starting from 2004 to 2010. In addition, an increase in deferred tax expenses is depicted by a horizontal bar to the right; indicating that the company owes taxes to the Receiver of Revenue. The decrease in deferred tax expenses is depicted by the horizontal bar to the left; indicating that the company is due for a tax refund from the Receiver of Revenue.

Figure 4.1 shows that five companies experienced an increase in deferred tax expenses, whilst the other four companies experienced a decrease in deferred tax expenses.

Figure 4.2 shows the mean unadjusted NOPAT and the mean adjusted NOPAT for each of the nine companies in the Food producer sector for the sample period 2004 to 2010.

Figure 4:2 The unadjusted NOPAT and adjusted NOPAT for Food producers (Rand values in 000's)



With reference to Figure 4.2, the unadjusted NOPAT for the current study represents the value of NOPAT before the implementation of the deferred tax adjustment. For example, Afgri Limited has an unadjusted NOPAT of R776 836 000, which represents NOPAT before the implementation of the deferred tax adjustment. Similarly, the adjusted NOPAT represents the value of NOPAT after the implementation of the deferred tax adjustment. For example, Afgri Limited has an adjusted NOPAT of R779 986 000, which represents NOPAT after the implementation of the deferred tax adjustment. Furthermore, it is important to interpret Figure 4.1 and Figure 4.2 together, as there is a relationship between the unadjusted NOPAT, the adjusted NOPAT and deferred tax expenses.

The empirical findings for Figure 4.1 and Figure 4.2 are interpreted together because the value of deferred tax expenses impacts the value of NOPAT. The increase/decrease in deferred tax expenses relates to the value of the unadjusted and adjusted NOPAT. Thus, the variance between the unadjusted NOPAT value and the adjusted NOPAT value is due to the value of the deferred tax expenses.

The study's findings showed that an increase in deferred tax expenses (taxes owing) resulted in the unadjusted NOPAT being lower than the adjusted NOPAT. Therefore, an increase in deferred tax expenses (taxes owing) resulted in a understated NOPAT value. To elaborate, Figure 4.1 and Figure 4.2 illustrate how an increase in deferred tax expense (taxes owing) affects NOPAT. Afgri Limited reported an increase in deferred taxes (taxes owing) of R3 150 000. The company used deferred tax expense in the calculation of NOPAT, therefore, the unadjusted NOPAT (with deferred taxes) is R776 836 000. When deferred tax expenses are removed, the adjusted NOPAT is R779 986 000. A comparison of the unadjusted NOPAT with the adjusted NOPAT shows that unadjusted NOPAT is lower than the adjusted NOPAT. This finding showed that an increase in deferred tax expense understated the value of the NOPAT. The NOPAT value was understated for five Food producers.

The findings for the current study can also be compared with the literature findings from previous studies. Phillips, Pincus and Rego (2002:3-4) examined the usefulness of deferred tax expenses in detecting the management of NOPAT. The results of the study suggested that an increase in deferred tax expenses resulted in an understated NOPAT value. The previous literature findings concur with the current empirical findings.

To contrast, a decrease in deferred tax expenses (tax refund) resulted in the unadjusted NOPAT being higher than the adjusted NOPAT. The decrease in deferred tax expenses (tax refund) resulted in an overstated NOPAT value. To elaborate, Figure 4.1 and Figure 4.2 also illustrate how a decrease in deferred tax expense (tax refund) affects NOPAT. AVI Limited reported a decrease in deferred tax expenses of R8 871 000. The company used the deferred tax expense in the calculation of NOPAT. This resulted in an unadjusted NOPAT of R407 943 000. When deferred tax expenses are removed or excluded, the value of the adjusted NOPAT is R399 072 000. A comparison of the unadjusted and adjusted NOPAT shows that the unadjusted NOPAT is higher than the adjusted NOPAT. This implies that a decrease in deferred tax expense overstated the value of NOPAT. The NOPAT value was overstated for four Food producers.

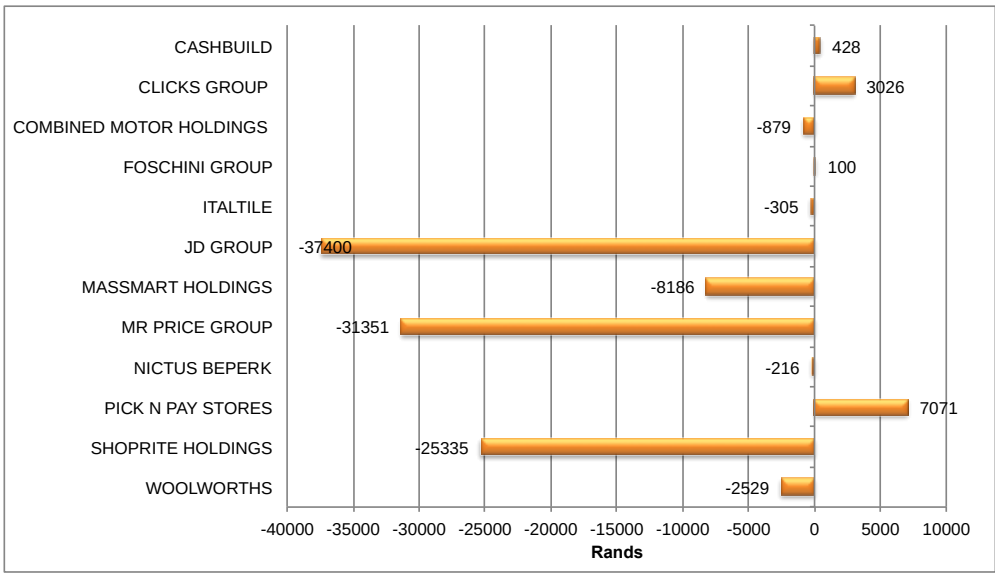
The current empirical findings can be compared with the literature findings. The study by Noor *et al.* (2005:15) investigated the reason for the widening gap between the unadjusted NOPAT and the adjusted NOPAT. The study showed that the widening gap was due to the management of NOPAT through the use of deferred tax expenses. Furthermore, the previous literature findings revealed that a decrease in deferred tax expenses resulted in an overstated NOPAT value. Therefore, the literature findings by Noor *et al*. are in agreement with the current empirical findings.

The Food producer sector yielded empirical findings that were consistent with previous empirical findings, for the unadjusted NOPAT and the adjusted NOPAT.

The next section presents, interprets and compares empirical findings for the unadjusted NOPAT and the adjusted NOPAT for the Retail sector.

Figure 4.3 shows the mean value of deferred tax expenses for each of the twelve companies in the Retail sector.

Figure 4:3 Increases and decreases in deferred tax expenses for Retailers (Rand values in 000's)



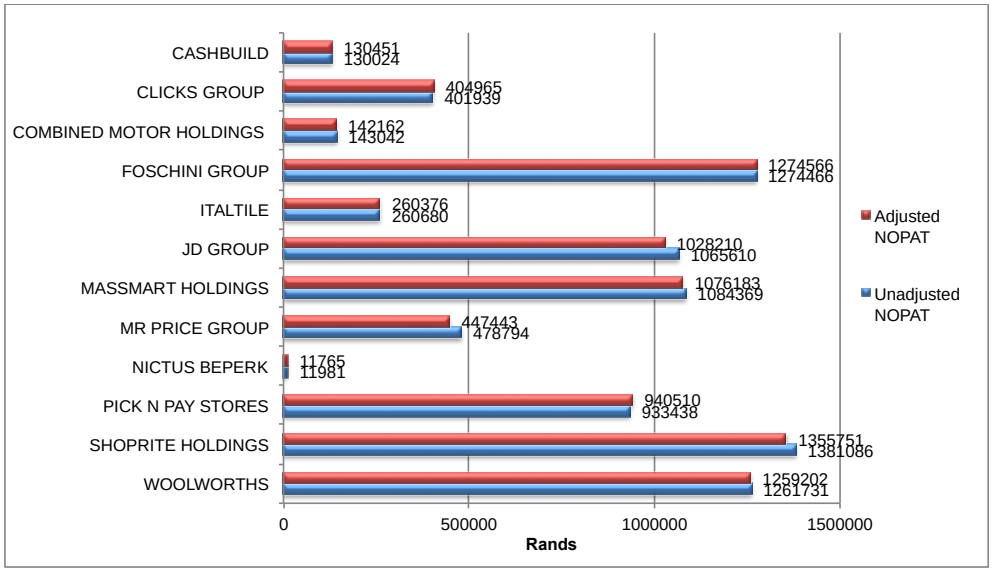
In Figure 4.3, the mean value of deferred taxes for each company is the average value of deferred tax expenses over the sample period (2004 to 2010). For example, Cashbuild Limited has a deferred tax expense of R428 000, which represents the average value of deferred taxes over the seven year period starting from 2004 to 2010. In addition, an increase in deferred tax expenses is depicted by a horizontal bar to the right; indicating that the company owes taxes to the Receiver of Revenue.

Furthermore, the decrease in deferred tax expenses is depicted by the horizontal bar to the left indicating that the company is due for a tax refund from the Receiver of Revenue.

Figure 4.3 illustrates that four companies experienced an increase in deferred tax expenses, whilst the other eight companies experienced a decrease in deferred tax expenses.

Figure 4.4 shows the mean unadjusted NOPAT and the mean adjusted NOPAT for each of the twelve companies in the Retail sector for the sample period 2004 to 2010.

Figure 4:4 The unadjusted NOPAT and adjusted NOPAT for Retailers (Rand values in 000's)



With reference to Figure 4.4, the unadjusted NOPAT for the current study represents the value of NOPAT before the implementation of the deferred tax adjustment. For example, Woolworths Limited has a unadjusted NOPAT of R1 261 731 000, which represents Woolworths NOPAT before the implementation of the deferred tax adjustment. Similarly, the adjusted NOPAT represents the value of NOPAT after the implementation of the deferred tax adjustment. For example, Woolworths Limited has an adjusted NOPAT of R1 259 202 000, which represents Woolworths NOPAT after the implementation of the deferred tax adjustment.

Furthermore, it is important to interpret Figure 4.3 and Figure 4.4 together, as there is a relationship between the unadjusted NOPAT, the adjusted NOPAT and deferred tax expenses.

Thus, the empirical findings for Figure 4.3 and Figure 4.4 are interpreted together because the value of deferred tax expenses impacts the value of NOPAT. The increase/decrease in deferred tax expenses relates to the value of unadjusted and adjusted NOPAT. Thus, the variance between the unadjusted NOPAT value and the adjusted NOPAT value is due to the value of the deferred tax expenses.

With reference to Figure 4.3 and Figure 4.4, Pick and Pay Stores Limited reported an increase in the provision of deferred taxes (taxes owing) of R7 071 000. The company uses deferred tax expenses in the calculation of NOPAT. Therefore, the unadjusted NOPAT (with deferred taxes) is R933 438 000. When deferred tax expenses are removed, the adjusted NOPAT is R940 510 000. The comparison of the unadjusted and adjusted NOPAT shows that unadjusted NOPAT is lower than the adjusted NOPAT. This result indicates that an increase in deferred tax expense understated the NOPAT value. The NOPAT value was understated for four Retailers.

A comparison of findings showed that Chang, Herbohn and Tutticci (2009:672) agree that deferred taxes are used by companies to manage the value of NOPAT. The study also mentions that an increase in deferred tax expenses would produce an understated NOPAT value. As a result, the literature findings support the current empirical findings.

To contrast, Figure 4.3 and Figure 4.4 also illustrate how a decrease in deferred tax expenses (tax refund) affects NOPAT. Shoprite Holdings reported a decrease in deferred tax expenses of R25 335 000. The company used the deferred tax expense (tax refund) in the calculation of NOPAT. This resulted in an unadjusted NOPAT of R1 381 086 000. When deferred taxes are removed/excluded, the value of the adjusted NOPAT is R1 355 751 000. A comparison of the unadjusted and adjusted NOPAT shows that the unadjusted NOPAT is higher than the adjusted NOPAT. This result indicated that a decrease in deferred tax expenses overstated the NOPAT value. The NOPAT value was overstated for eight Retailers.

A comparison can be made between the current empirical findings and the previous literature findings. A study by Herbohn, Tutticci and Khor (2010:766,769) showed that managers had a substantial amount of discretion in managing the value of NOPAT. The study revealed that managers decreased deferred tax expenses to overstate the NOPAT value. As a result, the previous empirical findings are consistent with the literature findings.

Therefore, the Retail sector yielded the empirical findings that were consistent with previous literature findings, for the unadjusted NOPAT and the adjusted NOPAT.

To summarise, the current empirical findings relating to the unadjusted NOPAT and the adjusted NOPAT, yielded similar results for both the Food producer sector and the Retail sector.

The above analysis, encompassed the presention, interpretation and comparison of current empirical findings for the unadjusted NOPAT and the adjusted NOPAT. The analysis also discussed the impact of deferred taxes on NOPAT. The next section will present, interpret and compare the empirical findings relating to the unadjusted TCE and the adjusted TCE.

4.2.2 The unadjusted TCE and adjusted TCE

The empirical findings for the unadjusted TCE and the adjusted TCE are presented, interpreted and compared to previous literature findings for the Food producer sector. Thereafter, the empirical findings for the unadjusted TCE and the adjusted TCE are presented, interpreted and compared to previous literature findings for the Retail sector.

Figure 4.5 shows the mean value of deferred tax liabilities for each of the nine companies in the Food producer sector.

Figure 4:5 Deferred tax liabilities for Food producers (Rand values in 000's)

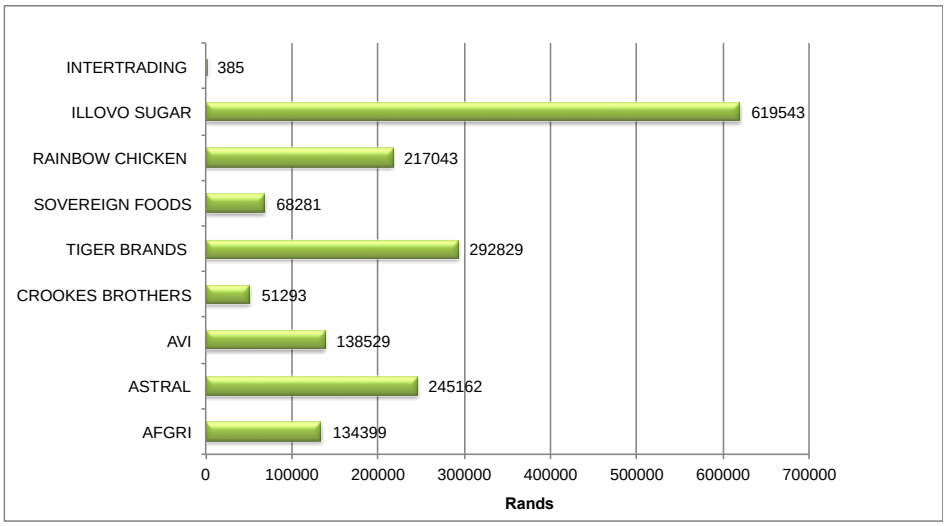
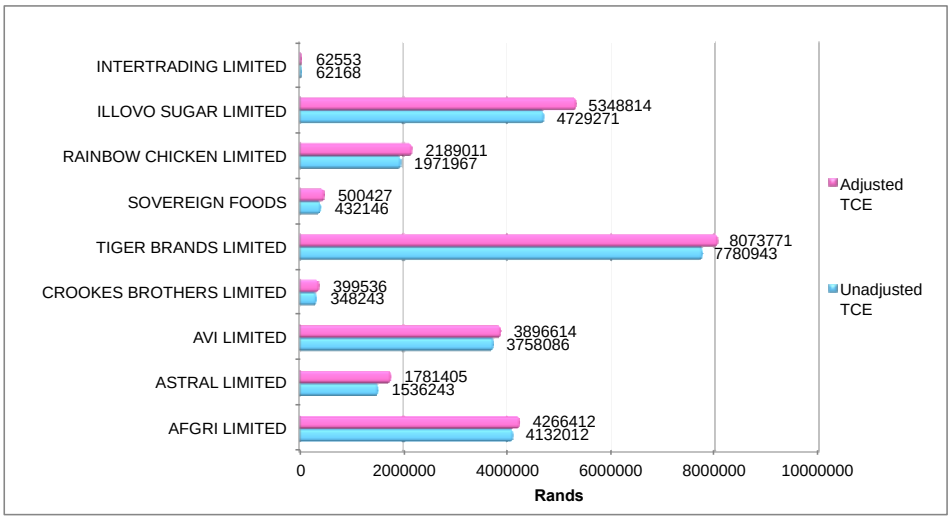


Figure 4.5 shows the mean value of deferred tax liabilities for each of the nine companies in the Food producer sector. For example, Afgri Limited reported a deferred tax liability of R134 399 000, which represents the average value of deferred tax liabilities reported throughout the seven year sample period, starting from 2004 to 2010. According to Figure 4.5, all nine companies in the Food producer sector reported deferred tax liabilities. To add, each company reported a deferred tax liability for each of the seven years starting from 2004-2010. No deferred tax assets were reported during the sample period.

Figure 4.6 shows the mean unadjusted TCE and the mean adjusted TCE for each of the nine companies in the Food producer sector for the sample period 2004 to 2010.

Figure 4:6 The unadjusted TCE and adjusted TCE for Food producers (Rand values in 000's)



With reference to Figure 4.6, the unadjusted TCE represents the TCE before the implementation of the deferred tax adjustment. For example, Afgri Limited has an unadjusted TCE of R4 132 012 000, which represents Afgri's TCE before the implementation of the deferred tax adjustment. Similarly, the adjusted TCE represents the TCE after the implementation of the deferred tax adjustment. For example, Afgri Limited has an adjusted TCE of R4 266 412 000, which represents Afgri's TCE after the implementation of the deferred tax adjustment.

To note, it is important to interpret Figure 4.5 and Figure 4.6 together, as there is a relationship between the unadjusted TCE, the adjusted TCE and the deferred tax liability. The variance between the unadjusted TCE value and the adjusted TCE value is due to the deferred tax liability.

Therefore, the empirical findings for Figure 4.5 and Figure 4.6 are interpreted together because the value of the deferred tax liability impacts the value of TCE.

With reference to Figure 4.5 and Figure 4.6, the current findings showed that deferred tax liabilities resulted in the unadjusted TCE being lower than the adjusted TCE for all nine companies in the Food producer sector. This empirical finding indicated that the value of deferred tax liabilities understated the TCE value, for all nine companies in the Food producer sector.

To elaborate, Figure 4.5 and Figure 4.6 illustrate the impact of deferred tax liabilities on TCE. Afgri Limited reported an unadjusted TCE of R4 132 012 000. The value of the deferred tax liabilities is used in the calculation of TCE. Therefore, the removal of deferred tax liabilities resulted in an adjusted TCE of R4 266 412 000. A comparison of the unadjusted TCE with the adjusted TCE showed that unadjusted TCE is lower than the adjusted TCE. This result confirms that the value of the deferred tax liability understated TCE. The TCE value was understated for all nine Food producers.

A study by Gee and Mano (2006:12) showed that managers were using deferred tax assets to manage the value of TCE. The results from the study indicated that companies were recognising deferred tax assets to produce an overstated TCE. The previous study also mentioned that if companies reported a deferred tax liability, an understated TCE would be produced. Therefore, the previous literature findings agree with the current empirical findings.

The next section presents, interprets and compares empirical findings for the unadjusted TCE and the adjusted TCE for the Retail sector.

Figure 4.7 shows the mean value of deferred tax liabilities for each of the twelve companies in the Retail sector.

Figure 4:7 Deferred tax liabilities for Retailers (Rand values in 000's)

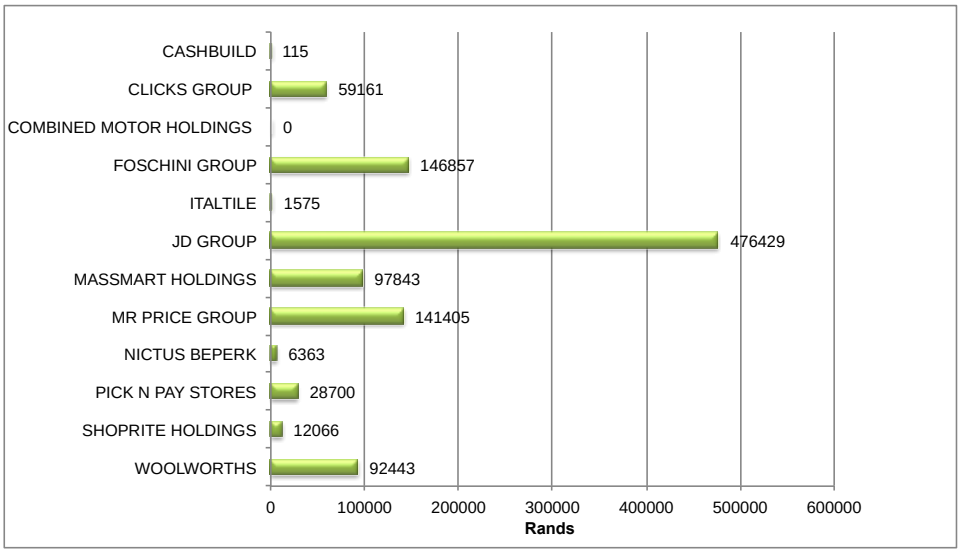
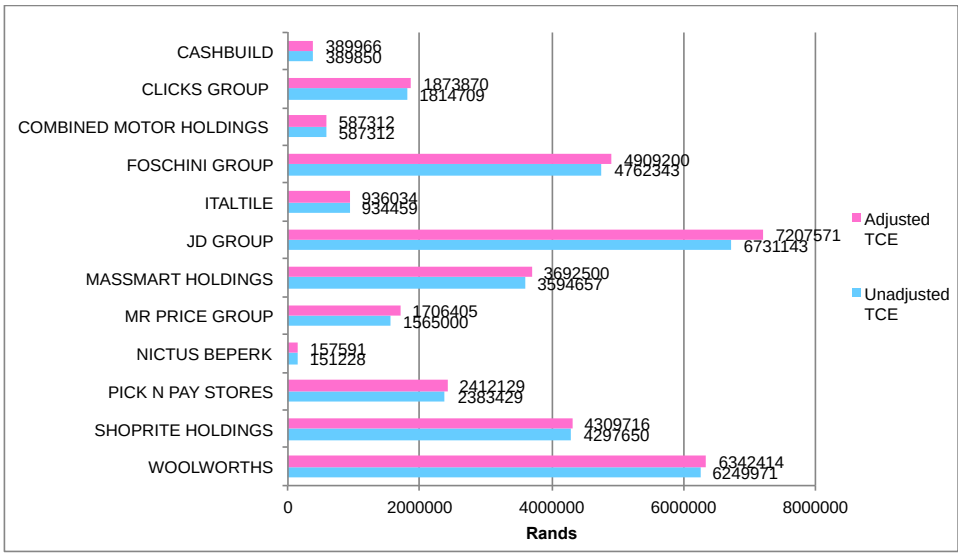


Figure 4.7 shows the mean value of deferred tax liabilities for each of the 12 companies in the Retail sector. For example, Woolworths Limited reported a deferred tax liability of R92 443 000, which represents the average value of deferred tax liabilities reported throughout the seven-year sample period, starting from 2004 to 2010.

By observing Figure 4.7, all 12 companies in the Retail sector reported deferred tax liabilities. To add, each company reported deferred tax liability for each of the seven years starting from 2004-2010. No deferred tax assets were reported during the sample period.

Figure 4.8 shows the mean unadjusted TCE and the mean adjusted TCE for each of the twelve companies in the Retail sector for the sample period starting 2004 to 2010.

Figure 4:8 The unadjusted TCE and adjusted TCE for Retailers (Rand values in 000's)



With reference to Figure 4.8, the unadjusted TCE represents the TCE before the implementation of the deferred tax adjustment. For example, Woolworths has a unadjusted TCE of R6 249 971 000, which represents Woolworths TCE before the implementation of the deferred tax adjustment. Similarly, the adjusted TCE represents the TCE after the implementation of the deferred tax adjustment. For example, Woolworths has a adjusted TCE of R6 342 414 000, which represents Woolworths TCE after the implementation of the deferred tax adjustment.

To note, it is important to interpret Figure 4.7 and Figure 4.8 together, as there is a relationship between the unadjusted TCE, the adjusted TCE and the deferred tax liability. The variance between the unadjusted TCE value and the adjusted TCE value is due to the value of the deferred tax liability.

Therefore, the empirical findings for Figure 4.7 and Figure 4.8 are interpreted together because the value of the deferred tax liability impacts the value of TCE.

With reference to Figure 4.7 and Figure 4.8, the current findings showed that deferred tax liabilities resulted in the unadjusted TCE being lower than the adjusted TCE for all twelve companies in the Retail sector. This empirical finding indicated that the value of deferred tax liabilities understated the TCE value, for all twelve companies in the Retail sector.

To elaborate, Figure 4.7 and Figure 4.8 illustrate the impact of deferred tax liabilities on TCE. Woolworths Limited reported an unadjusted TCE of R6 249 971 000. The value of the deferred tax liabilities used in the calculation of TCE was R 92 443 000. Therefore, the removal of deferred tax liabilities resulted in an adjusted TCE of R6 342 414 000. A comparison of the unadjusted TCE with the adjusted TCE showed that the unadjusted TCE is lower than the adjusted TCE. This result showed that the value of the deferred tax liability understated TCE. The TCE value was understated for all twelve Retail companies.

A comparison is made between the current empirical findings and the previous literature findings by Gallermore. The study by Gallermore (2012:4-5) showed that the unadjusted TCE had a higher value than the adjusted TCE. These results indicated that deferred tax assets overstated the TCE value. In addition, the study also suggested that a company's deferred tax liability understates the TCE value. Therefore, the Retail sector yielded the empirical findings that were consistent with previous literature findings for the unadjusted TCE and the adjusted TCE.

Furthermore, the current empirical findings relating to the unadjusted TCE and the adjusted TCE yielded similar results for both the Food producer sector and the Retail sector.

To summarise, the above analysis included the presentation, interpretation and comparison of current empirical findings for the unadjusted TCE and the adjusted TCE.

To conclude, the descriptive statistics analysed the relationships between deferred taxes and EVA. This was done by examining the relationships between the components of EVA (NOPAT and TCE) with the components of deferred tax (deferred tax expense and deferred tax liability). Therefore, descriptive statistics examined the relationship between NOPAT and deferred tax expenses and examined the relationship between TCE and deferred tax liabilities.

The next section focuses on the presentation and interpretation of the inferential statistics for the current study.

4.3 INFERENTIAL STATISTICS

The inferential statistics were computed specifically for the purposes of the current study. In addition to the descriptive statistics, the inferential statistics assisted the researcher in answering the research questions. The inferential statistics include correlational statistics and a multiple regression analysis. The correlational statistics are computed and analysed first, as it forms the basis for the computation, analyses and discussion of the multiple regression analysis.

4.3.1 Correlational statistics and scattergrams

The correlational statistics examine the correlations between the components of deferred taxes and the components of EVA. The correlation coefficient is calculated to examine the strength and the direction of relationships amongst variables. In particular, the Pearson's product moment correlation is calculated. Table 4.2 displays a set of variables on which the correlation coefficients are calculated.

Table 4.2 Relationships between the independent variable and the dependent variable

NOPAT **AND** Deferred taxes
Cost of capital **AND** Deferred taxes
TCE **AND** Deferred taxes

In order to examine the magnitude that deferred taxes have on the variables mentioned above, the unadjusted and adjusted values will be used. For example, to examine the relationship between NOPAT and deferred taxes, the unadjusted NOPAT and adjusted NOPAT will be correlated with the value of the deferred tax expense that impacts the NOPAT values.

The value of N is 63 for Food producers, as 9 companies are analysed over a seven-year period. Similarly, the value of N is 84 for Retailers, as 12 companies are analysed over a seven-year period. The value of N for each sector remains the same for all correlational statistics computed below.

The correlational statistics together with a scattergram are presented and analysed for the Food producer sector. Thereafter, the correlational statistics together with a scattergram are presented and analysed for the Retail sector.

4.3.1.1 Correlational statistics and scatterplot for NOPAT and deferred tax expenses

Table 4.3 presents the correlational statistics between NOPAT and deferred tax expenses for the Food producer sector.

Table 4.3 Relationship between NOPAT and deferred tax expenses for Food producers

Correlations				
		Unadjusted NOPAT	Adjusted NOPAT	Deferred tax expenses impacting NOPAT
Unadjusted NOPAT	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	63		
Adjusted NOPAT	Pearson Correlation	.999**	1	
	Sig. (2-tailed)	,000		
	N	63	63	
Deferred tax expenses impacting NOPAT	Pearson Correlation	,010	,060	1
	Sig. (2-tailed)	,937	,641	
	N	63	63	63
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4.3 shows only one significant correlation. The Pearson's correlation coefficient for Food producers is 0.999. The correlation value is close to the value of 1, resulting in a very strong positive relationship between the unadjusted NOPAT and the adjusted NOPAT.

It is also important to examine the coefficient of determination. The coefficient of determination is the square of the correlation coefficient (r^2). With reference to Table 4.3, the coefficient of determination will examine how changes in the dependent variable (adjusted NOPAT) is affected by changes in the independent variable (unadjusted NOPAT).

The Food producer sector shows that the unadjusted and adjusted NOPAT has a $r^2 = (0.999)^2 = 0.998$. This implies that 99.8% of the changes that occur in the adjusted NOPAT (dependent variable) is attributed to the unadjusted NOPAT (independent variable).

This results depict a very high coefficient of determination for the unadjusted and adjusted NOPAT. The high coefficient is justified as the unadjusted NOPAT is a major component required for the calculation of the adjusted NOPAT.

However, the Food producer sector showed very low correlation coefficients between the unadjusted NOPAT and deferred tax expenses. A very low correlation coefficient was also reported between the adjusted NOPAT and deferred tax expenses. The low correlation coefficients between these variables are graphically depicted in Figure 4.9.

Figure 4.9 is a scatterplot that examines and explains the reason for the high correlations and reasons for the low correlations for the Food producer sector.

Figure 4:9 Scattergram for NOPAT and deferred tax expenses for Food producers

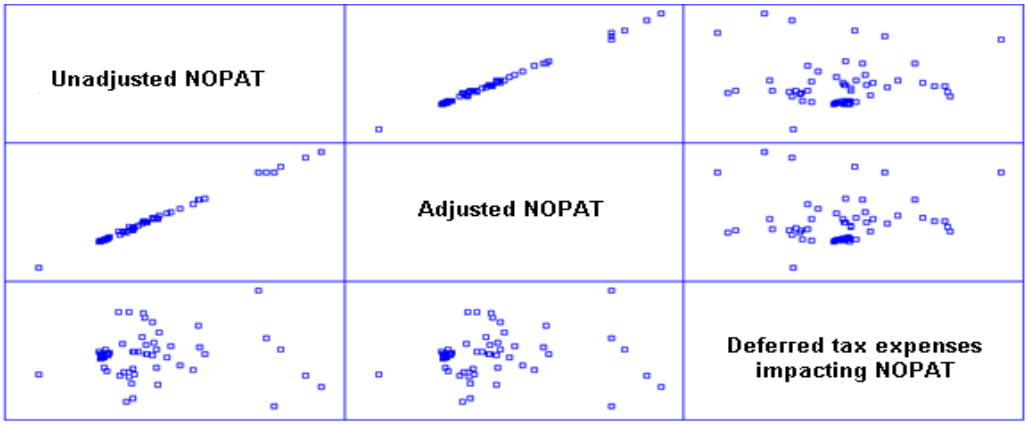


Figure 4.9 demonstrates a relationship between NOPAT and deferred tax expenses. The unadjusted and adjusted NOPAT variables move in the opposite direction to the deferred tax expense variable, which results in a low correlation coefficient. With reference to Figure 4.9, the deferred tax expense scatterplot is scattered, as most of the data points are central, and move in an outward direction. The reason behind the low correlation for deferred tax expenses is due to the increases and decreases in deferred tax expenses (Refer to Figure 4.1).

Furthermore, the unadjusted NOPAT and the adjusted NOPAT move in the same direction as both have positive (ascending) slopes. There is not much difference between the unadjusted and adjusted NOPAT, as these two lines closely track each other. The unadjusted and adjusted NOPAT lines closely track each other because the only difference between the unadjusted and adjusted NOPAT is due to the value of deferred tax expenses.

Moreover, the high correlational coefficients between the unadjusted and adjusted NOPAT (shown in Table 4.3) is justified by the scattergram, which shows the close proximity of the unadjusted and adjusted NOPAT values. The close proximity is depicted in Figure 4.9, as both the unadjusted NOPAT and the adjusted NOPAT have the same slopes and both have similar results, and, therefore, move in the same direction.

Table 4.4 presents the correlational statistics between NOPAT and deferred tax expenses for the Retail sector.

Table 4.4 Relationship between NOPAT and deferred tax expense for Retailers

Correlations				
		Unadjusted NOPAT	**Adjusted NOPAT**	**Deferred tax expenses impacting NOPAT**
Unadjusted NOPAT	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	84		
Adjusted NOPAT	Pearson Correlation	.997**	1	
	Sig. (2-tailed)	,000		
	N	84	84	
Deferred tax expenses impacting NOPAT	Pearson Correlation	-,029	,051	1
	Sig. (2-tailed)	,796	,643	
	N	84	84	84
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4.4 shows only one significant correlation. The Pearson's correlation coefficient for Retailers is 0.997. The correlation value is close to the value of 1, resulting in a very strong positive relationship between the unadjusted NOPAT and the adjusted NOPAT.

It is also important to examine the coefficient of determination. The coefficient of determination is the square of the correlation coefficient (r^2). With reference to Table 4.4, the coefficient of determination examines how changes in the dependent variable (adjusted NOPAT) is affected by changes in the independent variable (unadjusted NOPAT).

The Retail sector shows that the unadjusted and adjusted NOPAT has a $r^2 = (0.997)^2 = 0.994$. This implies that 99.4% of the changes that occur in the adjusted NOPAT is attributed to the unadjusted NOPAT.

There is a very high coefficient of determination for the unadjusted and adjusted NOPAT. The high coefficient is justified as the unadjusted NOPAT is a major component required for the calculation of the adjusted NOPAT.

However, the Retail sector shows a very low correlation coefficient between the unadjusted NOPAT and deferred tax expenses. Also, very low correlations were reported between the adjusted NOPAT and deferred tax expenses. The low correlation coefficients between these variables are graphically depicted in Figure 4.10.

Figure 4.10 is a scatterplot that displays the high and low correlations for the Retail sector.

Figure 4:10 Scattergram for NOPAT and deferred tax expenses for Retailers

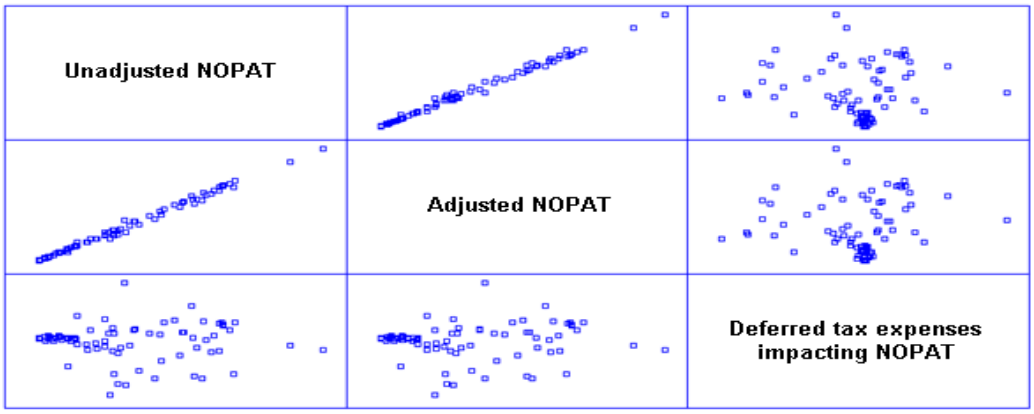


Figure 4.10 demonstrates a relationship between NOPAT and deferred tax expenses. The unadjusted NOPAT and the adjusted NOPAT variables move in the opposite direction to the deferred tax expense variable, which results in a low correlation coefficient.

With reference to Figure 4.10, the deferred tax expense scatterplot is scattered, as most of the data points are central, and move in an outward direction. The reason behind the low correlation for deferred tax expenses is due to the increases and decreases in deferred tax expenses (Refer to Figure 4.3).

The unadjusted NOPAT and adjusted NOPAT move in the same direction as both have positive (ascending) slopes. There is not much difference between the unadjusted and adjusted NOPAT, as these two lines closely track each other. The unadjusted and adjusted NOPAT lines closely track each other because the only difference between the unadjusted and adjusted NOPAT is due to the value of deferred tax expenses. Moreover, the high correlational coefficient between the unadjusted and adjusted NOPAT (shown in Table 4.4) is justified by the scattergram, which shows the close proximity of the unadjusted and adjusted NOPAT values.

The close proximity is depicted in Figure 4.10, as both the unadjusted NOPAT and the adjusted NOPAT have the same slope and both have similar results, and, therefore, move in the same direction.

To summarise, the correlation statistics and scattergram results for NOPAT and deferred tax expenses yielded similar empirical findings for both Food producers and Retailers. The next section will analyse the correlations for the deferred tax liabilities and TCE for both the Food producers and Retailers.

4.3.1.2 Correlational statistics and scatterplots for TCE and deferred tax liabilities

Table 4.5 presents the correlational statistics for TCE and deferred tax liabilities for the Food producer sector.

Table 4.5 Relationship for TCE and deferred tax liabilities for Food producers

Correlations				
		Deferred tax liability impacting TCE	**Unadjusted TCE**	**Adjusted TCE**
Deferred tax liability impacting TCE	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	63		
Unadjusted TCE	Pearson Correlation	.573**	1	
	Sig. (2-tailed)	,000		
	N	63	63	
Adjusted TCE	Pearson Correlation	.618**	.998**	1
	Sig. (2-tailed)	,000	,000	
	N	63	63	63
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4.5 shows all positive significant relationships amongst unadjusted TCE, adjusted TCE and deferred tax liabilities. The Food producer sector shows a very strong positive (correlation coefficient close to the value of 1) relationship between unadjusted TCE and adjusted TCE. The Pearson's correlation coefficient for Food producers showed r = 0.998.

The high coefficient between these two variables is justified, as the unadjusted TCE is a major component required for the calculation of the adjusted TCE. In addition, a positive correlation is shown between the unadjusted TCE and deferred tax liabilities. Furthermore, a positive correlation is shown between the deferred tax liabilities and the adjusted TCE. However, these correlations were not strongly positive, as the value of r is not close to 1.

In addition, the coefficient of determination is examined for the unadjusted TCE and adjusted TCE variables. The Food producer sector shows that the unadjusted and the adjusted TCE has a $r^2 = (0.998)^2 = 0.996$. This implies that 99.6% of the changes that occur in the adjusted TCE (dependent variable) are attributed to the unadjusted TCE (independent variable).

In addition, the coefficient of determination in Table 4.5 is calculated to examine how the independent variable (deferred tax liabilities) causes a change in the dependent variable (adjusted TCE). Consequently, the coefficient of determination is observed between deferred tax liabilities and the adjusted TCE. The coefficient of determination for Food producers is $r^2 = (0.618)^2 = 38.2\%$. This implies that there is a 38.2% change in the adjusted TCE when deferred tax liabilities are removed from the unadjusted TCE. The high and low correlations are depicted in Figure 4.11.

Figure 4.11 is a scatterplot that illustrates the high and low correlations in the Food producer sector.

Figure 4:11 Scattergram of TCE and deferred tax liabilities for Food producers

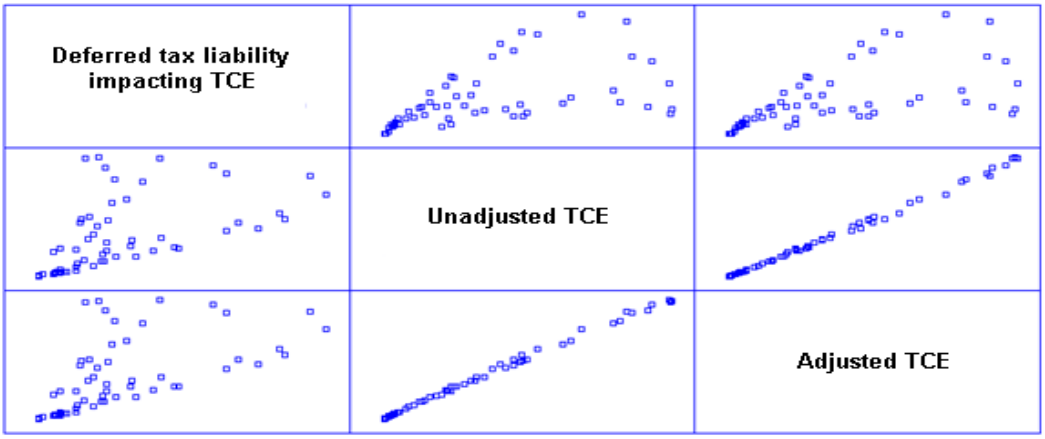


Figure 4.11 shows a positive relationship between the unadjusted TCE and adjusted TCE. The unadjusted TCE and the adjusted TCE have ascending slopes, and, therefore, move in the same direction. This fact is substantiated by the strong positive correlation statistic reported in Table 4.5. In addition, the deferred tax liability slope has an ascending slope, as most data points move in an ascending direction. By observation, the deferred tax liability slope and the adjusted TCE move in the same direction. The deferred tax liability slope and the adjusted TCE slope have a positive directly proportional relationship as an increase in the deferred tax liability variable is accompanied by an increase in the adjusted TCE.

Table 4.6, presents the correlational statistics for TCE and deferred tax liabilities for the Retail sector.

Table 4.6 Relationship between TCE and deferred tax liabilities for Retailers

Correlations				
		Deferred tax liability impacting TCE	Unadjusted TCE	Adjusted TCE
Deferred tax liability impacting TCE	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	84		
Unadjusted TCE	Pearson Correlation	.527**	1	
	Sig. (2-tailed)	,000		
	N	84	84	
Adjusted TCE	Pearson Correlation	.570**	.999**	1
	Sig. (2-tailed)	,000	,000	
	N	84	84	84
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4.6 shows all positive significant relationships amongst unadjusted TCE, adjusted TCE and deferred tax liabilities. The Retail sector showed a very strong positive (correlation coefficient is close to the value of 1) relationship between the unadjusted TCE and the adjusted TCE. The Pearson's correlation coefficient for Retailers had an r =0.999. The high coefficient between these two variables is justified, as the unadjusted TCE is a major component required for the calculation of the adjusted TCE.

In addition, the Retail sector showed a positive correlation between the unadjusted TCE and deferred tax liabilities. Furthermore, the Retailers showed a positive correlation between deferred tax liabilities and the adjusted TCE. However, these correlations were not strongly positive, as the value of r is not close to 1.

The coefficient of determination is examined for the unadjusted TCE and adjusted TCE variables. The Retail sector showed that the unadjusted TCE and the adjusted TCE had a $r^2 = (0.999)^2 = 0.998$. This implies that 99.8% of the changes that occur in the adjusted TCE is attributed to the unadjusted TCE.

In addition, the coefficient of determination in Table 4.6 is calculated to examine how the independent variable (deferred tax liabilities) causes a change in the dependent variable (adjusted TCE). Consequently, the coefficient of determination is observed between deferred tax liabilities and the adjusted TCE. The coefficient of determination for Retailers is r^2= (0.570) ^{2} = 32.4%. This implies that there is a 32.4% change in the adjusted TCE, when deferred tax liabilities are removed from the unadjusted TCE. The high and low correlations are graphically depicted in Figure 4.12.

Figure 4.12 is a scatterplot that shows the high and low correlations for the Retail sector.

Figure 4:12 Scattergram of TCE and deferred tax liabilities for Retailers

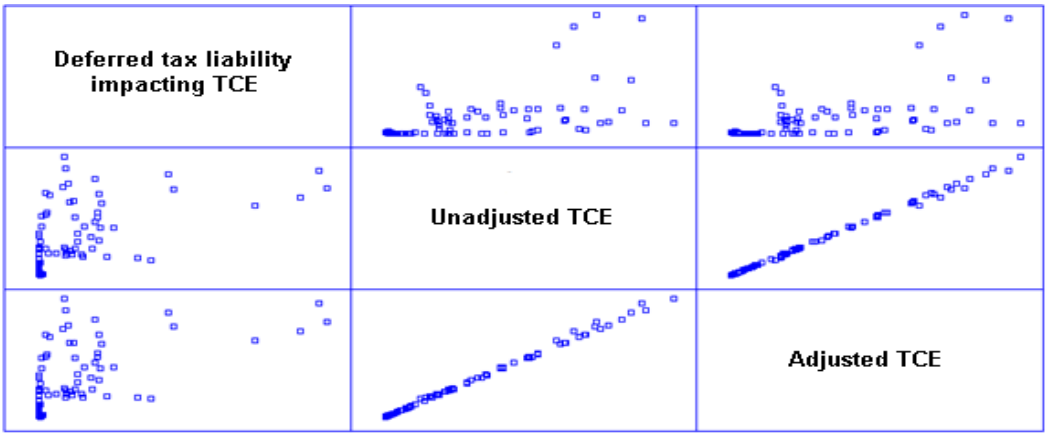


Figure 4.12 shows a positive relationship between the unadjusted TCE and the adjusted TCE. Both the unadjusted TCE and the adjusted TCE have ascending slopes, and, therefore, move in the same direction. This fact is substantiated by the strong positive correlation statistic reported in Figure 4.12. In addition, the deferred tax liability slope has an ascending slope, as most data points move in an ascending direction.

By observation, the deferred tax liability slope and the adjusted TCE move in the same direction. The deferred tax liability slope and the adjusted TCE slope have a positive directly proportional relationship. An increase in the deferred tax liability variable is accompanied by an increase in the adjusted TCE.

To summarise, the correlation statistics and scattergram results for TCE and deferred tax liabilities yielded similar empirical findings for both Food producers and Retailers. The next section will analyse the correlations for the cost of capital and deferred tax liabilities for both the Food producers and Retailers.

4.3.1.2 Correlational statistics and scatterplots for cost of capital and deferred tax liabilities

The two variables examined here are the cost of capital and deferred tax liabilities. An analysis is done on cost of capital, because, as mentioned in Chapter 3, when the EVA formula is reduced, the TCE is multiplied by WACC% to yield the cost of capital.

Table 4.7 presents the correlational statistics for cost of capital and deferred tax liabilities for the Food producer sector.

Table 4.7 Relationship between cost of capital and deferred tax liabilities for Food producers

Correlations				
		Deferred tax liability impacting TCE	Unadjusted Cost of capital	Adjusted Cost of capital
Deferred tax liability impacting TCE	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	63		
Unadjusted Cost of capital	Pearson Correlation	.527**	1	
	Sig. (2-tailed)	,000		
	N	63	63	
Adjusted Cost of capital	Pearson Correlation	.567**	.999**	1
	Sig. (2-tailed)	,000	,000	
	N	63	63	63
**. Correlation is significant at the 0.01 level (2-tailed).				

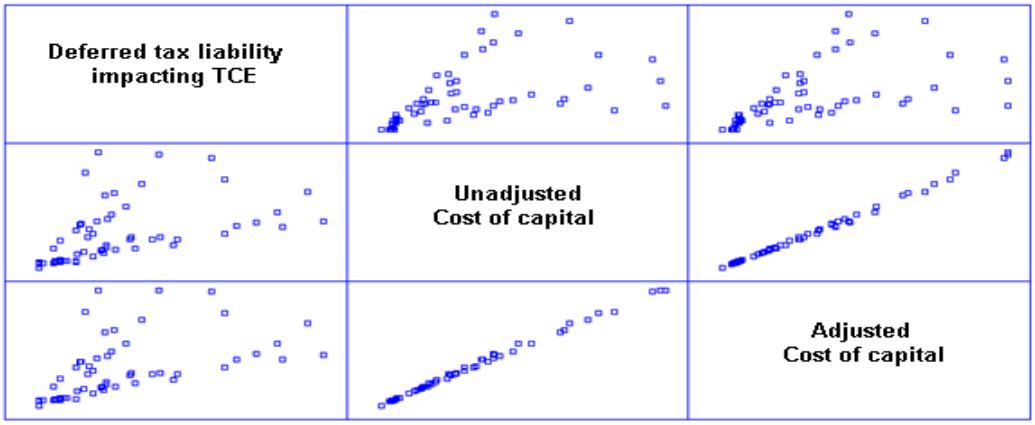
Table 4.7 shows positive relationships amongst all variables. There is a very strong relationship between the unadjusted cost of capital and the adjusted cost of capital. The value of the correlation coefficient is close to the value of 1, as the Food producer sector showed a very strong positive correlation coefficient of r = 0.999. Furthermore, the coefficient of determination between the unadjusted and adjusted cost of capital is $r^2 = (0.999)^2 = 99.8\%$. This implies that a 99.8% change to the adjusted cost of capital can be attributed to the unadjusted cost of capital. The high coefficient is due to the unadjusted cost of capital variable being used in the calculation of the adjusted cost of capital.

In addition, there is a positive correlation between deferred tax liabilities and adjusted cost of capital. The Food producer sector reported a correlation coefficient of 0.567. Another important aspect is the coefficient of determination. The coefficient of determination, with reference to Table 4.7, determines how changes in the dependent variable (adjusted cost of capital) is caused by changes in the independent variable (deferred tax liabilities). The study examines the removal of deferred tax liabilities from TCE. It is important to note that the adjusted cost of capital reflects the removal of deferred tax liabilities from the unadjusted cost of capital.

As a result, the coefficient of determination examines the relationship between deferred tax liabilities and adjusted cost of capital. The Food producer sector shows a [$r^2 = (0.567)^2$] 32.1% change in the adjusted cost of capital, when deferred tax liabilities are removed from the unadjusted cost of capital. The high and low correlations are graphically depicted in Figure 4.13.

Figure 4.13 is a scatterplot that shows the high and low correlations for the Food producer sector.

Figure 4:13 Scattergram of cost of capital and deferred tax liabilities for Food producers



It is important to note that Figure 4.13 and Figure 4.11 have one variable in common, namely, the deferred tax liability. The difference between these scattergrams is the cost of capital variable and the TCE variable. The cost of capital variable is almost identical to the TCE variable. This is so as the TCE is multiplied by WACC percentage to arrive at the company's cost of capital. As a result, the scattergrams in Figure 4.13 and Figure 4.11 have the same trends and patterns of slopes.

With reference to Figure 4.13, the deferred tax liability variable moves along an upward slope. This is so as most of the data points have an ascending slope. Figure 4.13 also shows an ascending slope for the unadjusted and adjusted cost of capital variables.

In addition, there is a positive relationship between the adjusted cost of capital and deferred tax liabilities. The correlational statistics revealed that deferred tax liabilities and adjusted cost of capital have a positive relationship. This relationship is substantiated by the ascending slopes in the above scattergram, where both variables are moving in the same direction.

Also, Figure 4.13 shows that an increase in deferred tax liabilities is accompanied by an increase in the adjusted cost of capital. Therefore, the cost of capital and deferred tax liabilities variables have a directly proportional relationship.

Table 4.8 presents the correlational statistics for cost of capital and deferred tax liabilities for the Retail sector.

Table 4.8 Relationship between cost of capital and deferred tax liabilities for Retailers

Correlations				
		Deferred tax liability impacting TCE	**Unadjusted Cost of capital**	**Adjusted Cost of capital**
Deferred tax liability impacting TCE	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	84		
Unadjusted Cost of capital	Pearson Correlation	.513**	1	
	Sig. (2-tailed)	,000		
	N	84	84	
Adjusted Cost of capital	Pearson Correlation	.555**	.999**	1
	Sig. (2-tailed)	,000	,000	
	N	84	84	84
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4.8 shows positive relationships amongst all variables. There is a very strong relationship between the unadjusted cost of capital and the adjusted cost of capital. The value of the correlation coefficient is close to the value of 1, as the Retail sector showed a very strong positive correlation coefficient of $r = 0.999$.

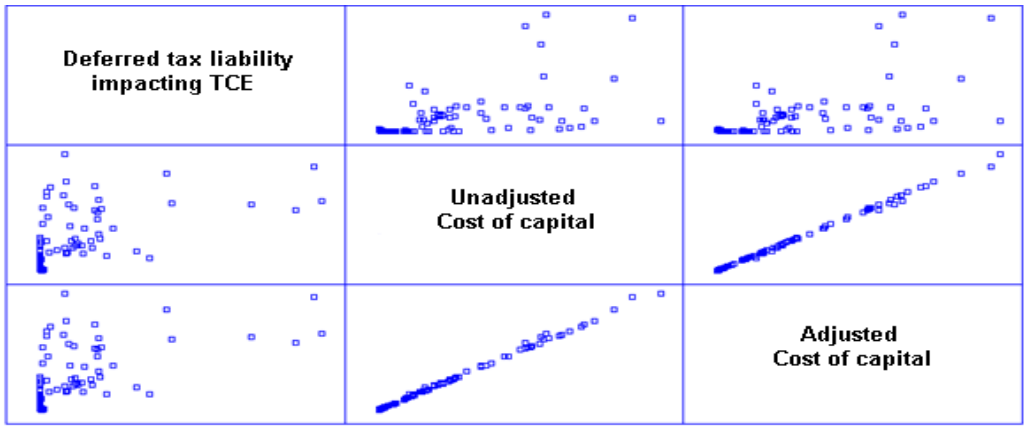
Furthermore, the coefficient of determination between the unadjusted and adjusted cost of capital is $r^2 = (0.999)^2 = 99.8\%$. This implies that a 99.8% change to the adjusted cost of capital can be attributed to the unadjusted cost of capital. The high coefficient is due to the unadjusted cost of capital variable being used in the calculation of the adjusted cost of capital.

In addition, there is a positive correlation between deferred tax liabilities and the adjusted cost of capital. The Retail sector reported a correlation coefficient of 0.555. Another important aspect is the coefficient of determination. The coefficient of determination, with reference to Figure 4.19, determines how changes in the dependent variable (adjusted cost of capital) is caused by changes in the independent variable (deferred tax liabilities).

The study examines the removal of deferred tax liabilities from TCE. It is important to note that the adjusted cost of capital reflects the removal of deferred tax liabilities from the unadjusted cost of capital. As a result, the coefficient of determination examines the relationship between deferred tax liabilities and adjusted cost of capital. The Retail sector showed a [$r^2 = (0.555)^2$] 30.8% change in the adjusted cost of capital, when deferred tax liabilities are removed from unadjusted cost of capital. The high correlations and low correlations are graphically depicted in Figure 4.14.

Figure 4.14 is a scatterplot that shows the high and low correlations for the Retail sector.

Figure 4:14 Scattergram of cost of capital and deferred tax liabilities for Retailers



It is important to note that Figure 4.14 and Figure 4.12 have one variable in common, namely, the deferred tax liability. The difference between these scattergrams are the cost of capital variable and the TCE variable. The cost of capital variable is almost identical to the TCE variable. This is so as the TCE is multiplied by WACC percentage to arrive at the company's cost of capital. As a result, the scattergram in Figure 4.14 and Figure 4.12 have the same trends and patterns of slopes.

With reference to Figure 4.14, the deferred tax liability variable moves along an upward slope. This is so as most of the data points have an ascending slope. Figure 4.14 also shows an ascending slope for the unadjusted and adjusted cost of capital variables.

In addition, there is a positive relationship between the adjusted cost of capital and deferred tax liabilities. The correlational statistics revealed that deferred tax liabilities and adjusted cost of capital have a positive relationship. This relationship is substantiated by the ascending slopes in the above scattergrams, where both variables are moving in the same direction.

Also Figure 4.14 shows that an increase in deferred tax liabilities is accompanied by an increase in the adjusted cost of capital. Therefore, the cost of capital and deferred tax liabilities variables have a directly proportional relationship.

To summarise, the correlation statistics and scattergram results for cost of capital and deferred tax liabilities yielded similar empirical findings for both Food producers and Retailers.

In conclusion, there were highly positive correlations between the following variables:
a) The unadjusted NOPAT and the adjusted NOPAT;
b) The unadjusted TCE and the adjusted TCE; and
c) The unadjusted cost of capital and the adjusted cost of capital.

The reason for the highly positive correlations are due to the fact that the unadjusted values provide a necessary input on which the adjusted values are calculated. The only difference between the unadjusted and adjusted values is due to deferred tax variable. The high correlations amongst the variables mentioned above further suggest that deferred taxes impact the components of EVA.

To add, the scattergrams and correlational matrices established correlational relationships between the components of deferred taxes and the components of EVA. Therefore, EVA is related to deferred taxes.

The above correlation matrices provide a good foundation for the development of multiple regression models as positive correlation values amongst variables will enable a good prediction on the multiple regression models. The next section will discuss the relevant variables required to build multiple regression models.

4.3.2 Multiple regression analysis

For the purposes of this study, multiple regression models have been developed. The multiple regression models will be able to determine the impact that deferred taxes have on the EVA measure. There are two types of multiple regression models. The first regression model can be used to predict the value of the unadjusted EVA. The second model can be used to predict the value of the adjusted EVA. The unadjusted EVA and adjusted EVA values can be determined by companies according to the regression models. The implementation of the deferred tax adjustment is included within the regression models. The implementation of the deferred tax adjustment and the regression models can be used at a company's discretion. To note, multiple regression models have been built for each sector.

4.3.2.1 Multiple regression model for the Unadjusted EVA

The first predictor model is the unadjusted EVA model. The unadjusted EVA model will enable a company to determine the value of its unadjusted EVA, when the following predictors are imputed into the model:

X1 = Unadjusted NOPAT;
X2 = Unadjusted TCE; and
X3 = Unadjusted cost of capital.

Table 4.9, Table 4.10 and Table 4.11 show the multiple regression model output for the Food producer sector which encompasses the ANOVA test for overall significance and the coefficient test for individual significance.

Table 4.9 Multiple regression model of the Unadjusted EVA for Food producers

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1,000	1,000	,385

a. Predictors: (Constant), Unadjusted Cost of capital, Unadjusted NOPAT, Unadjusted TCE

With reference to Table 4.9, the unadjusted EVA regression model yielded a perfect positive correlation of +1. This implies that the independent variables accurately predict the value of the (unadjusted EVA) dependent variable.

Table 4.10 ANOVA test for overall significance for Food producers

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12772919748781,700	3	4257639916260,560	28757108110560,200	.000[b]
	Residual	8,735	59	,148		
	Total	12772919748790,400	62			

a. Dependent Variable: Unadjusted EVA (Method 1)
b. Predictors: (Constant), Unadjusted Cost of capital, Unadjusted NOPAT, Unadjusted TCE

With reference to Table 4.10, the ANOVA (f-tests) evaluated the overall significance of the independent variables on the dependent variable. The findings revealed that all independent variables, (unadjusted NOPAT, unadjusted TCE and the unadjusted cost of capital) had an overall significance (p-value < 0.05) in predicting the value of the unadjusted EVA.

Table 4.11 Coefficient test for individual significance for Food producers

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,084	,071		-1,179	,243
	Unadjusted NOPAT	1,000	,000	1,557	7927466,069	0,000
	Unadjusted TCE	5,160E-08	,000	,000	,608	,545
	Unadjusted Cost of capital	-1,000	,000	-,782	-1509010,857	0,000

a. Dependent Variable: Unadjusted EVA (Method 1)

Table 4.11 shows the coefficient test for individual significance. The results revealed that the unadjusted NOPAT and the unadjusted cost of capital were the most significant variables in predicting the value of the unadjusted EVA. However, the unadjusted TCE lacked statistical significance (p-value > 0.05) in predicting the value of the unadjusted EVA. The reason for the lack of significance on the unadjusted TCE variable is inherent in the formulae used to calculate the value of EVA. The TCE forms an important component in the EVA formula. However, the TCE cannot determine the value of the EVA in isolation. The lack of completeness in this component led to the lack of significance as the multiplication of TCE by the WACC% makes the component of EVA complete and meaningful. In addition, the following unadjusted EVA regression equation for Food producers was formulated from Table 4.11:

Unadjusted EVA= - 0.084 +unadjusted NOPAT + unadjusted cost of capital.

With reference to the coefficient test for individual significance, the current empirical findings are compared to previous literature findings. Previous empirical evidence by Lynn, Seethamraju and Seetharaman (2008:117) showed that the unadjusted NOPAT was statistically significant. The comparison of empirical findings showed that the current empirical findings are in agreement with previous literature findings.

The next section presents, interprets and analyses the unadjusted EVA model for the Retail sector.

Table 4.12, Table 4.13 and Table 4.14 show the multiple regression model output for the Retail sector which encompasses the ANOVA test for overall significance and the coefficient test for individual significance.

Table 4.12 Multiple regression model of the Unadjusted EVA for Retailers

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1,000	1,000	,349

a. Predictors: (Constant), Unadjusted Cost of capital, Unadjusted NOPAT, Unadjusted TCE

With reference to Table 4.12, the unadjusted EVA regression model yielded a perfect positive correlation of +1. This implies that the independent variables accurately predict the value of the (unadjusted EVA) dependent variable.

Table 4.13 ANOVA test for overall significance for Retailers

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11894378258297,200	3	3964792752765,740	32487462094131,000	.000[b]
	Residual	9,763	80	,122		
	Total	11894378258307,000	83			

a. Dependent Variable: Unadjusted EVA (Method 1)
b. Predictors: (Constant), Unadjusted Cost of capital, Unadjusted NOPAT, Unadjusted TCE

With reference to Table 4.13, the ANOVA (f-tests) evaluated the overall significance of the independent variables on the dependent variable. The findings revealed that all independent variables, (unadjusted NOPAT, unadjusted TCE and the unadjusted cost of capital) had an overall significance (p-value < 0.05) in predicting the value of the unadjusted EVA.

Table 4.14 Coefficient test for individual significance for Retailers

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,033	,061		-,537	,593
	Unadjusted NOPAT	1,000	,000	1,521	8072810,286	0,000
	Unadjusted TCE	8,979E-08	,000	,000	1,209	,230
	Unadjusted Cost of capital	-1,000	,000	-,732	-1607576,456	0,000

a. Dependent Variable: Unadjusted EVA (Method 1)

Table 4.14 shows the coefficient test for individual significance. The results revealed that the unadjusted NOPAT and the unadjusted cost of capital were the most significant variables in predicting the value of the unadjusted EVA. However, the unadjusted TCE lacked statistical significance (p-value > 0.05) in predicting the value of the unadjusted EVA. The reason for the lack of significance on the unadjusted TCE variable is inherent in the formulae used to calculate the value of EVA. The TCE forms an important component in the EVA formula. However, the TCE cannot determine the value of the EVA in isolation. The lack of completeness in this component led to the lack of significance as the multiplication of TCE by the WACC% makes the component of EVA complete and meaningful. In addition, the following unadjusted EVA regression equation for Retailers was extracted from Table 4.14:

Unadjusted EVA = -0.033 + unadjusted NOPAT + unadjusted cost of capital.

With reference to the coefficient test for individual significance, the current empirical findings are compared to previous literature findings. The study by Phillips, Pincus and Rego (2003:13,37) showed that the unadjusted NOPAT was statistically significant. The comparison of empirical findings showed that the previous literature findings support the current empirical findings.

In summary, the unadjusted EVA regression models showed similar results for both Food producers and Retailers.

4.3.2.2 Multiple regression model for the Adjusted EVA

The second predictor model is the adjusted EVA model. The adjusted EVA model will determine the value of a company's adjusted EVA, when the following predictor values are entered into the model equation:

X1 = Unadjusted NOPAT;
X2 = Deferred taxes that impact NOPAT;
X3 = Adjusted NOPAT;
X4 = Unadjusted TCE;
X5 = Deferred tax liabilities that impact TCE;
X6 = Adjusted TCE;
X7 = Unadjusted cost of capital; and
X8 = Adjusted cost of capital.

It is important to note that the two components of deferred taxes (deferred tax expense and deferred tax liability) do not act in isolation in determining the impact of deferred taxes on the adjusted EVA. The two deferred tax components work in conjunction with other predictors in determining the impact of deferred taxes on EVA.

The deferred tax expense inherent in the unadjusted NOPAT had to be removed to arrive at the adjusted NOPAT. Furthermore, the deferred tax liability inherent in TCE/cost of capital had to be removed to arrive at the adjusted TCE/cost of capital. Therefore, the adjusted values together with the unadjusted values also became the independent variables (predictors) for the adjusted EVA regression model.

The following multiple regression models will determine how significant the above predictors are in measuring the value of the adjusted EVA.

Table 4.15, Table 4.16 and Table 4.17 show the multiple regression model output for the Food producer sector which encompasses the ANOVA test for overall significance and the coefficient test for individual significance.

Table 4.15 Multiple regression model of the Adjusted EVA for Food producers

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1,000	1,000	,382

a. Predictors: (Constant), Adjusted cost of capital, Deferred tax expenses impacting NOPAT, Deferred tax liabilities impacting TCE, Unadjusted NOPAT, Adjusted TCE

With reference Table 4.15, the adjusted EVA regression model yielded a perfect positive correlation value of +1. This implies that the independent variables predict 100% of the dependent variable (adjusted EVA).

Table 4.16 ANOVA test for overall significance for Food producers

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12578959126479,700	5	2515791825295,940	17278537831752,700	.000[b]
	Residual	8,300	57	,146		
	Total	12578959126488,000	62			

a. Dependent Variable: Adjusted EVA (Method 1)

b. Predictors: (Constant), Adjusted cost of capital, Deferred tax expenses impacting NOPAT, Deferred tax liabilities impacting TCE, Unadjusted NOPAT, Adjusted TCE

With reference to Table 4.16, the ANOVA (f-test) showed that all independent variables had an overall significance on the dependent variable. The findings revealed that all five independent variables had an overall significance (p-value < 0.05) on the value of the adjusted EVA.

Table 4.17 Coefficient test for individual significance for Food producers

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-,127	,075		-1,698	,095
	Unadjusted NOPAT	1,000	,000	1,569	7986474,723	0,000
	Deferred tax expenses impacting NOPAT	1,000	,000	,078	716624,832	,000
	Deferred tax liabilities impacting TCE	-2,384E-08	,000	,000	-,076	,940
	Unadjusted TCE	4,410E-08	,000	,000	,519	,606
	Adjusted Cost of capital	-1,000	,000	-,819	-1573007,896	,000

a. Dependent Variable: Adjusted EVA (Method 1)

Table 4.17 shows the coefficient test for individual significance. The results showed that the unadjusted NOPAT, the deferred taxes that impact NOPAT and the adjusted cost of capital variables significantly impacted (p-value < 0.05) the value of the adjusted EVA. However, the deferred taxes that impacted TCE and the unadjusted TCE were not individually significant (p-value > 0.05) in predicting the value of the dependent variable. In addition, the following adjusted EVA regression equation for Food producers was extracted from Table 4.17:

Adjusted EVA = -0.127 + unadjusted NOPAT + deferred tax expenses impacting NOPAT + adjusted cost of capital.

With reference to Table 4.17, the current empirical findings are compared to previous literature findings. A previous study by Noor *et al.* (2007:15) found deferred taxes that impacted NOPAT was statistically significant. The empirical results from the current study are in agreement with the previous literature findings.

The addition, Gallermore (2012:24,25,49) found deferred taxes that impacted TCE were statistically significant. The finding by Gallermore contrasts with the current empirical findings because the study by Gallermore reported a deferred tax asset, whilst the current study reported deferred tax liabilities.

The variation of empirical findings is also due to the nature of the previous studies that only evaluated specific components of EVA, whereas the current study investigated the entire EVA model.

The next section focuses on the presentation, interpretation and comparison of the adjusted EVA model empirical findings for the Retail sector.

Table 4.18, Table 4.19 and Table 4.20 show the multiple regression model output for the Retail sector which encompasses the ANOVA test for overall significance and the coefficient test for individual significance.

Table 4.18 Multiple regression model of the Adjusted EVA for Retailers

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	1.000[a]	1,000	1,000	,388

a. Predictors: (Constant), Adjusted Cost of capital, Deferred tax expenses impacting NOPAT, Deferred tax liabilities impacting TCE, Unadjusted NOPAT, Adjusted TCE

With reference to Table 4.18, the adjusted EVA regression model yielded a perfect positive correlation value of +1. This implies that the independent variables predict 100% of the dependent variable (adjusted EVA).

Table 4.19 ANOVA test for overall significance for Retailers

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11998716684155,800	5	2399743336831,160	15908125876394,100	.000[b]
	Residual	11,767	78	,151		
	Total	11998716684167,600	83			

a. Dependent Variable: Adjusted EVA (Method 1)
b. Predictors: (Constant), Adjusted cost of capital, Deferred tax expenses impacting NOPAT, Deferred tax liabilities impacting TCE, Unadjusted NOPAT, Unadjusted TCE

With reference to Table 4.19, the ANOVA (f-test) showed that all independent variables had an overall significance on the dependent variable. The findings revealed that all five independent variables had an overall significance (p-value < 0.05) on the value of the adjusted EVA.

Table 4.20 Coefficient test for individual significance for Retailers

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	,009	,068		,130	,897
	Unadjusted NOPAT	1,000	,000	1,514	7139244,868	0,000
	Deferred tax expenses impacting NOPAT	1,000	,000	,121	1064376,036	0,000
	Deferred tax liabilities impacting TCE	2,040E-07	,000	,000	,577	,566
	Unadjusted TCE	-4,180E-08	,000	,000	-,507	,614
	Adjusted Cost of capital	-1,000	,000	-,753	-1482355,924	0,000

a. Dependent Variable: Adjusted EVA (Method 1)

Table 4.20 shows the coefficient test for individual significance. The results showed that the unadjusted NOPAT, the deferred taxes that impact NOPAT and the adjusted cost of capital variable significantly impacted (p-value < 0.05) the value of the adjusted EVA. However, the deferred taxes that impacted TCE and the unadjusted TCE were not individually significant (p-value > 0.05) in predicting the value of the dependent variable.

In addition, the following adjusted EVA regression equation for Retailers was produced from Table 4.20:

Adjusted EVA = 0.009 + unadjusted NOPAT + deferred tax expenses impacting NOPAT + adjusted cost of capital.

With reference to Table 4.20, the current empirical findings are compared to previous literature findings. A previous study by Lynn, Seethamraju and Seetharaman (2008:117) found deferred taxes that impacted NOPAT was statistically significant. The empirical results from the current study are in agreement with the previous literature.

Lastly, a previous empirical study by Anderson *et al.* (2005:1) is closely related to the current study. It is important to note that Anderson *et al.* did not provide any empirical evidence on the components of the unadjusted EVA and the adjusted EVA. Therefore, no comparison can be made relating to the statistical significance for the components of the unadjusted EVA and the adjusted EVA. However, statistical results were provided on the significance of accounting adjustments. Anderson *et al.* (2005:12) found a lack of statistical significance amongst the five accounting adjustments. Upon comparison, the findings by Anderson *et al.* contradict the current empirical findings.

The above comparison shows a variation of empirical results for individual significance of independent variables. The current study shows five independent variables, of which three are statistically significant, whilst the remaining two independent variables are not statistically significant.

Although there is a lack of statistical significance amongst some of the independent variables, the study shows a high overall statistical significance for the majority of the independent variables. To summarise, the current empirical findings are in partial agreement with the previous literature findings.

The next section focuses on the presentation and interpretation of reliability statistics for the current study.

4.4 RELIABILITY STATISTICS

The calculation of the unadjusted and adjusted EVA values are based on the Stern Stewart formulae. In order to determine the reliability of the calculated unadjusted EVA and the adjusted EVA values, the (unadjusted and adjusted) EVA values are calculated using the following formulae:

Method 1:

Unadjusted EVA = Unadjusted NOPAT – (Unadjusted TCE x WACC)
Adjusted EVA = Adjusted NOPAT – (Adjusted TCE x WACC); and

Method 2:

Unadjusted EVA= (Unadjusted ROCE%- WACC%)÷100 x Unadjusted TCE
Adjusted EVA = (Adjusted ROCE% - WACC%) ÷ 100 x Adjusted TCE.

As mentioned in Chapter 3, Bennett Stewart provides two alternative EVA formulae, which are used for the current study. The value of EVA calculated according to the Method 1 was correlated with the value of EVA calculated according to Method 2.

The reliability statistics under Method 1 and Method 2 yielded exactly the same EVA values, across the seven year sample period (2004-2010), for all companies within the Food producer and Retail sector.

The reliability test was based on triangulation, where different methods are used to obtain the same result. For this study, two different types of formulae were used to arrive at the unadjusted and adjusted EVA values. The following segment discusses the results from reliability test, which was done via the Pearson's correlation statistic.

Table 4.21 presents the reliability statistics of the unadjusted EVA for the Food producer sector.

Table 4.21 Correlations of the Unadjusted EVA for Food producers

Correlations			
		Unadjusted EVA (Method 1)	**Unadjusted EVA (Method 2)**
Unadjusted EVA (Method 1)	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		0,000
	N	63	63
Unadjusted EVA (Method 2)	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	0,000	
	N	63	63
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 4.21 correlates the values for the unadjusted EVA (calculated using Method 1) with the unadjusted EVA (calculated using Method 2). The findings show a perfect positive correlation of +1. This implies that both unadjusted EVA values are moving in the same direction and, therefore, yield the same result. To add, these correlations are statistically significant (p-value < 0.05).

Table 4.22 presents the reliability statistics of the unadjusted EVA for the the Retail sector.

Table 4.22 Correlations of the Unadjusted EVA for Retailers

Correlations			
		Unadjusted EVA (Method 1)	**Unadjusted EVA (Method 2)**
Unadjusted EVA (Method 1)	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		0,000
	N	84	84
Unadjusted EVA (Method 2)	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	0,000	
	N	84	84
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 4.22 correlates the values for the unadjusted EVA (calculated using Method 1) with the unadjusted EVA (calculated using Method 2). The findings show a perfect positive correlation of +1. This implies that both unadjusted EVA values are moving in the same direction and, therefore, yield the same result. These correlations are statistically significant (p-value < 0.05).

Table 4.21 and Table 4.22 yielded the same results for both the Food producer sector and the Retail sector.

The next section will present and interpret the reliability statistics for the adjusted EVA for both the Food producer sector and the Retail sector.

Table 4.23 presents the reliability statistics of the adjusted EVA for the Food producer sector.

Table 4.23 Correlations of the Adjusted EVA for Food producers

Correlations			
		Adjusted EVA (Method 1)	**Adjusted EVA (Method 2)**
Adjusted EVA (Method 1)	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		0,000
	N	63	63
Adjusted EVA (Method 2)	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	0,000	
	N	63	63
**. Correlation is significant at the 0.01 level (2-tailed).			

Similarly, another reliability test is computed on the values for the adjusted EVA. Table 4.23 correlates the values of the adjusted EVA (calculated using Method 1) with the adjusted EVA (that is calculated using Method 2). The empirical results show a perfect correlation coefficient of +1. This implies that both adjusted EVA values are moving in the same direction, and, therefore, yield the same result. Also, these correlations are statistically significant (p-value < 0.05).

Table 4.24 presents the reliability statistics of the adjusted EVA for the Retail sector.

Table 4.24 Correlations of the Adjusted EVA for Retailers

Correlations			
		Adjusted EVA (Method 1)	**Adjusted EVA (Method 2)**
Adjusted EVA (Method 1)	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		0,000
	N	84	84
Adjusted EVA (Method 2)	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	0,000	
	N	84	84
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 4.24 correlates the values of the adjusted EVA (calculated using Method 1) with the adjusted EVA (that is calculated using Method 2). The empirical results show a perfect correlation coefficient of +1. This implies that both adjusted EVA values are moving in the same direction, and, therefore, yield the same result. Also, these correlations are statistically significant (p-value < 0.05).

Table 4.23 and Table 4.24 yielded the same results for both Food producers and Retailers.

To summarise, the current study used bar charts, correlational matrices and regression models to evaluate the impact of deferred taxes on EVA. The bar charts described the impact of deferred taxes on EVA. The correlational statistics demonstrated the trends and the relationships between deferred taxes and EVA. The regression statistics showed an overall statistical significance for the impact of deferred taxes on EVA. The regression statistics proved the alternate hypothesis (as stated in Chapter 3) that deferred tax significantly impacts the EVA measure. Lastly, the reliability statistics indicated a high validity in empirical evidence for the current study.

4.5 CONCLUSION

This chapter presented the results of the study using descriptive and inferential statistics. The descriptive statistics examined the relationships between the components of deferred tax and the components of EVA. The inferential statistics determined positive correlations between the components of deferred tax and the components of EVA. The results from the multiple regression models yielded a perfect correlation statistic. The multiple regression models also showed the ability to predict that unadjusted and adjusted EVA values with a reasonable degree of accuracy. The overall results showed that deferred tax significantly impacted the value of EVA.

The next chapter will indicate the achievement of research objectives, the conclusions and recommendations of this study and will determine the possibility for future research.

CHAPTER 5 : CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter focused on the presentation, interpretation and comparison of empirical findings for EVA and deferred tax. This chapter provides a summary of the current research study. This chapter also addresses the achievement of research objectives, the limitations from the study and provides suggestions for future research. The chapter ends with recommendations and conclusions for the current study.

5.2 CONCLUSIONS

5.2.1 Summary of the literature review

The summary of the literature review relates to the broad overview of empirical findings on the components of EVA and accounting adjustments. Thereafter, the summary of the literature review narrows in scope to explain empirical findings on the components of EVA and deferred taxes.

The broad overview of empirical findings discussed the impact of accounting adjustments on the unadjusted and adjusted values for NOPAT and TCE. The majority of previous literature such as those by Bhattacharya *et al.* (2003) and Aubert (2009) revealed that accounting transactions caused an understated NOPAT value.

In addition, previous literature provided evidence on the impact of accounting adjustments on the unadjusted and adjusted TCE. Previous studies such as those by Damodaran (2007) and Coffee *et al.* (2010) compared the unadjusted TCE to the adjusted TCE. The majority of empirical evidence from previous studies indicated that accounting transactions caused an understated TCE value.

The above studies suggested that the implementation of accounting adjustments would prevent the distorting effect of accounting transactions. These studies also stated that the implementation of accounting adjustments would produce the adjusted NOPAT and adjusted TCE, which are the accurate values for NOPAT and TCE.

More specifically, the previous empirical findings from the literature review were narrowed in scope to provide evidence on the impact of deferred taxes on the value of EVA. There were four major empirical findings, which revealed that deferred taxes distorted EVA. The first and the second major findings were related to the impact of deferred tax expenses on NOPAT. The first empirical finding suggested that an increase in deferred tax expenses produced an understated NOPAT value (Noor *et al*., 2007). The second finding showed that a decrease in deferred tax expenses produced an overstated NOPAT value (Herbohn, Tutticci and Khor, 2010).

The third and fourth major empirical finding showed that deferred tax assets/liabilities distorted the value of TCE. The third and fourth empirical findings provided by two scholars, produced the same set of empirical evidence. Gee and Mano (2006) and Gallermore (2012) found that deferred tax assets overstated the TCE value, whilst deferred tax liabilities was claimed to understate the TCE value.

The above studies provided evidence that deferred tax expenses distorted NOPAT and that deferred tax liabilities distorted TCE.

The previous empirical findings led to the development of the research problem that deferred taxes distorted the value of EVA. The distortion in the EVA value caused by deferred taxes resulted in a need to implement the deferred tax adjustment. The implementation of the deferred tax adjustment will remove the distortion and create an improvement in the accuracy of the EVA value.

The following section provides a brief discussion on the achievement of the research aim and research objectives.

5.2.2 How the study aim and objectives were achieved

The implementation of the deferred tax adjustment depends on the impact of deferred taxes on EVA. As a result the following research aim was set out.

- To determine the impact of the deferred tax adjustment on EVA for JSE-listed Food producers and Retailers in South Africa.

In order to achieve the research aim, four research objectives were set out.

Objective 1: To calculate the unadjusted EVA and the adjusted EVA

In order to achieve the first objective, the following sub-objectives were set out:

- *To calculate the unadjusted NOPAT and adjusted NOPAT; and*
- *To calculate the unadjusted TCE and adjusted TCE.*

Chapter 4 provided graphical presentations of the unadjusted and adjusted values for nine Food producers and twelve Retailers. A summary of individual results and overall results are discussed for the unadjusted and adjusted NOPAT. Thereafter, a summary of individual results and overall results are discussed for the unadjusted and adjusted TCE.

The following paragraphs summarise the individual and overall results for the unadjusted and adjusted NOPAT.

The empirical findings in Chapter 4 used bar charts to depict the mean values for the seven-year sample period (2004-2010) for an individual company within a sector.

The current empirical results showed that four Food producers and eight Retailers had a higher unadjusted NOPAT when compared to the adjusted NOPAT. In addition, the current empirical results showed that five Food producers and four Retailers had a lower unadjusted NOPAT when compared to the adjusted NOPAT.

Furthermore, the current empirical findings in Chapter 4 provided the overall results in Table 4.1. The overall results showed the mean value of all companies within a sector. The overall results for the Food producer sector showed a lower mean unadjusted NOPAT of R563 621 000, when compared to the mean adjusted NOPAT of R564 757 000. Similarly, the overall results for the Retail sector showed a higher mean unadjusted NOPAT of R702 263 000, when compared to the mean adjusted NOPAT of R694 299 000.

The following paragraphs provide a summary of the individual and overall results for the unadjusted and adjusted TCE.

The bar charts in Chapter 4 include the calculated values for the unadjusted TCE and the adjusted TCE. The calculated values for the unadjusted and adjusted TCE are the mean values of an individual company throughout the sample period. The individual results revealed that the unadjusted TCE was lower than the adjusted TCE for all nine Food producers and twelve Retail companies.

Furthermore, the overall results in Table 4.1 showed the mean values for all companies within a sector. The overall results for the Food producer sector showed a lower unadjusted TCE of R2 750 120 000 when compared to the adjusted TCE of R2 946 505 000. Similarly, the overall results for the Retail sector showed a lower unadjusted TCE of R2 788 479 000 when compared with the adjusted TCE of R2 877 059 000.

The above paragraphs provided a summary of the current empirical findings for the unadjusted and adjusted NOPAT and TCE values. The statistical analysis in Chapter 4 enabled the presentation of the current empirical findings, which portrayed the calculated values for the unadjusted and adjusted values for NOPAT and TCE. Therefore, the first research objective is achieved.

Objective 2: To evaluate the impact of deferred taxes on EVA

In order to achieve the second objective, the following sub-objectives were set out:

- *To evaluate the impact of deferred taxes on the unadjusted and adjusted NOPAT; and*

- *To evaluate the impact of deferred taxes on the unadjusted and adjusted TCE.*

The sub-objectives for the second objective were achieved through the use of descriptive statistics. The descriptive statistics in Chapter 4 were depicted using bar charts. The following paragraph provides a summary of individual and overall results for NOPAT and deferred tax expenses.

The impact of deferred tax expenses was indicated by either an understated or overstated NOPAT value. The current empirical findings showed that deferred tax expenses overstated the value of NOPAT for four Food producers and eight Retail companies.

To contrast, the deferred tax expenses understated the value of NOPAT for five Food producers and four Retail companies. The overall results (Table 4.1) showed that deferred tax expenses understated the value of NOPAT by R1 136 000 amongst all sample companies in the Food producer sector. In addition, the overall results indicated that deferred tax expenses overstated the value of NOPAT by R7 965 000 for all companies in the Retail sector.

The next paragraph summarises the individual and overall results for the impact of deferred tax liabilities on TCE.

The impact of the deferred tax liability is indicated by the understated TCE value. The individual results showed that deferred tax liabilities were understated for all nine Food producers and twelve Retail companies. The overall results showed that deferred tax liabilities understated the value of TCE by R196 385 000 for the Food producer sector. Similarly, the overall results for the Retail sector showed that deferred tax liabilities understated the value of TCE by R88 580 000.

The descriptive statistics, summarized above and explained in Chapter 4, provided the relevant empirical evidence. Therefore, the second objective was achieved.

Objective 3: To compute a regression model to evaluate the statistical significance of deferred taxes on EVA

The inferential statistics encompassed the development of multiple regression models for the current study. The unadjusted EVA regression models and the adjusted EVA regression models evaluated the statistical significance of deferred taxes on EVA. The empirical findings from the unadjusted and adjusted EVA regression models showed an overall statistical significance. The overall statistical significance suggested that deferred taxes had a significant impact on the value of EVA.

The development of these regression models in conjunction with the statistical significance results achieved the third research objective.

Objective 4: To show the impact of deferred taxes on EVA based on the statistical significance of the regression model

The output from the multiple regression models yielded positive results. The regression results showed an overall significance for all independent variables (deferred tax predictors). The regression results led to the rejection of the null hypothesis. The current research, therefore, proved the stated hypothesis, as deferred taxes significantly impacted EVA. The current study concluded that deferred taxes significantly impacted EVA, resulting in the achievement of the fourth research objective.

All four objectives set out at the beginning of the research study have been achieved. As a result, the research aim was achieved.

5.3 LIMITATIONS

The multiple regression models were specifically designed for companies in the Food producer and Retail sector. In addition, the regression results revealed an overall significance of the deferred tax adjustment for EVA in both sectors. The results for the current study are specific to the Food producer and Retail sector. The impact of the deferred tax adjustment could vary amongst other industrial sectors. Consequently, the results of the study can only be generalized to the companies in the Food producer and Retail sector.

5.4 SUGGESTIONS FOR FURTHER RESEARCH

Sharma and Kumar (2010:205) state that companies are experiencing difficulties in implementing EVA adjustments. The current research study assists in bridging the knowledge gap by investigating the impact of deferred taxes on EVA. However, more research should be done on other types of EVA adjustments. Also, future research should focus on external factors that could impact on the accuracy of EVA.

5.5 RECOMMENDATIONS

Flowing from the analysis of the results of this study, the following recommendations are offered.

5.5.1 Companies should evaluate the impact of deferred taxes

The regression statistics from the current study revealed an overall significance of deferred taxes on EVA. Therefore, the study recommends that companies use the unadjusted EVA and adjusted EVA regression models to evaluate the impact of deferred taxes on EVA. These regression models are designed to assist companies in determining the value of the unadjusted EVA and the adjusted EVA. The unadjusted EVA regression model can be used by companies to determine the value of their EVA before the removal of deferred taxes. The adjusted EVA regression model can be used to determine the value of the EVA after the removal of deferred taxes. These regression models enable companies to compare the EVA before and after the removal of deferred taxes. This, in turn, enables companies to evaluate the impact of deferred taxes on EVA.

5.5.2 Companies should implement the deferred tax adjustment

With reference to the current empirical results, an increase in deferred tax expenses understated the value of NOPAT. Moreover, a decrease in deferred tax expenses overstated the value of NOPAT. The study also revealed that deferred tax liabilities understated the value of TCE. These results revealed that deferred taxes distorted the components of EVA. Therefore, the study recommends that companies implement the deferred tax adjustment. The implementation of the deferred tax adjustment will remove the distorting effects of deferred taxes on EVA.

The implementation of the deferred tax adjustment to EVA is divided into two parts. The deferred tax adjustment must be made to NOPAT and TCE, since these are the components of EVA. The implementation of the deferred tax adjustment is explained below.

5.5.2.1 The implementation of the deferred tax adjustment for NOPAT

The first part of the adjustment constitutes adjusting the NOPAT value for deferred tax expenses. The implementation of the deferred tax adjustment to NOPAT requires the removal of deferred tax expenses from the unadjusted NOPAT, to arrive at the adjusted NOPAT.

5.5.2.2 The implementation of the deferred tax adjustment for TCE

The second part of the adjustment constitutes adjusting TCE for deferred tax liabilities. The implementation of the deferred tax adjustment to TCE requires the removal of deferred tax liabilities from the unadjusted TCE to arrive at the adjusted TCE.

Consequently, companies need to decide whether or not to implement the deferred tax adjustment on the EVA measure. The researcher recommends that companies implement the deferred tax adjustment. It is important that deferred taxes be removed from each of the components of EVA. When deferred taxes are removed, the accuracy of the EVA will be improved. A further motivation for the removal of deferred taxes is that deferred taxes are not actual cash flows for the current financial period. EVA, on the other hand, is a value-based measure on actual cash inflows and cash outflows. As a result, deferred taxes should be removed from EVA.

The implementation of the deferred tax adjustment will benefit both shareholders and managers. Shareholders will benefit, as they will know with a reasonable degree of accuracy, the amount of wealth the company has created for their investment in shares.

Also, managers that use the EVA measure will be able to make better and well informed decisions, which, in turn, impact shareholder wealth. In the end the implementation of the deferred tax adjustment will enable the EVA to accurately measure, what it supposed to measure.

5.6 CONCLUSION

This chapter provided a brief summary of the current research study. The chapter explained the achievement of the research aim and the research objectives. The regression results show an overall significance of deferred tax predictors on the value of the EVA measure. As a result, the study concluded that deferred taxes significantly impacted EVA. Therefore, the researcher recommends the implementation of the deferred tax adjustment for the EVA measure. The implementation of the deferred tax adjustment will lead to an improvement in the accuracy of EVA and will, therefore, benefit both shareholders and managers.

LIST OF REFERENCES

1. Abbott, M. L. & McKinney, J. 2013. *Understanding and applying research design* (online). United States: Wiley. Available: http://site.ebrary.com/lib/durbanut/Doc?id=10657581&ppg=62 (Accessed 20 August 2013).

2. Abdeen, A. M. & Haight, G. T. 2002. A fresh look at Economic Value Added: Empirical study of the Fortune Five-Hundred companies. *The Journal of Applied Business Research* (online), 18(2). Available: http://www.cluteinstituteonlinejournals.com/pdfs/200217.pdf (Accessed 03 April 2011).

3. Alzawahreh, A. & Khasawneh, S. 2011. Business strategies adopted by Jordanian organizations: The key to a sustained competitive advantage. *Interdisciplinary Journal of Contemporary Research in Business* (online), 3(5): 508-524. Available: http://journal-archieves8.webs.com/508-524.pdf (Accessed 15 March 2012).

4. Anderson, A. M., Bey, R. P. & Weaver, S. C. 2005. Economic value added adjustments: much to do about nothing. Available: www.lehigh.edu/~incbeug/Attachments/Anderson%20EVA%204-7-05.pdf (Accessed 01 April 2011).

5. Anderson, D. R., Sweeney, D. J., Williams, T. A., Freeman, J. & Shoesmith, E. 2010. *Statistics for business and economics*. 2nd ed. United Kingdom: South Western Cengage Learning.

6. ArabSalehi, M. & Mahmoodi, I. 2011. EVA or traditional accounting measures: Empirical evidence from Iran. *International Research Journal of Finance and Economics* (65): 51-58. Available: http://www.eurojournals.com/finance.htm (Accessed 15 May 2012).

7. Aubert, F. 2009. The relative informativeness of GAAP and pro forma earnings announcements in France. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1414423 (Accessed 10 June 2012).

8. Berthon, B. 2010. Responding to the crisis: redefining corporate value. *Corporate Governance* (online), 10(4): 354-359. Available: http://www.emeraldinsight.com.dutlib.dut.ac.za:2048/journals.htm?issn=1472-0701&volume=10&issue=4&articleid=1878373 (Accessed 20 March 2013).

9. Bhattacharya, N., Black, E. L., Christensen, T. E. & Larson, C. R. 2003. Assessing the relative informativeness and permanence of pro forma earnings and GAAP operating earnings. *Journal of Accounting and Economics* (online), 36: 285-319. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=311302 (Accessed 10 June 2012).

10. Black, D. E. & Christensen, T. E. 2009. U.S managers use of pro forma adjustments to meet strategic earnings targets. *Journal of Business Finance and Accounting* (online), 36(3,4): 297-326. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1400373 (Accessed 10 June 2012).

11. Black, K. 2011. *Applied business statistics: Making better business decisions*. 6th ed. Asia: Wiley.

12. Blumberg, B., Cooper, D. R. & Schindler, P. S. 2008. *Business research methods*. 2nd ed. New York: McGraw-Hill.

13. Bryman, A. & Bell, E. 2011. *Business research methods*. 3rd ed. New York: Oxford University Press.

14. Bryan, S. H., Lilien, S. & Martin, D. R. 2010. The financial statement effects of capitalizing operating leases. *The CPA Journal* (online), 80(8): 36-41. Available: http://dutlib.dut.ac.za:2057/docview/749930439 (Accessed 10 June 2012).

15. Burksaitiene, D. 2009. Measurement of value creation: Economic Value Added and Net Present Value. *Economics & Management*: 709-714. Available: http://web.ebscohost.com/ehost/pdfviewer /pdfviewer?hid=9&sid=b266e81c-0c31-4724-bcd4-8a1ad31a26e2%40session mgr112&vid=6 (Accessed 07 February 2011).

16. Callimaci, A. & Landry, S. 2004. Market valuation of research and development spending under Canadian GAAP. *Canadian Accounting Perspectives* (online), 3(1): 33-53. Available: http://dutlib.dut.ac.za:2057/docview/201696328 (Accessed 10 June 2012).

17. Cazavan-Jeny, A. & Jeanjean, T. 2006. The negative impact of R&D capitalization: A value relevance approach. *European Accounting Review* (online), 15(1): 37-61. Available: http://www.tandfonline.com/doi/abs/10.1080/09638180500510384 (Accessed 10 June 2012).

18. Chang, C., Herbohn, K. & Tutticci, I. 2009. Market's perception of deferred tax accruals. *Accounting and Finance*: 645-673. Available: http://web.ebscohost.com.dutlib.dut.ac.za:2048/ehost/detail?sid=77f8d804-ed4b-4b78-8ce9f0e4016263cf%40session mgr11&vid=1&hid=9&bdata=JnNpdGU9ZWhvc3Qt bGl2ZQ%3d%3d#db=bth&AN=45393156 (Accessed 15 May 2011).

19. Coffee, D., Roig, R., Lirely, R. & Little, P. 2010. The materiality of LIFO accounting distortions on liquidity measurements. *Journal of Finance and Accountancy* (online), 2: 1-12. Available: http://dutlib.dut.ac.za:2057/docview/759568114 (Accessed 10 June 2012).

20. Collier, P. M. 2012. *Accounting for managers: Interpreting accounting for decision making*. 4th ed. United Kingdom: John Wiley and Sons Limited.

21. Correia, C., Langefeld-Smith, K., Thorne, H. & Hilton, R. W. 2008. *Management accounting: information for managing and creating value*. South African ed. Maidenhead: McGraw-Hill Education.

22. Cortinhas, C. & Black, K. 2012. *Statistics for business and economics*. 1st ed. United Kingdom: Wiley.

23. Curwin, J., Slater, R. & Eadson, D. 2013. *Quantitative methods for business decisions*. 7th ed. United Kingdom: Cengage Learning.

24. Damodaran, A. 2007. ROC, ROIC and ROE: Measurement and implications. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1105499 (Accessed 10 June 2012).

25. Damodaran, A. 2009. Leases, debt and value. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1390280 (Accessed 10 June 2012).

26. Deliotte & Touche. 2011. *Summaries of International Financial Reporting Standards IAS 12* (online). Available: www.iasplus.com/standard/ias12.htm (Accessed 24 October 2011).

27. Drury, C. 2011. *Cost and management accounting: an introduction*. 7th ed. England: South-Western/Cengage Learning.

28. Eames, M. J. & Sepe, J. 2005. The valuation of special items. *Journal of Applied Business Research* (online), 21(3): 61-70. Available: http://journals.cluteonline.com/index.php/JABR/article/view/1469 (Accessed 10 June 2012).

29. Farquhar, J. D. 2012. *Case study research for business*. 1st ed. London: SAGE.

30. Gallermore, J. 2012. Deferred tax assets and bank regulatory capital Available: http://ssrn.com/abstract=2025031 (Accessed 12 May 2012).

31. Gee, M. A. & Mano, T. 2006. Accounting for deferred tax in Japanese banks and the consequences for their international operations. *Abacus* (online), 42(1): 1-21. Available: http://web.ebscohost.com.dutlib.dut.ac.za:2048/ehost/detail?sid=cadd6f96-f0ae-4aaa-88e7811909b87b12%40sessionmgr112&vid=1&hid=123&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=bth&AN=20069359 (Accessed 12 May 2012).

32. Hamilton, J., Rahman, S. & Lee, S. C. 2009. EVA: Does size matter? *Review of Pacific Basin Financial* (online), 12(2): 267-287. Available: http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?hid=17&sid=b266e81c-0c31-4724-bcd4-8a1ad31a26e2%40sessionmgr112&vid=6 (Accessed 07 February 2011).

33. Herbohn, K., Tutticci, I. & Khor, P. S. 2010. Changes in unrecognised deferred tax accruals from carry-foward losses: Earnings management or signalling? *Journal of Business Finance and Accounting* (online), 37(7): 763-791. Available: http://web.ebscohost.com.dutlib. dut.ac.za :2048/ehost/ detail?sid=d13d184f-5191-427a-ab4e-496006fe8ff0%40 sessionmgr11 &vid=1&hid=9&bdata=JnNpdGU9ZW hvc3QtbGl2 ZQ %3d%3d#db=bth&AN=53710787 (Accessed 14 May 2011).

34. Jackson, S. 2012. *Research methods and statistics: A critical thinking approach*. 4th ed. United States: Cengage Learning.

35. Johnson, S. & Bamber, M. 2007. Economic value added: creating value. *Student Accountant* (online). October: 40-43. Available: http://www2.accaglobal.com/students/publications/student_accountant/archive/sa_oct07_johnson_revised.pdf (Accessed 25 January 2012).

36. Larrabee, D. T. & Voss, J. A. 2012. *Valuation techniques: discounted cash flow, earnings quality, measures of value added and real options* (online). United States: Wiley. Available: http://site.ebrary.com/lib/durbanut/Doc?id=10613139&ppg=54 (Accessed 16 July 2013).

37. Latha, C. 2009. Measuring value enhancement through Economic Value Added: Evidence from literature. *IUP Journal of Applied Finance* (online), 15(9): 46-62. Available: http://web.ebscohost.com/ehost/ pdfviewer/ pdfviewer?hid=110&sid=b266e81c-0c31-4724-bcd4-8a1ad 31a26 e2% 40sessionmgr112&vid=6 (Accessed 07 February 2011).

38. Lin, C. & Zhilin, Q. 2008. Empirical study of integrated EVA performance measurement in China. *Canadian Social Science* (online), 4(2): 41-48. Available: http://cscanada.net/index.php/css/article/view/353/pdf_191 (Accessed 09 March 2011).

39. Lovata, L. M. & Costigan, M. L. 2002. Empirical analysis of adopters of economic value added. *Management Accounting Research* (online), 13(2): 215-228. Available: http://www.sciencedirect.com/science?_ob= Article URL&_udi=B6WMY-46SXWXK-4&_user=10&_coverDate =06% 2F30% 2F2 002&_rdoc=1&_fmt=high&_orig=search&_origin= search&_sort=d&_docanchor=&view=c&_searchStrId=1656145106&_rerunOrigin=scholar.google&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=30b4da17f7a90f47e9ee26d68ca6ed0e&searchtype=a (Accessed 08 February 2011).

40. Lynn, S., Seethamraju, C. & Seetharaman, A. 2008. Incremental value relevance of unrecognised deferred taxes: Evidence from the United Kingdom. *American Accounting Association* (online), 30(2): 107-130. Available: http://search.proquest.com/docview/211073155/1373C81ECDD5CD24944/4?accountid=10612 (Accessed 14 May 2012).

41. Mackenzie, B., Coetsee, D., Njikizana, T., Chamboko, R., Colyvas, B. & Hanekom, B. 2012. *Wiley IFRS 2012: interpretation and application of international financial reporting standards.* 9th ed. New Jersey: Wiley.

42. Marques, A. 2010. Disclosure strategies among S&P 500 firms: Evidence on the disclosure of non-GAAP financial measures and financial statements in earnings press releases. *British Accounting Review* (online), 42:119-131. Available: http://www.sciencedirect.com/science/article/pii/S0890838910000211 (Accessed 10 June 2012).

43. McClave, J. T., Benson, P. G. & Sincich, T. 2011. *Statistics for business and economics*. 11th ed. United States: Pearson.

44. Nichols, N. B., Gray, S. J. & Street, D. L. 2005. Pro forma adjustments to GAAP earnings: bias, materiality and SEC action. *Research in Accounting Regulation* (online), 18: 29-52. Available: http://www.sciencedirect.com/science/article/pii/S1052045705180023 (Accessed 10 June 2012).

45. Noor, R. M., Mastuki, N. & Aziz, Z. 2007. Earnings management and deferred tax. *Malaysian Accounting Review* (online), 6(1): 1-17. Available: http://eprints.ptar.uitm.edu.my/4198/1/J_MARv6n10701.pdf (Accessed 16 May 2012).

46. Phillips, J., Pincus, M. & Rego, S. O. 2002. Earnings management: New evidence based on deferred tax expense. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=276997 (Accessed 14 May 2012).

47. Quinlan, C. 2011. *Business research methods*. 1st ed. United Kingdom: Cengage Learning.

48. Ray, R. 2001 Economic Value Added: Theory, evidence, a missing link. *Review of Business* (online), 22(1/2): 66-70. Available: http://search.proquest.com (Accessed 04 August 2011).

49. Ray, S. 2012. Efficacy of Economic Value Added concept in business performance measurement. *Advances in Information Technology and Management* (online), 2(2): 260-267. Available: www.worldsciencepublisher.org (Accessed 25 July 2012).

50. Reddy, R., Rajesh, M. & Reddy, T. 2011. Valuation through EVA and Traditional Measures an Empirical Study. *International Journal of Trade, Economics and Finance* (online), 2(1): 19-23. Available: www.ijtef.org/papers/73-F492.pdf (Accessed 01 April 2013).

51. SAICA. 2012. *Joint announcement by the APB and the FRSC regarding SA GAAP* (online). South Africa: SAICA. Available: www.saica.co.za/Portal/0/Technical/Future%20of%20SA%20GAAP.pdf (Accessed: 18 February 2013).

52. SARS - guide for tax rates/levies/duties 2011/12 and prior years. 2012. Available: www.sars.gov.za (Accessed 10 January 2012).

53. Saunders, M. & Lewis, P. 2012. *Doing research in business and management: An essential guide to planning your project*. 1st ed. London: Pearson Education.

54. Sekaran, U. & Bougie, R. 2010. *Research methods for business: A skill building approach*. 5th ed. London: Wiley.

55. Sharma, A. K. & Kumar, S. 2010. Economic Value Added (EVA) - Literature review and relevant issues. *International Journal of Economics & Finance* (online), 2(2): 200-220. Available: http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?hid=104&sid=b266e81c-0c31-4724-bcd4-8a1ad31a26e2%40sessionmgr112&vid=6 (Accessed 06 February 2011).

56. Stern, J., Stewart, B. & Chew, D. 1996. EVA: An integrated financial management system. *European Financial Management* (online), 2(2): 223-245. Available: http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?hid=108&sid=9daa1456-db29-4f82-ba92-c5b16b1035fa%40sessionmgr110&vid=12 (Accessed 02 March 2011).

57. Stewart, B. 1991. *The quest for value: a guide for senior managers*. 1st ed. New York: Harper Business.

58. Stewart, B. 2009. EVA momentum: The one ratio that tells the whole story. *Journal of Applied Corporate Finance* (online), 21(2): 74-86. Available: http://web.ebscohost.com/ehost/detail?hid=17&sid=caef2f76-8b25-418c-a7b8-b50eb06bc0e3%40 sessionmgr14&vid=1&bdata=JnNpdGU9ZWh vc3QtbGl2ZQ%3d%3d#db=bth&AN=42748004 (Accessed 04 March 2011).

59. Stewart, B. 2013. *Best practice EVA: The ultimate solution for value-based corporates* (online). United States: Wiley. Available: http://site.ebrary.com/lib/durbanut/Doc?id=10660609&ppg=98 (Accessed 10 August 2013).

60. Stokes, P. 2011. *Key concepts in business and management research methods*. 1st ed. New York: Palgrave Macmillan.

61. Svirina, A. 2012. Entrepreneurial Creation of Social Value: The Basement for Post-Crisis Recovery. *Journal of marketing development and competitiveness* (online), 6(3): 95-104. Available: http://www.na-businesspress.com/JMDC/svirina_abstract.html (Accessed 20 March 2013).

62. Vorster, Q., Koornhof, C., Oberholster, J. & Koppeschaar, Z. 2010. *Descriptive accounting: an IFRS focus*. 15th ed. Southern Africa: LexisNexis.

63. Wang, X. 2013. Studies and discussion on the application of Economic Value Added in enterprises evaluation. *International Journal of Advancements in Computing Technology* (online), 5(6): 628-636. Available: http://search.proquest.com.dutlib.dut.ac.za/docview/1415386172 (Accessed 21 October 2013).

64. Weathington, B. L., Cunningham, J. L. & Pittenger, D. J. 2012. *Understanding business research* (online). United States: Wiley. Available: http://site.ebrary.com/lib/durbanut/Doc?id=10602116&ppg=64 (Accessed 21 June 2013).

65. Weiers, R. M. 2011. *Introductory business statistics*. 7th ed. United States: South-Western College Publishing.

66. White, T. L. & McBurney, D. H. 2012. *Research methods*. 9th ed. United States: Cengage Learning.

67. Worthington, A. C. & West, T. 2001. Economic value added: A review of the theoretical and empirical literature. *Asian Review of Accounting* (online), 9(1): 67-86. Available: http://eprints.qut.edu.au/2568/1/2568.pdf (Accessed 05 April 2011).

68. Young, D. 1997. Economic value added: A primer for European managers. *European Management Journal* (online), 15(4): 335-343. Available: http://www.sciencedirect.com.dutlib.dut.ac.za (Accessed 05 March 2011).

69. Zikmund, W. G., Babin, B. J., Carr, J. C. & Griffin, M. 2013. *Business research methods*. 9th ed. United States: Cengage Learning.

APPENDIX A: ACCESS TO MCGREGOR'S BFA DATABASE

Melissa Naicker

From: support@helpdesk.com
Sent: Thursday, June 09, 2011 5:13 PM
To: Melissa Naicker
Subject: Member Activated

Importance: Low

Dear Melissa Naicker,

Congratulations!

Your account has been activated on McGregor BFA.

You may login at http://research.mcgregorbfa.com/Login.asp?MemberEmail=melissan@dut.ac.za

Kind Regards,
The McGregor BFA Team

6/9/2011 5:10:27 PM

>

APPENDIX B: SOUTH AFRICAN INCOME TAX RATES FOR CORPORATIONS

2010	2009	2008	2007	2006	2005	2004
28.00%	28.00%	29.00%	29.00%	29.00%	30.00%	30.00%

Adapted: South African Revenue Service - Guide for tax rates/duties/levies 2011/12 and prior years (2012:5).

APPENDIX C: A SAMPLE OF THE EVA AND DEFERRED TAX ANALYSIS (RAND'S IN 000'S)

AFGRI LIMITED							
	Year 2010	Year 2009	Year 2008	Year 2007	Year 2006	Year 2005	Year 2004
NOPAT	898220	1335368	1188561	738497	572244	286499	418462
Less: Cost of capital	824465	845467	595647	201634	406891	185231	279157
EVA (Unadjusted)	73755	489902	592914	536863	165353	101268	139305
Calculation of NOPAT (Unadjusted)							
Profit after tax and interest	272754	413561	356617	342997	202272	182603	272248
Plus: Interest and finance charges	488645	720162	644918	306589	286800	79920	112472
add: tax benefit on interest expense	136821	201645	187026	88911	83172	23976	33742
NOPAT	898220	1335368	1188561	738497	572244	286499	418462
Calculation of TCE (Unadjusted)							
Total assets	9824950	9174033	7119789	3913650	3732439	2832476	3477077
Less: Non-interest bearing current liabilities (NIBCL)	1797057	2015127	1680088	1445672	1749539	1032373	1430471
Trade creditors	1475369	1745754	1188458	764816	1004548	597378	795134
Short term non-interest bearing	321688	269373	491630	680856	744991	434995	635337
TCE (Unadjusted)	8027893	7158906	5439701	2467978	1982900	1800103	2046606
Cost of capital calculation							
TCE (Unadjusted)	8027893	7158906	5439701	2467978	1982900	1800103	2046606
x Weighted Average Cost of Capital	0,1027	0,1181	0,1095	0,0817	0,2052	0,1029	0,1364
Cost of capital	824465	845467	595647	201634	406891	185231	279157

	Year 2010	Year 2009	Year 2008	Year 2007	Year 2006	Year 2005	Year 2004
Calculation of tax shield on interest expense							
Interest expense	488645	720162	644918	306589	286800	79920	112472
x tax rate	0,28	0,28	0,29	0,29	0,29	0,30	0,30
Tax benefit on interest expense	136821	201645	187026	88911	83172	23976	33742
Calculation of increase/decrease of deferred tax for the year							
Deferred tax for previous year	5116	1690	23705	-15155	-19039	8212	555
subtract: deferred tax for the current year	22606	5116	1690	23705	-15155	-19039	8212
Increase/decrease in deferred tax as per Income Statement	-17490	-3426	22015	-38860	-3884	27251	-7657
Calculation of NOPAT (Adjusted)							
NOPAT unadjusted	898220	1335368	1188561	738497	572244	286499	418462
add or less increase/decrease in deferred tax for the year	17490	3426	22015	38860	3884	27251	7657
NOPAT adjusted	915710	1338794	1166546	777357	576128	259248	426119
Calculation of TCE (Adjusted)							
TCE (Unadjusted)	8027893	7158906	5439701	2467978	1982900	1800103	2046606
add deferred tax liability and less deferred tax asset (B/S)	173836	200836	192492	178129	99548	40258	55696
TCE (Adjusted)	8201729	7359742	5632193	2646107	2082448	1840361	2102302
Calculation of cost of capital for adjusted EVA measure							
TCE (Adjusted)	8201729	7359742	5632193	2646107	2082448	1840361	2102302
x Weighted Average Cost of Capital	0,1027	0,1181	0,1095	0,0817	0,2052	0,1029	0,1364
Cost of capital	842318	869186	616725	216187	427318	189373	286754
Calculation of Adjusted EVA measure							
NOPAT adjusted	915710	1338794	1166546	777357	576128	259248	426119
less: cost of capital	842318	869186	616725	216187	427318	189373	286754
EVA (Adjusted)	73392	469609	549821	561170	148810	69875	139365

AFGRI LIMITED							
	YEAR 2010	YEAR 2009	YEAR 2008	YEAR 2007	YEAR 2006	YEAR 2005	YEAR 2004
NOPAT unadjusted	898220	1335368	1188561	738497	572244	286499	418462
NOPAT adjusted	915710	1338794	1166546	777357	576128	259248	426119
Deferred tax expenses impacting NOPAT	17490	3426	22015	38860	3884	27251	7657
Deferred tax liability impacting TCE	173836	200836	192492	178129	99548	40258	55696
TCE unadjusted	8027893	7158906	5439701	2467978	1982900	1800103	2046606
TCE capital adjusted	8201729	7359742	5632193	2646107	2082448	1840361	2102302
Cost of capital unadjusted	824465	845467	585647	201634	406891	185231	279157
Cost of capital adjusted	842318	869186	616725	216187	427318	189373	286754
EVA UNADJUSTED *(METHOD 1)*	73755	489902	592914	536863	165353	101268	139305
EVA ADJUSTED *(METHOD 1)*	73392	469609	549821	561170	148810	69875	139365
EVA UNADJUSTED *(METHOD 2)*	73755	489902	592914	536863	165353	101268	139305
EVA ADJUSTED *(METHOD 2)*	73392	469609	549821	561170	148810	69875	139365
Return on Capital	0,1119	0,1865	0,2185	0,2992	0,2886	0,1592	0,2045
minus the Cost of Capital	0,1027	0,1181	0,1095	0,0817	0,2052	0,1029	0,1364
Return Spread	0,0092	0,0684	0,1090	0,2175	0,0834	0,0563	0,0681
Return Spread percentage (EVA unadjusted)	0,92	6,84	10,90	21,75	8,34	5,63	6,81
Return on Capital	0,1116	0,1819	0,2071	0,2938	0,2767	0,1409	0,2027
minus the Cost of Capital	0,1027	0,1181	0,1095	0,0817	0,2052	0,1029	0,1364
Return Spread	0,0089	0,0638	0,0976	0,2121	0,0715	0,0380	0,0663
Return Spread percentage (EVA adjusted)	0,89	6,38	9,76	21,21	7,15	3,80	6,63