Analysing market ratio fluctuations before and after publication of financial statements

AMC Smit

orcid.org/0000-0002-7846-8362

Dissertation accepted in fulfillment
of the requirements for the degree
Master of Commerce in Accountancy
at the North-West University

Supervisor: Prof MJ Swanepoel
Co-supervisor: Dr JJ Swart

Graduation: June 2023

Student number: 12066060

DECLARATION

I, AMC SMIT, declare that **Analysing market ratios fluctuation before and after publication of financial statements** is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references. This dissertation has not previously been submitted by me or any other author to any other university.

Signature:

Date: 2022/10/17

PROOF OF LANGUAGE EDITING

Jomoné Müller
Language Practitioner
SATI No. 1002831
BA Hons (Language practice)

www.jmuller.co.za
Tel: +27 84 406 0029
jomone@jmuller.co.za

DECLARATION OF LANGUAGE EDITING

29 August 2022

To whom it may concern

This is to confirm that I, the undersigned, have language edited the dissertation entitled: ***Analysing market ratios fluctuation before and after publication of financial statements***

No changes were permanently affected and were left to the discretion of the author. The responsibility of implementing the recommended language changes rests with the author of the text.

Yours truly

Jomoné Müller

REMARKS TO THE READER

The reader must take the following into consideration:

The literature used in this dissertation comprised sources ranging from the 1923s to 2021. This demonstrated that research on the topic of analysing market ratios fluctuation before or after publication of financial statements to academics and investors for more than 98 years and guaranteed that the most recent research was taken into consideration.

The format and referencing of this dissertation are presented in accordance with the policies of the North-West University. The North-West University Harvard referencing style was applied in this study. In accordance with the latest referencing guidelines of the North-West University (2022 version), the first indicated surname is cited, followed by the term *et al*. in cases where the argument of three or more authors is quoted within a text, for example: “Correia *et al.* (2019:5-17)….” The North-West University does not require all surnames of three or more authors to be indicated, even when the source is referenced for the first time in the text. For more information on referencing techniques applied in this study, please visit the North-West University’s referencing link at http://www.nwu.ac.za/sites/www.nwu.ac.za/files/files/library/documents/verwysings.pdf

Statistical evidence included in Chapter 4 was reported in accordance with prescriptions by Pallant (2021). This required the statistical results to be rounded to two decimals.

PREFACE

This was the most challenging journey of my life so far. Despite my workload, Corona hit us in March 2020 and I also became pregnant at this time.

My life journey changed course from completing a CA degree to completing a FA degree. In 2015 my father passed away and I went back home to my mother and 13-year-old sister. I started working and decided not to put extra strain on my mother. Although I lost the opportunity to finish my CA qualification our Father in Heaven gave me an opportunity to do a Masters in Accountancy.

I want to first thank my Father in Heaven for giving me this opportunity and giving me strength to complete this.

To my daughter Driné Smit (5) and son Deriann Smit (born November 2020) thank you for understanding that I can't play with, chat or go lie down when I needed to. Driné who tried to be as considerate as a five-year-old can be and for her concern about the well-being of her brother.

For my husband Wimpie Smit who asked how everything is going and prepared meals when I couldn't.

For my mother, Frieda Lourens and sister Elzette Lourens for always giving me advice and encouragement.

Prof. Thys and Prof. André for, before Corona, popping into my office and asking how everything is going, for encouraging me, for making time to help and support me and for guidance. I couldn't ask for better supervisors.

Prof. Heleen Janse van Vuuren and Beistske van der Niet for understanding and supporting me in every possible way to complete my studies.

Marike Cockeran for assisting with the stats.

ABSTRACT

The study aims to analyse market ratios fluctuation before and after the publication of financial statements. This study was encouraged by the fact that there is currently a gap in the literature where no evidence is found of what the relationship between the market ratios and the beta analysis before and after the publication of annual financial statements according to market ratios are determined. Financial ratios are used by investors, potential investors, creditors and competitors to monitor and evaluate company performance. In monitoring and evaluation, investors consider annual financial statements, integrated reports and the background of companies. This research demonstrates that a holistic analysis of ratios and other factors should be considered in the investment decision-making process. The primary goal is obtained through the secondary objectives to determine qualitative and quantitative indicators on market analysis that investors make their decisions on and determine the relationship between market ratios and beta. This study makes use of a quantitative method where quantitative and qualitative data were collected and analysed. Literature was aggregated and analysed through INETBFA. The information was obtained from INET BFA of the selected 60 listed companies for a six-year period for the financial year ending from January 2014 to June 2019.These companies were divided into three groups namely: high (20), average (20) and low (20), based on the market value. The correlation and ANOVA test have been conducted there is a relationship between the fluctuation of market ratios before and after the publishing of annual financial statements. The findings of the study indicate that there is a fluctuation relationship between share prices, market-related ratios and beta that are classified as market ratios that influences investors decision-making. Therefore, the general ability of the results to other companies and countries is limited.

Keywords: Financial indicators, financial relationship, financial statements, market ratios fluctuations, non-financial indicators, share prices

TABLE OF CONTENTS

PROOF OF LANGUAGE EDITING ..... **II**
REMARKS TO THE READER ..... **III**
PREFACE **IV**
ABSTRACT **V**
TABLE OF CONTENTS ..... **VI**
LIST OF TABLES ..... **IX**
LIST OF FIGURES ..... **XI**
CHAPTER 1: INTRODUCTION AND BACKGROUND TO THE STUDY **1**

1.1. Introduction 1

1.2. Problem statement 12

1.3. Objective of the study 13
1.3.1. Primary objective 13
1.3.2. Secondary objectives 13

1.4. Research design and methodology 14
1.4.1. Literature review 14
1.4.2. Empirical study 14
1.4.3. Target population 15
1.4.4. Sampling frame 15
1.4.5. Sample method 16
1.4.6. Sampling size 16
1.4.7. Measuring instrument and data collection method 16
1.4.8. Statistical analysis 17
1.4.9. Ethical considerations 17

1.5. Chapter classification 18

1.6. Chapter summary 19
CHAPTER 2: LITERATURE REVIEW ON VARIOUS RATIOS **20**

2.1. INTRODUCTION 20

2.2. Historical background on the development of ratio analysis 21

2.3. indicators that influence investors' decision-making 24
2.3.1. Qualitative decisions 24
2.3.2. Quantitative decisions 25

2.4. Financial analysis 27
2.4.1. Structured analysis 27
2.4.2. Unstructured analysis 30

TABLE OF CONTENTS

2.5. Share Valuation Methods – Share price determination 40
2.5.1. Absolute valuation 40
2.5.2. Dividend discount model (DDM) 40
2.5.3. Discounted cash flow model (DCF) 40
2.5.4. Relative valuation 41
2.5.5. Comparing market price-to-book value (P/B) 41
2.5.6. Comparable companies analysis 41
2.6. Volatility of share prices before and after publication of annual financial statements 42
2.7. Beta: Regression co-efficient 42
2.7.1. The influence of risk on share prices 42
2.7.2. Unsystematic risk 43
2.7.3. Systematic risk 43
2.7.4. Capital asset pricing model (CAPM) theory 43
2.8. The relationship between market price, financial ratio and beta analysis on share prices . 44
2.9. CHAPTER SUMMARY 45
CHAPTER 3: RESEARCH METHODOLOGY 47
3.1. INTRODUCTION 47
3.2. Epistemology 48
3.3. Research process 49
2.8.1. The research problem 50
2.8.2. Research design 52
2.8.3. Research methodology 54
3.4. Data collection method 60
3.5. Data analysis 61
3.6. Validity and reliability of data 65
3.7. Ethical considerations 65
3.8. CHAPTER Summary 65
CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS 67
4.1. INTRODUCTION 67
4.2. Financial Statements 68
4.3. Transformation of data 69
4.4. Organisation of empirical findings 70
4.5. Results 70

TABLE OF CONTENTS

3.5.1. Descriptive statistics 71
3.5.2. Spearman's correlation 71
3.5.3. Analysis of variance (ANOVA) 82
3.5.4. Beta analysis 87

4.6. Discussion OF RESULTS 88
3.6.1. Two-tailed t-test 88
3.6.2. Correlation analysis 91
3.6.3. Analysis of variance (ANOVA) 91
3.6.4. Beta analysis 91

4.7. CHAPTER CONCLUSION 91
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS 92

5.1. INTRODUCTION 92

5.2. research objectives 92
4.2.1. Theoretical objectives 93
4.2.2. Empirical objectives 95

5.3. Problem statement 95

5.4. OVERVIEW — SUMMARY OF PREVIOUS CHAPTERS 95

5.5. LIMITATIONS OF THIS STUDY 96

5.6. AREAS OF FUTHER STUDIES 97

5.7. Reccomadations 97

5.8. CONCLUSION AND CLOSING REMARKS 97
REFERENCE LIST 99
ANNEXURE A: ABBRIVATIONS 112
ANNEXURE B: DATA COLLECTION 113
DATA COLLECTION BASED ON THE 60 COMPANIES AT MARKET CAPITALISATION AS AT 31 DECEMBER 2018 113
DATA 20 DAYS BEFORE PUBLICATION (-20), YEAR-END (0) AND 20 DAYS AFTER PUBLICATION(+20) 113
ANNEXURES C- ETHICAL APPROVAL 169

LIST OF TABLES

Table 1-1: Summary of financial statement analysis research since 2007 4

Table 3-1: Research problem..... 52

Table 3-2: Industry abbreviation..... 55

Table 3-3: The sample companies- divided in high, medium, and low 59

Table 3-4: Ratio's used on specific time periods..... 64

Table 4-1: Relationship between dividend yield and share price 72

Table 4-2: Relationship between earnings yield and share price 73

Table 4-3: Relationship between price per earnings and share price..... 73

Table 4-4: Correlation and p-value between market ratios on year-end 2014 74

Table 4-5: Correlation and p-value between market ratios on year-end 2015 76

Table 4-6: Correlation and p-value between market ratios on year-end 2016 77

Table 4-7: Correlation and p-value between market ratios on year-end 2017 78

Table 4-8: Correlation and p-value between market ratios on year-end 2018 80

Table 4-9: Correlation and p-value between market ratios on year-end 2019 81

Table 4-10: ANOVA 2014 83

Table 4-11: ANOVA 2015 84

Table 4-12: ANOVA 2016 84

Table 4-13: ANOVA 2017 85

Table 4-14: ANOVA 2018 86

Table 4-15: ANOVA 2019 86

Table 4-16: Relationship between share price and beta 87

Table 4-17: P-value between beta and share price 88

Table 4-18: P-value between share price and dividend yield.....89

Table 4-19: P-value between share price and earnings yield.....89

LIST OF FIGURES

Figure 2-1: Chronological overview 20

Figure 3-4: The research process 50

Figure 3-5: The research problem 51

Figure 4-1: Unfolding of empirical data 68

CHAPTER 1: INTRODUCTION AND BACKGROUND TO THE STUDY

1.1. INTRODUCTION

Johannesburg Stock Exchange-listed (JSE) companies are to publish financial statements every six months. With the publication of these financial statements market ratios are being affected. Stakeholder's decisions are affected by market ratio fluctuations. Market value is the value of a company according to the financial markets. Market value fluctuations consists of ratio share prices going up and down daily, which influences the decision-making of stakeholders.

Correia *et al.* (2019:5-17) and Swanepoel (2017:29) both outline the importance of analysing annual financial statements and financial ratios for decision-making by stakeholders. Correia *et al.* (2019:5-20), Hattingh *et al.* (2018:3-5) support Gouws and Lucouw (1999:107-108) that stakeholders use ratio analysis to examine the financial position and performance of a company. However, the financial ratio analyses are based mainly on historic information from the annual financial statements. Cassim (2014:13) asserts that historic information can be extracted from the annual financial statements and by performing financial ratio analysis business success can be predicted effectively.

Performing financial ratio analysis on a company's results is important to stakeholders as it provides valuable information about the company (Tudose, *et al.* 2022:119-139). Gouws and Lucouw (1999:107-108) argue that financial ratio analysis contains valuable and meaningful investment information of a company if considered independently and holistically, in order to determine risk and forecast future expectations. Lorencic and Festic (2022:142-170) and Yang (2021:812-819) stated that financial ratio analysis can be useful and meaningful if it is compared with: historical ratios, trends and management goals and objectives. Financial ratios are used by stakeholders such as investors, potential investors, financiers, employees, trade unions, customers, suppliers, competitors and the community to monitor and evaluate company performance. In monitoring and evaluation, a company's stakeholders consider annual financial statements, integrated reports and media reports in order to make decisions. Decisions made by all of the above decision makers must create a dynamic environment.

Yang (2021:812-819) stated that companies operate in a dynamic environment and are influenced by the market. When stakeholders, like investors, consider historical information with current market indicators to determine the value of a company. Correia *et al.* (2019:5-20) support Garrison *et al.* (2012:680) and Parker and Media (2014:15) that market value ratios, exemplify the relationship of the company's share price. The market value ratios consist of the dividend yield ratio, earnings yield ratio, price-earnings ratio (P/E) and dividend cover, which all form part of the financial ratio analysis.

Lietz (2019:25) argues that financial ratio analysis could not predict the downfall of an office sharing real estate service company, which applied for listing as a public corporation, but major losses incurred due to expensive leasing deals and complicated organisational structure. However, despite the value of a financial ratio analysis in predicting the risk, future projections and share price of a company it is not faultless. Market fluctuation on a day-to-day basis resulted in the decline of the company's value from $47 billion to $10 billion, which led to the CEO fired and 2,400 employees laid off. Yet another case where fluctuations in market financial ratio analysis fails to predict the risk was with Steinhoff Holdings Limited.

The Steinhoff Holdings Limited accounting scandal, the most conspicuous ever in the South African financial environment could not have been predicted through the financial ratio analysis due to the limitations of market ratios and the daily fluctuations of these market ratios (Styan, 2018:15). The Steinhoff Holdings Limited accounting scandal resulted in a loss of R117 billon in its market value (Styan, 2018:15), as shareholders used accounting information for decision-making purposes and trust that the audited annual financial statements are free of material misstatements. Styan (2018:15), Roelofs (2018:13) and Fenster (2017:173) argue that the Steinhoff Holdings Limited accounting scandal led to a major mistrust of annual financial statements and the loss of reputation of the usefulness of annual financial statements of all listed companies. Another scandal that fuelled the mistrust and usefulness of annual financial statements further was when African Bank collapsed in 2018 after been under curatorship after the 2014 audit (Jaffer *et al.,* 2019:99). In an attempt to enhance the usefulness of financial statements in decision-making the shareholders would need to perform a financial statement analysis. To understand the importance and extent of research done since 2007 on financial statement analysis Table 1.1 provides a summary that summarises previous studies and

their conclusion on market ratios as part of financial ratios in an attempt for stakeholders to make decisions from the results.

Table 0-1: Summary of financial statement analysis research since 2007

Year	Researchers	Country	Research content	Findings
2007	De Wet and Du Toit	South Africa	Economic value added, return on equity, profits per share, dividend per share, interest-bearing debt to total assets, and cash flow from operations were the six performance indicators of a company that were found by the research. The goal was to foresee which performance ratio will most strongly link with investment returns (i.e., dividends plus changes in market prices per year). According to the research, return on equity was a poor predictor of shareholder performance. and aimed to define inferior quality indicators in the South African business context.	For the empirical analysis, a group of 83 industrial companies was chosen and data for the period 1996 to 2005 were obtained. The cumulative decrease between the six performance metrics and the returns of shareholders was calculated and the findings revealed that there was little to no relation between any of the performance indicators and shareholder return. Given that dividends were integrated into the calculation of returns, it was predictable that the dividend per share indication would be less consistent with shareholder returns.

Table 0-5: Summary financial statement analysis research since 2007 (cont.)

Year	Researchers	Country	Research content	Findings
2010	Erasmus	South Africa	Several variables can affect the performance of the company's share price. Other considerations include earnings per share and cash flow per share. In order to evaluate which of the three factors best matched the behavior of share prices, the study attempted to determine the link between share prices and profits per share volatility, dividends per share, and cash flow per share. The literature review established these three factors, which were then further investigated through empirical study.	The JSE was used to select a group of 236 businesses for the study. From INET BFA, useful data over the years 2000 to 2009 have been obtained. Both a Spearman's correlation analysis and a multiple correlation analysis were performed by the author. The results showed a significant link between share prices, changes in profits per share, and dividends per share, with dividends per share having the highest correlation coefficients. Variability in cash flow per share did not significantly affect share prices. It was discovered that dividends and earnings per share were crucial elements for the shareholder.

Table 0-6: Summary financial statement analysis research since 2007 (cont.)

Year	Researchers	Country	Research content	Findings
2012	Menaje	Philippines	Share prices typically exhibit volatility. The study's primary objective was to identify the financial variables that significantly affect Philippine share prices. The study's two variables were as follows: • Earnings per share • Return on assets The correlation between the share price and these variables has been established. The researcher was of the assumption that such analysis would benefit clients, financial market analysts, academics and finance graduates.	In the Philippines, 50 publicly listed firms were chosen as examples. The 2009 financial reports were examined for the investigation. Data from the OSIRIS network have been assembled. After including a Spearman ranking order correlation and a multiple regression analysis, the study came to the conclusion that profits per share could account for 73% of share price variations. The analyst said that while return on assets had a negative impact on share prices, profits per share had a positive impact.

Table 0-7: Summary financial statement analysis research since 2007 (cont.)

Year	Researchers	Country	Research content	Findings
2013	Haque and Faruquee	Bangladesh	The goal of the study was to establish which fundamental performance indicator might most effectively predict share prices on the Dhaka Stock Exchange. The subsequent performance measures were found.: • Earnings per share • Dividend per share • Return on equity • Return on assets • Fixed assets to total assets	As a statistical sample, 14 pharmaceutical businesses with Dhaka Stock Exchange listings were chosen. A secondary data set was gathered from 2005 to 2011. There was a multiple regression analysis. The research found no correlation between any of the five performance metrics and share prices. Therefore, it was determined that none of the indicators had a meaningful connection to changes in share price. The researchers came to the conclusion that variables other than performance metrics affected stock prices.

Table 0-8: Summary financial statement analysis research since 2007 (cont.)

Year	Researchers	Country	Research content	Findings
2014	Menike and Prabath	Sri Lanka	The prime objective was to provide financial information users guidance on how well a company performed. There were found to be three performance indicators for the company: • Earnings per share • Dividend per share • Book value per share The researcher wanted to examine how performance metrics affected company share prices. All three of the above mentioned factors, had the potential to have an impact on the share prices of companies listed on the Colombo Stock Exchange.	The Colombo Stock Exchange was used to identify a total of 100 companies. Information that was significant was gathered from 2008 to 2012. The results of a multi-regression model showed that dividend per share, followed by profits per share and book value per share, was the best predictor of share prices. According to the study mentioned above, 37% of share price changes were predictable.

Table 0-9: Summary financial statement analysis research since 2007 (cont.)

Year	Researchers	Country	Research content	Findings
2015	Iqbal *et al.*	Pakistan	The goal of this study was to pinpoint the elements that influence the stock prices of companies in the cement and oil and gas sectors that are listed on the Karachi Stock Exchange. The main objective of the study was to examine fundamental financial ratios as stock price predictors. These ratios consisted of: • Earnings per share • Book value per share • Dividend per share • Price-earnings ratio • Dividend yield • Company size, measured in terms of total asset turnover.	The study's sample included 31 businesses. For the years 2008 to 2013, data were gathered. The methodology adopted was multiple regression. The findings revealed that profits per share was a key factor in determining stock prices in the studied industries. The researchers came to the conclusion that shares in the Karachi Stock Exchange's cement and oil and gas businesses should both be assessed using profits per share.

Source: Authors listed above

Table 1-1 showed relevance from previous studies on market ratios used for decision-making. From Table 1-1, Table 1-2 is created to indicate the frequencies used of various market ratios. These various market ratios are classified as quantitative data due to their nominal values. After considering quantitative market financial indicators that are influenced by inflation and external factors, the quantity according to Table 1-1 above the following quantitative ratios that use mathematical and statistical analysis were used for this study:

Table 0-2: Frequencies of various market ratios used in research from 2007 to 2015

Market ratio	Frequency
Dividend yield	2
Price per earnings	2
Dividend per share	5
Earnings per share	9
Economic value added	1
Share price-to-book value	2
Return on assets	2
Return on equity	2

Table 1-2 outlines market ratio analysis research from 2007 till 2015 which highlights the frequent use of quantitative financial ratios which are determined through mathematical and statistical calculations. However, Ion and Criveanu (2016:252-263) and Hornell and Cikotic (2020:20) critique only using quantitative financial ratio analysis and proposes of a holistic performance analysis approach that includes qualitative factors such as social and environmental indicators. Human behaviour is also a factor to be consider in analysing a company's performance as fluctuations in market ratios can occur from human behaviour and emotions that influence their decision-making.

Other methods are being considered since quantitative market ratios and qualitative human behaviour are not the only factors for the fluctuation of market ratios. Bouwman and Frishkoff (1995:22) supported by Weetman (2019:42) argue the relevance of annual financial statements, financial ratio and qualitative analysis as well as, observing the reactions of financial analysts' influence on the share market and ultimately cause share prices to change upwards or downwards. Cho and Wuthrich (1999:56) propose that there are different forecasting methods that were developed to predict upwards or downwards movements of share prices and company's value. Poincelot and Wegmann (2008:69) conclude that financial ratio analysis directly expresses the profitability of a company.

Vukelio and Przulj (2009:14) argue that financial ratio analysis and the evaluation of these ratios are necessary to assess financial strength and profitability of a company, which directly impacts its share price. Subramanian *et al.* (2016:34) explain that investors and market analysts rely on financial statement analysis relevant to share investment. Subramanian *et al.* (2016:34) further differentiate that the prediction of companies' share prices is a heavily debated and contentious issue. Vukelio *et al.* (2009:17) stated that out of the financial indicators such as liquidity, solvency and profitability the most used financial indicators are solvency. Given that there is an inverse relationship between liquidity and profitability and financial operations, solvency issues are frequently linked to the aim of increased profitability. This can be seen as quantitative ratios.

Lorencic and Festic (2022:142-170) stated that quantitative financial ratio analysis is a useful tool in the evaluation of a company's performance, investments and determining of its value for stakeholders to make a decision. However, quantitative financial ratios are influenced by a variety of factors such as inflation and external factors, pollution, management changes and performance, which must be taken into consideration. Anis *et al.* (2012:3) conclude that results in general are similar for local and global companies. However, Cassim (2014:4) argues that different results are obtained due to the heterogeneous choice of the periods analysed and assumptions on which the processing of the accounting information is based. Vimrova (2015:160) and Doorasamy (2019:29) posit that traditional financial ratio analysis is synonymous with a variety of flaws, such as the ability to exploit revenues, mismatched timing between profit and cash flow, but it is also inspired the development of new and better instruments to evaluate a company's performance. In an attempt to mitigate the criticisms against the use of quantitative financial analysis the possibility of integrating it with beta is discussed next.

Correia *et al.* (2019:4-19) and Da Fonseca (2013:302-308) explain that beta measure volatility measures systematic risk, meaning the risk of the whole market that is associated to an entire economy crashing or failing in comparison to the entire market. The capital asset pricing model (CAPM), which describes the link between systematic risk and anticipated return on assets, uses beta to assess market volatility. This relationship between systematic risk and expected return on assets may be used to analyze changes in market ratios, that is useful in calculating the expected return of an asset to found what the relationship between the market ratios and the beta analysis is.

Correia *et al.* (2019:4-19) and Da Fonseca (2013:302-308) explain further that beta has an unsystematic risk, which indicates the extent of the volatility of a share in the market associated with beta to assist in the research of what the relationship between the market ratios and the beta analysis are. Correia *et al.* (2019:4-19) explain that unsystematic risks can be eliminated by diversification, the risk that is important to the investor. Correia *et al.* (2019:4-19) propose that the use of the systematic and unsystematic risks together with beta are also used to measure market ratios.

Prior studies by Da Fonseca (2013:302-308), Cassim (2014) and Schaberl (2016:98) focus on ratios and company success rates and confidence for investors, other factors that influence analysis and causes of bankruptcy. These studies focused only on share prices and what it means to the company and investors but the effect that the disclosure of the financial statements may have on the share price has not yet been measured in previous studies. These shortcomings of previous studies led to motivate this study. The inconclusive results of previous studies regarding the behaviour of share price in relation to ratios necessitates further research on the impact of publication of financial statements. Financial statements report on the historical financial position and performance of a company, while shares are traded in a dynamic environment. This motivated the study that if there is a relationship between the market ratios and the beta analysis before and after the publication of annual financial statements. Prior research findings stated above proposes that a holistic analysis of ratios, which include other factors should be considered in investment decisions. A Google Scholar search indicated limited studies are done on the relationship between market ratios and beta influence on published annual financial statements.

1.2. PROBLEM STATEMENT

The paragraphs above indicate that there is currently a gap in literature where limited research is found of what the relationship between the market ratios and the beta analysis before and after the publication of annual financial statements according to market ratios are determined. Based on the before-mentioned problem statement, the following research question can be formulated:

Is there a fluctuation between market ratios and beta analysis before and after the publication of annual financial statements?

1.3. OBJECTIVE OF THE STUDY

The following objectives have been formulated for the study:

1.3.1. Primary objective

The primary objective of this study is to analyse market ratios fluctuation before and after the publication of financial statements.

1.3.2. Secondary objectives

Through a literature review and collection of secondary data the primary objective is achieved, by the following secondary objectives:

1.3.2.1. Theoretical

- Investigate the historical background on the development of financial ratio analysis in Chapter 2.
- Determine qualitative and quantitative indicators that influence investors decisions in Chapter 2.
- Identifying the commonly used financial ratio analysis methods in Chapter 2.
- Identifying the share valuation methods in Chapter 2.
- Investigate reasons how qualitative and quantitative factors influence the volatility of share prices before and after publication of annual financial statements in Chapter 3.
- Investigate how beta measure share's fluctuation compared to the share market in Chapter 3.
- Determine the fluctuation between market price, financial ratio and beta analysis on share prices in Chapter 3.

1.3.2.2. Empirical

- Perform a statistical analysis to determine the fluctuation between share prices, market-related ratios and beta in Chapter 4.

- Analyse market ratios and beta and the fluctuation between share price and ratios before and after the publication of financial statements in Chapter 4.

1.4. RESEARCH DESIGN AND METHODOLOGY

A qualitative literature review summarize and analyse literature qualitative conclusions that are created on a variety of formulas including data kind and quality, influencing variables and risk assessments. Quantitative decisions are based on statistical analysis of obtained information. Quantitative methods make use of quantitative data and have been used in the studies of Cassim (2014) and Robettze (2015). Arkan (2016:13) stated that investors' decision-making is based on qualitative and quantitative indicators derived from market analysis. This study makes use of a quantitative method where quantitative and qualitative data were collected and analysed. A quantitative method was used where multiple things are happening during the same window of time. The quantitative method helps stakeholders making decisions with the fluctuation of the market ratios. Fraenkel *et al.* (2019:555) and Creswell (2014:5) illustrate that the quantitative method consists of an exploratory design, explanatory design or triangulation design. Therefore, gathering and use of both qualitative and quantitative data. Hornell and Cikotic (2020:20) stated that the primary difference between deductive and inductive methods to analysis is that the former is focused on and evaluates hypotheses, while the latter involves the development of a theory that arises from the results for this study, the deductive approach is used.

1.4.1. Literature review

Hart (2018:35) states that the literature review will unlock the full value of one's work with: a detailed analysis of the literature review process from beginning to end. Literature was aggregated and analysed. The literature review includes journal articles, relevant textbooks and the internet in order to determine if there is a relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements.

1.4.2. Empirical study

Lauren and Lawson (2018:20) argue that documentary analysis of existing information, is an effective method to provide a clear explanation of the relationship between market ratios and beta on published annual financial statements. Cassim (2014:17) demonstrates documentary analysis on INET BFA is an indicated method to use for ratio

related studies. In this study, share prices and volumes for high, average and low published annual financial statements, interim financial statements and relevant ratios associated with published information will be performed through a documentary analysis and content analysis on INET BFA. INET BFA (2018) indicates that volumes and prices are classified as high, average and low on a daily basis and is a trustworthy source, which has been used successfully in many prior studies.

The purpose is to obtain information from financial websites and determine relationships and correlation between share prices and relevant financial ratios. Analyse financial market ratios and share price during specific periods in the year and determine volatility through IBM SPSS Statistics 27and are discussed in Chapter 4. The empirical portion of this study uses the following methodological dimension:

1.4.3. Target population

The target population consists of all Johannesburg Stock Exchange (JSE-listed) companies excluding mining and financial sectors due to the different treatment of certain accounting principles. Swart (2018:45) illustrates that there were 384 companies listed on the main board in 2018. In 2020 there are 344 listed companies on the main board according to INET BFA, which indicates that the study had enough companies to compare to make a meaningful conclusion.

1.4.4. Sampling frame

The sampling frame included a list of 60 JSE-listed companies based on the market value. The information covers a six- year period for the financial year-ending from 1 January 2014 to 30 June 2019. The These companies were divided into three groups namely: high (20), average (20) and low (20) based on the market value. The market value was obtained from the INET BFA data base, on financial year-ends from January 2014 to June 2019 and selected on 31 December 2018. The year-end of 2020 falls outside the parameter because information for the financial statements is limited due to the outbreak of COVID-19. The INET BFA data base is a reputable data base as were concluded by Cassim (2014:4), Chabala (2014:127), Philander (2015:120) and Swart (2018:7). The sample excluded mining and financial sectors due to the different treatment of certain accounting principles. Barac and Moloi (2010:19), De Villiers (2012:12) and Robbetze

(2015:31) successfully used the top 40 JSE-listed companies therefore this study was conducted with 60 companies.

1.4.5. Sample method

A non-probability sample is used in this study as it is both convenient and purposeful. Non-probability is explained by Uprichard (2013:3) as "sampling that is always about the knowledge that was obtained from the target population but to "extend and deepen existing knowledge about the sample". Bless *et al.* (2006:106) scribe that with a non-probability sampling the selection the probability of the sample is unknown and discusses that there are four basic types of non-probability sampling: convenience sampling, snowball sampling, quota sampling and focus groups. Greener (2011:65-67) concludes that convenience sampling is restricted to an easily available portion of the population. Convenience sampling was used for this study because companies disclose their financial information on INET BFA, which is easily accessible and 60 JSE-listed companies were selected.

1.4.6. Sampling size

The sample consisted of 60 JSE-listed companies. These companies were divided into 20 high, 20 average and 20 low market valued listed companies. The selection was based on accessibility and availability as argued by Barac *et al.* (2010:19), Greener (2011:65), De Villiers (2012:12) together with Robbetze (2015:31) and Swanepoel (2017:10) successfully used top 40 JSE-listed companies. This study used 60 companies, evenly spread across high, average and low market valued for a more diverse sample. The sample excluded mining and financial sectors due to the different treatment of certain accounting principles as illustrated by Barac *et al.* (2010:19), Greener (2011:65), De Villiers (2012:12) and Robbetze (2015:31). The sample size and the population of this study was consequently equal, this might result in valuable research findings, given that the whole population except mining and financial sectors was investigated as part of the research sample.

1.4.7. Measuring instrument and data collection method

Selected financial ratios and beta were calculated, using INET BFA market ratio values of the 60 selected JSE-listed companies 20 days before and 20 days after publication of interim- and annual financial results. The market ratio was used to categorise companies

between high, medium and low. Chabala (2014:21), successfully used 20 days to analyse share price volatility but for a more comprehensive result one month will be significant. The information was obtained from INETBFA for a five-year period as information is available for financial year-ends from January 2014 to June 2019.

1.4.8. Statistical analysis

The following statistical methods were used on the empirical data using IBM SPSS Statistics 27to evaluate the following:

- Spearman's correlation between share price, financial ratio analysis and beta analysis before and after publication the ability to quantify the intensity and polarity (positive or negative) of the connection between two variables, generating a result that is always between one and minus one.
- Analysis of variance (ANOVA) analysis to find out if the ratios results are significant to establish if there is a difference between ratios and beta before and after publication.
- Beta analysis is done to measure the market risk and if it will remain fairly stable over time.
- Two-tailed t-test analysis to indicate if the data are correct to examine the relationship between market ratios and beta before and after publications.

1.4.9. Ethical considerations

The ethics checklist from the NWU was completed and submitted to the Ethics committee of the faculty. An ethics number (NWU-0115-19A4) was granted. The secondary data are readily available and as it is in the public domain the information is not considered confidential. The information will not be used to discredit any company's reputation. Data will be analysed and disclosed in aggregate and not individually.

1.5. CHAPTER CLASSIFICATION

This study comprises the following chapters:

Chapter 1: Introduction and background to the study

Chapter 1 provides a brief introduction to the study. Highlighting limited prior studies about a fluctuation between market ratios and beta before and after publication of financial statements. The lack of these previous studies motivates the research and forms the platform for the problem statement, which established the theoretical and empirical objectives of the study. Furthermore, this chapter includes a summary of the research design and methodology before concluding with a chapter summary.

Chapter 2: Literature review

Chapter 2 comprises the literature review of related studies in peer-reviewed journals, relevant textbooks and other available sources relating to ratio analysis, qualitative and quantitative indicators, which influence the volatility of share prices before and after publication of annual financial statements and fluctuation between market ratios and beta.

Chapter 3: Research design and methodology

Chapter 3 describes research stages of how the data were gathered and analysed. It includes the research problem, research design and methodology that were used. The chapter also includes a discussion of the target population, sample size, sampling method and the collection of data that were used. Finally, the reliability, validity of data and ethical considerations are argued.

Chapter 4: Results and findings

Chapter 4 deliberates on how the collected data were designed and analysed. This includes the methods used according to the methodology as per Chapter 3. The chapter commences with descriptive statistics measures adopted. Furthermore, the sample used followed by the analysis of the market value ratios and financial statement were discussed.

Chapter 5: Conclusions and recommendations

The findings of the objectives and problem statement are presented in the last chapter, which is followed by a summary and conclusion of the other chapters. The study's limits, findings, contributions, and suggestions are covered in more detail in this chapter. Finally, recommendations for more research are provided at the chapter's conclusion.

1.6. CHAPTER SUMMARY

This chapter presents the historical background on the primary objective of this study, which was to analyse the relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements. Listed companies are obligated to publish their annual financial statements, which is captured on INET BFA.

This study attempts to answer the question if there is a relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements. The application of the research methods is discussed in Section 1.4. Furthermore, explaining the literature and empirical research, which were undertaken to establish conclusions that address the research question. “Is there a relationship between market ratios and beta analysis before and after the publication of annual financial statements?”

CHAPTER 2: LITERATURE REVIEW ON VARIOUS RATIOS

2.1. INTRODUCTION

This chapter links the literature to the problem statement from Chapter 1 and provides an in-depth analysis of the literature that is essential to the research. This forms the literature review of the study. As discussed in Chapter 1 this study endeavours to answer the question is there a fluctuation between the market ratios and beta analysis of listed companies before and after publication of annual financial statements. Creswell (2014:25) explains that the literature review carries out a valuable part, by assisting the researcher to limit the scope of the study and primarily focus on significance topics. The aim of the chapter is to respond to the theoretical objectives, which is to examine the literature on the analysing market ratios fluctuation before and after publication of financial statements. To accomplish this, the chapter provides critical analysis of the concept of market ratios. It also evaluates literature on beta as well as the financial ratios. The later sections examine literature on fluctuation before and after publication of financial statements. The discussions conclude with the analysis of literature on the relationship between market price, financial ratio and beta analysis on listed companies share prices. Figure 2-1 gives a brief chronological overview of the theoretical objectives.

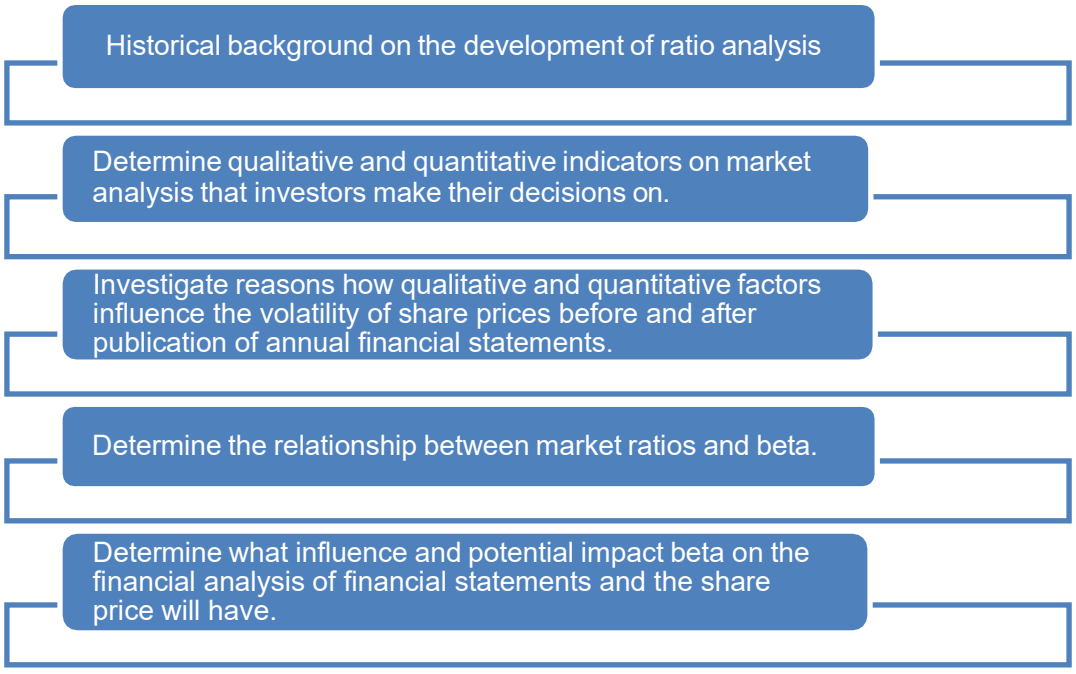

Figure 0-1: Chronological overview

2.2. HISTORICAL BACKGROUND ON THE DEVELOPMENT OF RATIO ANALYSIS

The following seminal approach are applied to illustrate the development of the historical background of ratio analysis. Ratios have been researched since 300 BC by Euclid who wrote a book with the titled "A Greek mathematician, organized and applied geometry logic: Book V". This is deemed the origin of quantitative ratio analysis as illustrated by researchers such as Bliss (1923:34-38) who argues that quantitative ratios are a fundamental measure of a business enterprise. Smith (1925:478) demonstrates that ratios was for reckoning, calculation and reasoning. Gilman (1925:111-112) critiques the use of ratio analysis due to the limitation of accounting data, the source from which quantitative ratio analyses are calculated. Gilman (1925:111-112) points out that due to the diversity of the indicator between ratios, the reliability of this type of analysis depends on the company's holistic outlook. I still feel market financial ratios can be used to analyse fluctuations in a market.

Fitzpatrick (1931:132) concludes the failure might be somewhat predicted by all quantitative ratios. Generally speaking, the strongest predictors were the ratios of net profit to nett worth, debt to equity, and net worth to fixed assets (fixed asset ratio).Merwin (1942:134-139) analysed several quantitative ratios on failed and non-failed companies for the trend for six years. He addressed three ratios as indicators of failure, listed as net working capital to total assets, net debt-to-debt and current ratio.

Brown (1955:13) illustrates that in the latter half of the 19th century, America had a drive toward industrial maturity, which generated a demand for more study on quantitative ratio analysis. The advanced development of capital markets and the information resulted in the overwhelming need for financial statements among investors, namely among creditors, investors, and management. As the need for managerial control greatly expanded, there was an overlap of credit and managerial purposes throughout the change of management from entrepreneurial capitalist to professional manager. The potential to pay is measured for credit purposes, and management significance is given to the profitability measurement.

Foulke (1961:176-229) and his employers secured the industry with data of 14 quantitative ratios. These quantitative ratios became well-known and extremely influential

average quantitative ratios of the sector. The legitimacy criteria of these quantitative ratios were based on years of experience. Foulke (1961:178) explains that while other ratios developed during the 1890 period, such as the gold-silver ratio, did not have the same long-lasting effects, the quantitative ratio that emerged in the late 1890s, for example, the current asset ratio (current assets/current liabilities), had a very significant and lasting impact on the analysis of financial statements. Quantitative ratio analysis attained popularity in the 19th century.

Foulke (1961:178) explains that the price-earnings ratio ratio provide a perception of the market of the company's past performance and future prospects that link it to the Du Pont analysis that was created in 1965, which is an excellent way to measure the operating performance of a company.

The use of quantitative ratio analysis is credible for evaluating companies' financial statements where ratio analysis is useful for investors' decision-making, making use of Du Pont, CAPM and beta (Horrigon, 1965:556 & Al-Ajmi, 2008:260). Beaver (1966:71), explains that a quantitative ratio is a percentage of two numbers that involves elements of financial statements. Beaver (1966:76-101) performed a direct study of ratio predictive value to company failure.

Horrigan (1968:284) reasons that it is reasonable to state that quantitative ratio analysis still has relevance for everything that has been practically started? From 1890 to 1968, a period of enormous growth in the availability of financial data and information flow, Horrigan (1968:285-290) analyzed the history of advancements in quantitative ratio analysis. The examination of the financial statements by creditors evolved in the following order: item comparison, column-based analysis, classification of current and non-current items, and the emergence of linkages between various items in the financial statements. On the basis of this new development of the financial statements, the current ratio was created. Horrigan, (1968:185) identifies that there is an increase in the demand for analysis of the financial ratio and concluded that the return on investment ratio could be used for managerial analysis.

The development of ratios was researched a lot as the following studies indicated:

- Ramser and Foster (1931:200) cited by Yadav (1986:15) used 11 ratios on 173 companies, concluding that companies that did not succeed and were lower than non-failed companies when these 11 ratios were used.
- Winakor and Smith (1935:112) cited by Brady (1999:15) then used 21 ratios like assets to equity; return on assets %; return on capital %: return on equity etc. to summarise the trends of the past ten years.

Brady (1999:5) concluded that the development of quantitative ratios has been round since 300 BC. Brady (1999) integrates market analysis, which includes price-earnings ratio as an enhancement on the qualitative ratios. These are discussed in the next chapter. Trevino and Robertson (2002:83) explain the price-earnings ratio shows what the market is prepared to pay for a share at the time being. The price-earnings ratio enables investors to establish a share market value as compared to the earnings of the company. Trevino and Robertson (2002:83) explain that a high price-earnings might mean that the price of a share is high and possibly overpriced comparative to earnings.

Brigham and Ehrhardt (2007:464) and Doorasamy (2019:29) conclude that the Du Pont analysis shows how to determine the rate of return on equity, the profit margin on sale, the ratio of asset turnover and of debt interacts. To measure the individual components of the return on equity of a company, a Du Pont analysis is used. This makes it possible for an investor to determine which financial strategies add the most to the return on equity improvements. In order to establish an comparison between the operating performance of two related companies, an investor should use analysis like this to establish if there is a relationship between ratios before and after publication.

Arkan (2016:13) highlights the importance of the price price-earnings ratio for investors or potential investors. Illustrating the enthusiasm of investors or potential investors to invest in evaluating whether there is a relationship between the price-earnings ratio and the subsequent holding period of returns. Arkan (2016:89) concludes that the current price-earnings ratio is useful to estimate long-term average returns. However, investors will not be able to use the timeline of the markets if the current price-earnings ratio is marginalised. Investors should anticipate lower returns when the current price-earnings ratio is high and higher returns when the price-earnings ratio is low. Beta determine the risk that investors base their decision on.

Doorasamy (2019:29) shows that the beta term used to represent the link between risk and the expected return on assets in markets is how the CAPM defines the relationship between systematic risk and expected return for assets. From the research above it is evident that market ratios are the most accurate and steady indicator of success. From the information above, investors' decisions are influenced by quantitative and qualitative factors. These factors are discussed in the next paragraph.

2.3. INDICATORS THAT INFLUENCE INVESTORS' DECISION-MAKING

Arkan (2016:13) states that although qualitative selections are based on a range of factors such as data type and quality, influencing variables, and risk assessments, quantitative decisions are concentrated on statistical analysis of gathered data. Qualitative and quantitative indicators are determined by market analyses that investors base their decisions on and also the reasons why qualitative and quantitative factors influence the volatility of share prices before and after publication of annual financial statements. Financial ratio analysis and non-financial analysis are looked at as factors for investors' decision-making.

2.3.1. Qualitative decisions

Kaplan and Norton (2008:200) developed a balanced scorecard (BSC) that contains both quantitative and qualitative indicators that provide data on the outcomes of performed operations. Financial indicators are enhanced by three types of performance assessment linked to customer satisfaction, inner procedures in a business and its capacity to learn and improve. Kaplan and Norton (2008:200) and Robbetze (2015:116) argue that qualitative performance measures are better indicators of future economic performance than financial measures, which is based upon the fact that financial indicators only partly represent the effect of present investors decision-making.

Kotane and Kuzmina-MerlinoIt (2011:5) highlighted that the financial reports are the primary source of data on company results and on the principle of which the company's business operations and financial situation are assessed. Kotane and Kuzmina-MerlinoIt (2011:5) state that under circumstances of modern business development, it is not possible for management to solely depend on the assessment scheme of financial statements to maintain the business effectively. The main business activity indicators are not only discovered in financial information. These indicators as performance, customer

satisfaction, developments and profitability quite often show a company's economic position and development possibilities better than the financial performance indicators expressed in reports. Doorasamy (2019:32) stated financial output is used by analysts and investors to evaluate comparable companies in the same industry or to compare industries or sectors as a whole. Performance is a subjective measure of a company's capacity to earn revenue by utilising assets from its core method of operation. Doorasamy (2019:33) asserts that a measure of how pleased customers are with a company's products, services, and abilities is customer satisfaction. The definition of development is "growth, improvement, gradual change, or the addition of physical, economic, environmental, social, and demographic components." A company's profitability may be used as a reflection of its efficiency and success. Doorasamy (2019:32) concluded that non-financial analysis are qualitative indicators that are not denominated in monetary terms and have an influence on investors' investment decisions.

From the paragraphs above in Chapter 1 it is clear that apart from quantitative analysis and qualitative analysis there are also factors that influence the volatility of share prices before and after the publication of annual financial statements so that the fluctuations of market ratios can be analysed.

2.3.2. Quantitative decisions

Robbetze (2015:45) explains that comparing financial statement data allows analysts to learn more about a company's profitability, liquidity, operational efficiency, and solvency. Quantitative ratio analysis is employed to track a company's performance over time and evaluate it in comparison to other businesses operating in the same sector or industry. Quantitative ratio analysis is one of the factors investors use to make investment decisions. Stittle (2004:135) supported by Robbetze (2015:45) states that the main objectives of the quantitative ratios analysis are to discover the company's performance, to evaluate the company's financial strength and to pertain them for comparative purposes. Stittle (2004:135) further explains that the importance of using quantitative ratio analysis comes from knowing which ratios to select and being able to analyse for the investor.

The quantitative ratio analysis is an extremely simplistic and approximate method and the use of such a technique without taking precautions will generate generalised and often unreliable conclusions for investors to make their decisions. In order to strengthen

investors' decisions, Robbetze (2015:41) demonstrates that the statement of financial position is the best indicator of ratios although arguments of Jagongo and Mutswenje (2014:100) posit that performance of an entity will primarily influence investment decisions.

Guay *et al.* (2016:234) subject, that financial statements give a company a strong platform to disclose accounting information and to provide a trustworthy analysis that explains the financial results. Which supports Fulbier's (2008: 123) explanation that quantitative ratios are used as performance indicators and also to evaluate companies. Koen and Oberholzer (1999:4) explain that quantitative ratio analysis has been generally used to measure the financial strength of a company by comparing different companies in the same industry. Evaluating a company's quantitative useful information is obtained to enhance decision-making. Quantitative ratios are primarily based on past information and amounts of a company. The relationship between amounts in the financial statements and the interpretation of these amounts are of the utmost importance.

Beaver (1966), Altman (1968), Blum (1974) and Mossman *et al.* (1998:36) found that the ratio model yielded significant results in the seminal studies conducted and found that quantitative ratios are useful when evaluating a company's ongoing concern for company valuation purposes. Mossman *et al*. (1998:36) propose that ratio-based models are preferable to the financial base variables model with just common variables, but that they will not perform as well as models built with only quantitative ratios. Despite the fact that this model has been applied successfully, there is still disagreement over which quantitative ratio is the best bankruptcy predictor.

Firer *et al.* (2004:56) suggest that a great advantage of quantitative ratio analysis is to make decisions of companies with different sizes by using percentages and multiples that can be compared. Eluyela *et al.* (2019:1100) examined the comparison between pre- and post-adoption of International Financial Reporting Standards-based (IFRS) financial statements of listed small and medium scale enterprises (SMEs) in Nigeria, which was additional to the previous study mentioned above. The study considered the period 2012–2015 using data from the annual financial reports of SMEs listed on the Nigerian stock exchange. Return on capital employed, return on equity, debt to equity and earnings per share as a proxy to measure the profitability, liquidity and market ratios of the listed SMEs in Nigeria. The study's findings show that there is no significant difference between the

profitability and leverage ratios of the listed SMEs' IFRS and NGAAP-based financial statements. Although further findings revealed that a significant difference exists among the market ratios prepared by the listed SMEs under IFRS and NGAAP-based financial statements. Eluyela *et al*.'s (2019) study's major implication is that IFRS has a significant impact on the market ratio. This is due to the introduction of the IFRS of fair value measurement and impairment of assets in 2019 to get more clarity and unity among statements.

To optimise an investors' decision-making another factor to consider for investors' decision-making is qualitative analysis and is discussed below.

2.4. FINANCIAL ANALYSIS

The literature classifies financial analysis in structures and unstructured analysis.

2.4.1. Structured analysis

Structural ratios are based on the proportions of debt and equity in the capital structure of the company to compare the efficiency of similar companies (Correia *et al.* 2019:5-21). Investors decision-making is on the outcome of these structured analysis that influences the fluctuations of investments.

2.4.1.1. Du Pont analysis

Du Pont (1961:5) started using the ratio triangle pyramid system as a chemical company in the United States of America (USA). Sloan (1963:140) proposes that this is the first documented framework system and that he has no understanding of any economic concept that better reflects the rate of return as an objective support to business judgement. Brigham and Ehrhardt (2007:464) highlight that the Du Pont model demonstrates how profit margin on sale, asset turnover ratio and debt utilisation communicate to determine the rate of return on equity. Stowe *et al*. (2002:85) and Worthington and West (2018:215) state that return on equity is the final result of a financial ratio analysis called the "Du Pont analysis", which has made a significant contribution to its popularity. Marx *et al.* (2003:108) define it is a joint analysis of helpful ratios that eventually results in a single figure. Correia *et al.* (2019:5-21) argued that return on equity is linked to net profit margin, return on assets and financial leverage multiplier because it can be analysed mathematically to compare similar companies before and after publication. Return on equity can also be used to analyse other ratios.

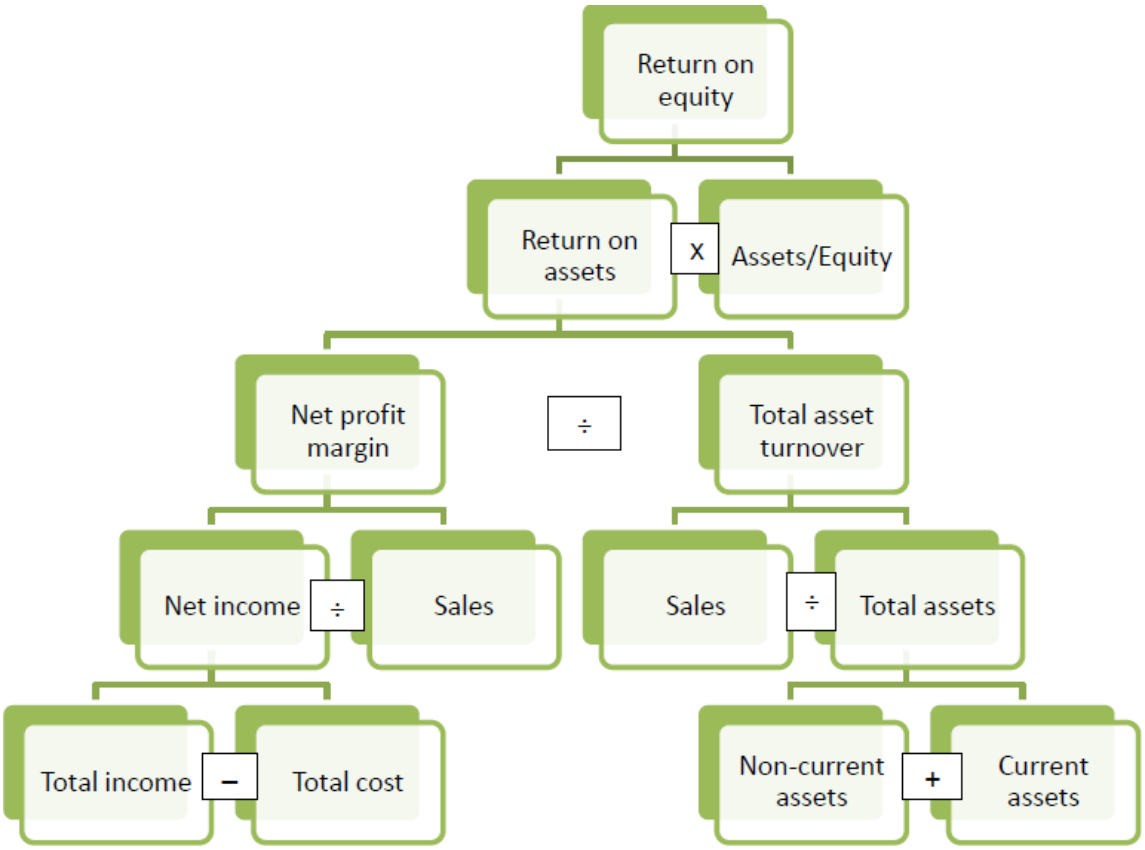

Figure 0-2: Du Pont analysis

Source: Robbetze (2015:181) adjusted

Figure 2-2 demonstrates how return on equity can be analysed using other ratios. Net income is determined by deducting total expenditures from total revenue. Complete assets result from the addition of current and non-current assets. A net profit margin is determined when net income is divided by sales, whereas total asset turnover is determined when sales are divided by total assets. Return on assets is calculated by dividing the net profit margin by the total asset turnover. The return on equity is then calculated by multiplying the return on assets by equity assets.

Researchers along with Reimann (1989), Finegan (1991) and Jensen and Meckling (1999) have started to consider that return on equity is not necessarily a significant indicator of investment returns along with De Wet and Du Toit (2007:67) who identified a weak correlation between return on equity ratios and shareholder returns. Jensen and Meckling (1999:13) highlighted that return on equity is not a credible measuring tool since it is vulnerable to manipulation by directors. Jensen and Meckling (1999:13) stated that economic value added is a stronger decision-making tool, while De Wet *et al.* (2007:61)

regarded economic value added as an entity's economic profit after subtracting the total cost of capital. While Robbetze (2015:58) concluded that many researchers are not confident to use the return on equity ratio as a means of measuring shareholder prosperity as it correlates badly with shareholder return, it can simply be manipulated and reflects only on short-term results and therefore it must be strengthened with the Altman's Z-score.

2.4.1.2. Altman's Z-score

Altman's (1968:589) reason for undertaking this research to "evaluate the quality of ratio assessment as an analytical method" is that researchers in the domain are turning the tables on the significance of financial ratios. The concern was whether, given the presence, success, and greater accuracy of statistical approaches, the gap between conventional and statistical procedures could be overcome. Multiple discriminant analysis (MDA) was the statistical technique that Altman used. Businesses are statistically categorized as either succeeding or failing. Altman (1968:591) implemented the MDA to acquire a linear combination to best discriminate between unsuccessful and succesful entities.

A number of techniques can be used to establish the estimation for failure, namely: Z-scores (Altman), A-scores (Subjective) and Altman's model.

2.4.1.3. Z-scores (Altman)

Altman's Z-score is a formula to determine whether a company is about to file for bankruptcy. It deals with commercial failure.

The Z-score model was generated by Altman (1968) who subsequently upgraded the model to the Zeta model in 1977 and improved the Zeta to the emerging market score in 2006. All these models were based on ratios and consisted of five factors.

The sample chosen for the Z-score model was 66 companies and 22 ratios. A non-bankrupt bank was selected for each bankrupt business, known as the pairing strategy. Altman and Hotchkiss (2006:241) highlighted that data were obtained from the same year, but the groups were not entirely comparable due to variations in market and asset volume. Of the 22 ratios, a total of five ratios conducted best in holistically anticipating bankruptcy, Altman (1968:604) states that the precision of the Z-score model degrades longer with

the duration before bankruptcy. Altman (1968:604) argues that the reason for the volatility is that the capacity to predict the Z-score model over longer periods before bankruptcy becomes less accurate and it is a stronger predictor within two years before failure.

2.4.1.4. A-scores (Subjective)

Worthington *et al.* (2018:250) stated that Argenti's A-score model is the most well-known qualitative model. The mechanism of failure behaves in a predictable way. Defects include management issues (such as an authoritarian chief executive) and accounting issues (such as n budgetary control). For each deficit, a score is given. A score of 10 or more out of a possible 45 is said to as unsatisfactory. Due to the aforementioned shortcomings, faults may develop over time. Mistakes include high gearing, excessive trading, and the collapse of a sizable enterprise. A score of more than 15 out of a possible 45 is deemed unsatisfactory. Errors that gradually appear as apparent failure symptoms, such as deteriorating ratios or creative accounting, are known as failure symptoms. The companies have more avoidable failure warning signals if the average score is higher than 25.

2.4.1.5. Altman's model

Altman *et al.* (2006:267-268) upgraded the Zeta model and named it the emerging market score (EMS) to enhance precision. The Enron and WorldCom situations were used to test EMS and potential problems were discovered before the event. Anjum (2012:212) identifies that the Altman's Z-score model can be adapted to the modern economy by predicting bankruptcy and distress up to three years in advance. Together with Eidleman (1995:52-53), Rama (2012:5) stated that the Altman (1968) Z-score model is worldwide the most accurate model for business failure forecast. In contrast to structured analysis, unstructured analysis considers customers' needs.

2.4.2. Unstructured analysis

Focussing on the changing customer needs, unstructured analysis allowing companies to stay ahead of future trends that influence investors' decision-making and create a fluctuation in the market ratios analysis. Unstructured analysis consider performance, return on equity, asset return ratio, liquidity, risk, solvency, shortcomings of ratio analysis and economic value added.

2.4.2.1. Performance

Financial performance is how well financial goals have been met in a period of time through financial analysis. It calculates the monetary value of a company's policies and operations. It is used to assess a company's general financial health over a span of time and to compare comparable companies (Florea 2020:3).

Florea (2020:3) scribes that all companies across the world measure performance to ensure that they conduct business as efficient and effective as possible and also to consider whether a company is accomplishing its targets. Performance volatility has therefore an influence on companies' share price. Menike and Prabath (2014:26) states that performance measures can also be used to promote sustainable growth by concentrating on areas where managers want a certain performance level. Consequently, there is a compulsion for managers to contemplate lots of performance measures, therefore, they assume with assurance that everything essential is being monitored. Nagy and Obenberger (1994:65) argue that performance is not reasonable, because of the time and cost of producing such large amounts of information and because of so much information, the outcomes sometimes lack quality and increase volatility. Therefore, only ratio analysis outcomes can be obtained and as a result, managers must make sure that the analysis engaged are the most reliable. An essential measure is to analyse the amounts extracted from the financial statement of a company for the use of ratio analysis.

Nagy and Obenberger (1994:65) supported by Florea (2020:3) explain that shareholders' interest is in the expected accounting performance and rely mostly on the earnings found in the annual reports and financial statements. Higgins (2009:6) stated that financial statements are the best measurement tool for financial performance. Higgins (2009) used the following to measure the appropriate financial ratios of selected companies namely:

- Statement of profit or loss and other comprehensive income is a breakdown of the company's sales, earnings and expenditures over a time period. A company's financial success in terms of sales and revenue for a specific time period is summarized in an income statement. (Correia *et al.* 2019: 3-3).
- Statement of financial position together with the notes to the statement is a document that details the organisation's assets and liabilities. It is a basic but useful measure of a company's financial stability, which sketches the economic

resources of the entity, indicating solvency, liquidity and cash flow (Correia *et al.* 2019: 3-3).

- Statement of changes in equity, which displays the variation between each component's opening and ending balances. It only includes cumulative earnings and losses in addition to equity inputs (where it came from) and equity outputs, allowing readers to understand the equity sources (where it came from) and outlets (where did it go) (Correia *et al.* 2019: 3-3).

Performance is calculating the numerical effects of a company's decisions and activities. It is used to determine a company's overall financial health over a given time span with the following ratios:

2.4.2.2. Return on equity (ROE)

Return on equity measures the return that shareholders get from the business and overall earnings and are relevant to establish if any fluctuation occurred before and after publication of the financial statements. Alexander and Nobes, (2016:290) state that the return on equity relates to the return of the shareholders provided to the company by the shareholders by a company for its shareholders. In other words, it indicates the final outcome of the management in optimising the return on shareholders predicated on their investment in the company.

The formula for return on equity from Elliott (2011) is:

ROE = (Net profit before interest and tax/shareholder's fund) * 100

Seng and Hancock (2012:30) state that return on equity is at the peak of the pyramid ratio, it does not tell the owners if the company creates or damages the wealth of shareholders.

2.4.2.3. Asset turnover ratio (ROA)

It shows effectiveness of the management to use assets to generate revenue. Stickney and Weil (2007:605) argue that this ratio measures return through using assets to generate income. Analysts use return on assets to evaluate the operating performance of a company compared to investments without taking into account whether the company used debt or equity capital to finance the investments. The ratio analyses the relationship

between the amount of profit before interest and tax and the total number of assets calculated as a percentage and are relevant to establish if any fluctuation occurred before and after publication of the financial statements.

ROA = (Net profit before interest and tax/Total assets) * 100

According to Stickney *et al.* (2007: 602), return on assets shows how productive the total assets of the company are in generating profit. Furthermore, Stickney *et al.* (2007: 602) highlighted that it overlooks the means and costs of financing the assets (i. e. the debt to equity financing ratio and the cost of those forms of capital).

Liquidity refers to a company's ability to satisfy short-term debt commitments without incurring a deficit by turning short-term assets into cash. Therefore, performance is a big factor for financial statements, which focus on a company's liquidity that is discussed next.

2.4.2.4. Liquidity

Liquidity is a company's ability to meet short-term current liabilities without risking a loss by turning short-term assets into cash. Assets that can be sold at prices that do not result in significant losses in order to obtain the funds they need to meet other obligations are considered liquidity (Correia *et al.* 2019: 3-4).

Cassim (2014:74) states that financial users like employees, management, creditors, shareholders and lenders provide economic information. Higgins (2009:35) together with Block *et al.* (2009:58) and Sharif (2020:2) proves that investors analyse financial statements into ratios to determine profitability and liquidity. Mitrache and Boitout (2009:41) point out that the share market system shares have comparable characteristics like when there is a sudden shift or crisis in the scheme, shares interactions tend to improve drastically and vice versa. Hong and Stein (2003:487) indicate that the enhanced stock correlation generally appears in the declining market. Chatfield and Xing (2019:105) endorse the potential of current value to provide early warning signals over the use of trading activity and close price, which indicates that financial value is the best tool of liquidity on the stock market. Smart and Graham (2012:41) submit that the capacity of businesses to repay their short-term commitments will be evaluated as they become due and it is a good measure of cash flow challenges. Cassim (2014:74) proves that three ratios are subjected to liquidity:

- Current assets ratio — The current ratio is a liquidity ratio that shows whether a company has sufficiently existing assets to offset or pay off its current liabilities (Florea ,2020:25). This ratio is calculated by separating current assets and current liabilities. The greater the answer the greater the company can fulfil its present responsibilities (RMA, 2011:14).
- Quick asset ratio — determine if a company has enough funds to cover its immediate obligations, such as short-term debt. It compares its most short-term assets to its most short-term liabilities. Present properties that are impossible to liquidate efficiently, such as inventory are excluded from the acid-test ratio (Florea ,2020:25). This ratio is calculated when inventory is deducted from current assets and compared to current liabilities. If a business can fulfil its present obligations, the ratio will be greater than 1:1 (RMA, 2011:14).
- Working capital ratio — Working capital is a measure that shows how much money a company has available to finance its daily operations. In a company, liquidity is important since it reveals if the company has funds that can be quickly converted to cash if necessary. (Florea ,2020:25). This ratio is when working capital is divided by total assets. Service (2013:1085) states that this ratio indicates the liquidity part of total assets.

Early warning signs can be discovered if a business cannot fulfil its obligations if liquidity rations are applied but together with the liquidity that changes constantly risk will always be a factor and is discussed in more detail.

2.4.2.5. Risk

Financial risk is the possibility of losing money on an investment or business activity. A type of risk known as financial risk might result in financial loss for those who are interested. (Florea, 2020:30). Share price volatility is generally associated with investment risk. Garret (2003:1940) explains that the word “risk” originates from the Italian term "riscare" which means "to dare". According to The Merriam Webster Online Dictionary (2019a), risk can be defined as “the chance that an investment will lose value”. Reynders *et al.* (1984:248) explain that risk is any deviation between anticipated and real outcomes leading to loss. Correia *et al.* (2019: 3-3) differentiate that risk is any probability of a loss, arising from a specified action and rely investment selections on risk reasoning and return factors. Investment possibilities are categorised as certain or uncertain from an investor's point of view where uncertainty raises risk as well as desired returns. Blume

and Friend (1978:98) assert that an important risk indicator is unstable income. Moles *et al.* (2011:244) highlight that there is a direct connection between risk and return — if the risk is greater, the shareholder will expect a greater return as reward for the elevated risk distribution and potential loss. Jagongo and Mutswenje (2014:95) state that rational investors would prevent unusually high risk in order to protect investment from losses.

Jagongo and Mutswenje (2014:98) state that the volatility of a company and the solvency ratio is heavily driven by the market risk and are discussed next.

2.4.2.6. Solvency

Solvency can be defined as the potential of a company to maintain its long-term debts and other financial commitments. Solvency demonstrates the company's capacity to continue operating in the near future, solvency is a sign of a company's financial stability.. (Phu *et al.* 2020:3).

Ratios of solvency or debt management provide information on the management of debt. Greater gearing and risk result from higher levels of debt in the capital structure. The ratios shown below can be computed: Debt ratio that measures total liabilities to total assets, debt to equity that measures total debt to total equity and time interest earned that measures interest earned over interest expense.
Insurers have learned from experience not to underestimate the volatility of the solvency. Cassim (2014:209) demonstrated through a model to determine solvency in a company, which links closely to share price volatility. The profitability potential of companies is explained by Cassim's solvency model, and the ratio indicates if assets and equity are being employed effectively and generating returns. The quick ratio was used for financial consistency because the current ratio skews results because some businesses may have a lot of outdated inventory, which means that a company bases its liquidity on inventory that insurers may not even be willing to sell or sell at a loss and yet may not be prepared to repay short-term obligations. Because a company cannot continue as a going concern if its cash flow is restricted, cash flow is crucial. The risk gives a general overview of the financing utilized by the firms and if the company can repay the interest commitments, while the likely growth ratio is used to show whether the sales and revenue of the companies are increasing.

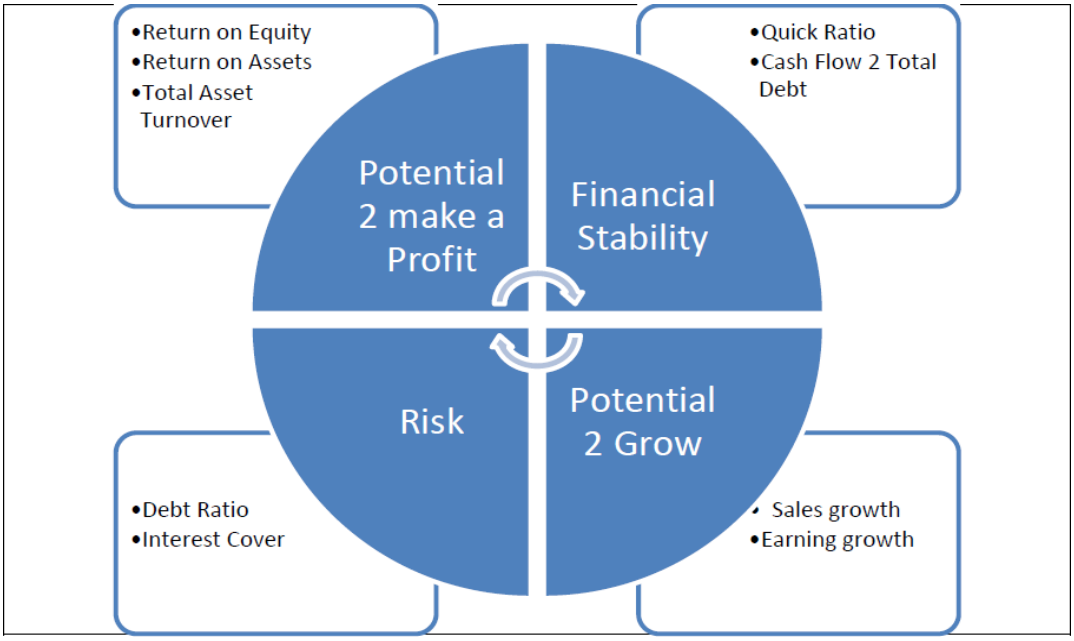

Figure 0-3: Potential to generate profit

Source: Cassim (2014:248)

Figure 2-3 demonstrates according to the ratios whether the assets and equity are used successfully and give rise to returns.

To generate a profit would influence the market ratios to analyse if fluctuations happened before and after publication.

Phu *et al.'s* (2020: 2) findings show that solvency shock raises liquidity, while income and solvency respond adversely to the liquidity shock and change is very similar over the chosen period. This represents that because of the low resources the probability of insolvency is prone to the uncertainty of capital.

The share price of a company is evaluated using market value ratios. Present and prospective investors use these ratios to decide if a company's shares are overpriced or underpriced. Market ratios and volatility's main purpose is to find a relationship between the risk and return of funds, which result in effectiveness. Cassim (2014:75) states that ratios are grouped into two categories, namely profitability (accounting) ratios and investment (market) ratios. Most of the analysis of financial statements discusses aspects of the profitability of a company. Investigating a company's profitability and volatility of market ratios in the past years affords information to help the analyst project its future

profitability and the rate of return from investing in the company's equity securities. The second method is to compare the market value or share price of the companies with the fundamental principles of profitability and investment of the company. This strategy used market ratios such as market-to-book ratio and the price-to-earnings ratio.

Masa'deh *et al.* (2015:141) state that the market price for an important equity share is a very unique and accurate number because it reflects the overall aspirations of all market investors regarding that particular stock. The market price represents the outcome of that stock's trading activity on the market. It outlines the aggregate data that market investors have about the overall expectation for the company's future profitability and growth.

i. Outecheva (2007:95) a market-based paradigm was initially put into action. Since that time, investors have started to favor market-based models. The problems with the accounting-based paradigm are controlled by this model. In order to forecast distress risk, this is maintained by fusing the company's obligation structure with asset market values. The fundamental premise of the market-based approach is that market prices produce all the pertinent data necessary for capital providers to determine the risk of default. (Outecheva, 2007:94–95). Correia *et al.* (2019:4-19) explains market ratios as the ratios that indicate the relationship of the company's share price to dividends and earnings. The following ratios were used price-earnings ratio, price-to-book value, market value/ book value, price-to-earnings/book value and economic value added.

ii. The price-earnings ratio that measures the companies' value is used to determine the evaluation of a company and whether it is overvalued or undervalued and are relevant to establish if any fluctuation occurred before and after publication of the financial statements. The price-to-earnings ratio shows how much investors are paying for each earning. The price-to-earnings ratio is a measure of market confidence in a company's shares. The widely known way to calculate the ratio (by dividing market price by earnings per share) is practical, as analysts can observe price per share and historical earnings per share for most companies. Stickney *et al.* (2007: 970-971) scribe that the Wall Street Journal regards the price-earnings ratio as part of the daily coverage of stock prices and trade activities. The ratio is

calculated using the current share price and current earnings as indicated in the following formula:

P/E = Market price per share/Earning per share

It is also known that the higher the price-earnings ratio, the stronger the valuations of the future profitability of the company. However, although the price-earnings ratio is efficient, since analysts do not need to generate significance calculation or earnings forecast, it creates a mismatch for evaluation methods as it separates historical earnings into share prices that represent the present value of future earnings.

iii. Price-to-book value

The price-to-book ratio, or P/B ratio, is a financial ratio that compares the current share value of a company to its book value and are relevant to establish if any fluctuation occurred before and after publication of the financial statements. Stickney *et al.* (2007: 970-971) state that researchers used the market-to-book ratio as an indicator of market performance. The ratio can be calculated by dividing the company's equity market value at a time by the book value of shareholders' equity from the company's current statement of financial position.

Alexander and Nobes (2016: 289) indicate that the book value of an ordinary share corresponds to the value that would be associated with each share if the company's assets and liabilities were sold or resolved at the prices reflected in the published statement of financial status. Reports can be used to determine the market value per share (the share price). The market value/book value ratio represents what the market value is since market values are determined by the cash flow that can be generated from assets immediately rather than by the capital invested in their acquisition. Analysts are still left in the dark as to what the proper ratio should be.

MB = (Market Value/ Book Value) * 100

Where: Market Value = Ordinary shares + Minority interest + Short-term debt + Long-term debt + Other long-term liabilities

Book value = Shareholders’ equity + Minority interest + Short-term debt + Long-term debt + Other long-term liabilities

iv. Price/earnings growth ratio

The price/earnings growth ratio is used to know the relationship between the price of a shares earnings per share and the company's growth and are relevant to establish if any fluctuation occurred before and after publication of the financial statements. Kennon (2014:2) states that the earnings yield indicates how much the investor receives as a proportion of the investment. It is calculated by splitting the earnings per share by the share's market cost. However, there are limitations of ratio analysis like it does not take external factors into account.

2.4.2.7. Shortcomings of ratio analysis

Ratio analysis doesn’t take external factors into consideration such as, recessions. Using economic value added can overcome some of these shortcomings and must also be considered where the principle of economic value added is that true economic profit should be determined. This is then an indication of shareholder value, which is added or destroyed over a period.

2.4.2.8. Economic value added

Worthington *et al.* (2018:205) consider the idea that economic value added is a measure of a company's financial performance based on the surplus wealth that is determined by taking the capital cost from the operational profit after taxes.. Economic value added can also be referred to as financial profit as it aims to capture a company's real financial profit. Support for economic value added arises primarily from studies that compares the outcomes with those generated quantitative accounting measures.

Palliam (2006: 212) proposes that economic value added is strongly linked to inventory income and company valuation rather than accrual income. Mittal *et al.* (2008:118) researched the relationship between economic value added and corporate responsibility. Economic value added is regarded to be one of the most contemporary and sophisticated company instruments for measuring company efficiency. Economic value added is regarded to be one of the most contemporary and developed company instruments for measuring company efficiency based on the concept of value management. Share valuation methods must also be taken into consideration where supply and demand are being consider.

2.5. SHARE VALUATION METHODS – SHARE PRICE DETERMINATION

The share market is dominated by supply and demand. As shares are sold, the buyer and seller trade money for ownership of the shares. The current market price is determined by the price at which the share was bought. This price becomes the most recent market price when a second share is sold. Koller *et al.* (2010: 4) suggest that value is the fundamental measurement aspect in a market economy. People are investing in the assumption that when they sell, the value of each investment will have raised reasonably above its cost to reimburse them for the risk they took. Prusak (2017: 417) explains that methods of valuation of shares can be mainly classified into two primary types: absolute and relative.

2.5.1. Absolute valuation

The technique usually includes analysing multiple financial data that can be discovered in or obtained from the financial statements of a company. Several methods of absolute valuation mainly analyse the money flows, dividends and growth rates of the company. Prusak (2017: 417) explains that there are two notable techniques of absolute valuation namely the dividend discount model (DDM) where the cash flow statement is to show dividends to the shareholders and the discounted cash flow mode (DCF) where cash flow is reduced to its present value.

2.5.2. Dividend discount model (DDM)

The DDM is one of absolute valuation's fundamental methods. The DDM primarily focussed on the concept that the dividends of the company represent the cash flow of the company to its shareholders.

The model predicts that the real value of the stock price of the company is equal to the present value of potential dividends of the company. It is supposing that a company can only use the dividend discount model if it consistently provides dividends. (Koller *et al* 2010:223).

2.5.3. Discounted cash flow model (DCF)

The DCF model is another widely used method for valuing absolute inventory. According to the DCF technique, a stock's real value is determined by dividing the company's free cash flow by its present value. The DCF model's main advantage is that no assumptions

about dividend distribution are required. As a result, it is suitable for companies whose dividend distribution is unpredictable or unstable. The DCF model is powerful in terms of technology. (Koller *et al* 2010:223).

Absolute valuation depends on the basic data of the company's relative valuation compared to the investment with similar businesses.

2.5.4. Relative valuation

The relative valuation technique works with calculating the main financial ratios of comparable companies and deducing the same ratio for the target business. Relative company analysis is the best representation of relative valuation (Prusak,2017: 417).

The similar analysis is an illustration of relative share valuation. The comparable technique aims to get at the theoretical share price using the price multiples of comparable firms rather than arriving at the intrinsic value of a share using the company's fundamentals. The most frequently used multiples include price-to-earnings, price-to-book (P/B), and enterprise value to-EBITDA (EV/EBITDA).

Price-to-earnings (P/E) indicates to shareholders what a company is worth

2.5.5. Comparing market price-to-book value (P/B)

The book-to-market ratio differentiates a company's book value with market value. The asset value less the liabilities value equals the book value. The market value of a corporation is determined by dividing the number of outstanding shares by the market price of one share. A useful statistic for valuing a company for investors is the book-to-market ratio. (Prusak 2017: 420).

Enterprise value to-EBITDA (EV/EBITDA) is a valuation method to determine the fair market value of the company.

2.5.6. Comparable companies analysis

Analysing similar businesses is deemed to be one of the easiest techniques from a technical view. However, Koller *et al.* (2010:223) are of the opinion that the determination of truly similar businesses is very difficult.

2.6. VOLATILITY OF SHARE PRICES BEFORE AND AFTER PUBLICATION OF ANNUAL FINANCIAL STATEMENTS

Higgins (2009:6) and Florea (2020:3) state that the volatility of shares is misunderstood and some factors that influence volatility of share prices before and after the publication of annual financial statements are performance, liquidity, risk, solvency, asset management and cash flow ratios that highlight their relationship to share price volatility,

The market ratios shown a relationship with the risk and return, to understand the relationship better the fluctuation of beta must be analysed. The influence of a beta has an impact on the financial analysis of financial statements and the share price.

2.7. BETA: REGRESSION CO-EFFICIENT

The volatility or systematic risk in comparison to the market is measured by beta. The CAPM uses beta to explain the relationship between systematic risk and asset expected return on shares. CAPM is a frequently used model for pricing volatile securities and estimating potential returns on investments and is important to establish the influence of beta and how it potentially impacts the financial analysis of financial statements and the share price.

Chenxing (2020: 5) identifies volatility as a financial measure that tells investors how often the price of a share changes to tests consumer expectations on share potential results, beta contrasts the fluctuations in a share price to the remainder of the market to provide insight on the share output. To understand the fluctuation in the market better the influence of risk on share prices must be analysed.

2.7.1. The influence of risk on share prices

Novak (2020:5) state that risk variables (such as the price-earnings ratio or the leverage) in defining the risk of return. It is also asserted that the returns expected on companies are subjected to good market ratios. The total risk of a company's shares consists of two types of risk, systematic and unsystematic. Market-related risk is systematic risk, while the company’s specific risk is unsystematic risk. A clearer view will be given by the impact of beta on financial analyses through unsystematic risk and systematic risk.

2.7.2. Unsystematic risk

Unsystematic risk is the risks that are not shared with the market.

Unsystematic risk can be minimised by holding a diversified portfolio of inventory therefore, investors' concern is the systematic portion of risk. Systematic and unsystematic risk influence inventory prices. (Correia *et al* 2019:4-19)

2.7.3. Systematic risk

Systematic risk is the risk that is shared with the market.

Correia *et al.* (2019:4-19) and Da Fonseca (2013:302-308) explain that beta quantifies systemic risk relative to the overall market beta measures systematic risk in comparison to the entire market. The CAPM, which determines an asset's projected return based on its beta and anticipated market returns, uses beta. Investors who have diversified their holdings are only concerned with systematic risk and want a greater rate of return for shares with a higher level of systematic risk.

2.7.4. Capital asset pricing model (CAPM) theory

CAPM is the relationship between the systematic risk and expected return on assets, that is useful to calculate the expected return of an asset to determine what the relationship between the market ratios and the beta analysis is.

The risk can be calculated through the following:

The systematic risk CAPM theory (Correia *et al.*, 2019:4-20)

Ri=Rf + βi (Rm-Rf).

Where: R_i is the return on the *i*th share, Rm is the return on the market portfolio, *Rf* is the risk-free rate, ßi is the share beta. According to the CAPM model, a risk premium that rises as a company's systematic risk does should be added to the risk-free rate to estimate the return on an asset. Litwin (1995:53) illustrates how the equation or line of features may be used to evaluate the systematic risk (beta) for each company. The estimated beta is the slope of each company's characteristic section, which reflects how sensitive the inventory return is to market return and is calculated by decreasing the return against the company's inventory return.

From 1999 to 2020, Phu *et al.* (2020) studied 58 quick service and full-service restaurants' financial ratios. In all segments, it was discovered that return on investment was inversely linked with beta and significant at the threshold of 0.05. The debt to equity ratio was not significant in full-service restaurants, but it did have a strongly positive association with beta in rapid service restaurants. According to a research by Borde (1998), excessive liquidity may be a sign that resources are being invested poorly, which might lead investors to perceive risk as being higher. As a result, Phu et al. (2020) claim that there is a positive correlation between risk and quick ratio (a measure of liquidity) (beta).

Correia *et.al* (2019, 4-21) identifies the part of risk that may be spread away, unsystematic risk, is the one where investors are always susceptible to market risk. Investors won't be compensated for risk that diversification can take care of; only market risk as determined by beta is important. The measurement is known as beta. The appropriate measure of a share's market risk is its future beta, and it can be inferred from historical data that this value will be relatively consistent over time.

As beta is a linear concept, it is possible to graph a security market line (SML), which is used to display the risk-return relationship for individual shares held within a diversified portfolio, which is known as the CAPM.

Constantinos *et al.* (2014: 24) state in their research that potential influence on value on share price in which beta pricing varies with investor sentiment and that the SML is upward only during pessimistic periods. Large inflows of funds are shown into high-beta share price during bullish times, but little difference in flows between the high-beta and the low-beta inventory during negative cycles. Finally, using the possibility of informed trading, they note that traders are more interested in high share prices during beta inventory.

There is a relationship between market price, financial ratio and beta analysis on listed companies’ share prices, which is evident in all of the studies.

2.8. THE RELATIONSHIP BETWEEN MARKET PRICE, FINANCIAL RATIO AND BETA ANALYSIS ON SHARE PRICES

The impact of beta on financial analyses and share prices had been determined to find a pattern through the years to establish the influence of beta and how it potentially

influences the financial analysis of financial statements and the share price. Horngren *et al.* (2013:52) discuss that the analysis of financial statements is essential as past performance is probably an indication of future performances and the current position is the framework on which future performances will be built on. Financial ratios can be determined from any amounts collected, not only from within a set of accounts, but also from other official sources, including trade and other statistical sources. Ratios are therefore particularly relevant when a pattern or trend can be identified over the years.

Lončarski and Vidovič (2019:12) explore the systematic and reliable use of large amounts of financial statement information most generally used by financial analysts for analysing purposes in terms of comparative (multiple) analysing. The actual value of the company should be expressed in the financial statements. Lončarski and Vidovič (2019:12) converted financial statements information into unique variables with a specific economic concept, i.e. factors that can be regarded as performance drivers expressing profitability, growth opportunities and risk.

Studies from Ou and Penman (1989), as well as Piotroski (2000), and Lallemand and Strauss (2016) have shown that financial statements provide meaningful signals for a financial analyst and can be used effectively in investment strategies. Ratios appears to have a range of previous studies. Findings on an international research summary show that more than half of this research indicated that the relationship between market price, financial ratio and beta analysis on listed companies' share prices are significant. The relationship between market price, financial ratio and beta analysis on listed companies share prices is substantial, despite the limitations, such as it does not take external factors into consideration.

2.9. CHAPTER SUMMARY

The study responded to the theoretical research objectives. Qualitative and quantitative indicators are determined by market ratios used by investors to make decisions. The relationship between market ratios and beta were determined. The influence of beta and how it potentially influences the financial analysis of financial statements and the share price showed a relationship before and after publications of financial statements. Beta influences the financial analysis of financial statements and the share price as discussed in Section 2.8. The discussion in the next chapter provide important insights on the

research design and methods applied in the primary research process against this theoretical backdrop.

.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. INTRODUCTION

In the previous chapter, an overview of the literature on the relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements is given. The purpose of this chapter is to discuss the research methodology (i.e., research design and methods) used to conduct the study through looking at qualitative and quantitative methods and the research design that was used.

The focus of this chapter is to provide the research design and research methods that is used in this study. The research approach was designed with the intention to address the research problem and follow the research objectives disclosed in Chapter 1. The emphasis of this study is to analyse the market ratios relevant to the relationship between the share price, financial ratio analysis and beta analysis of listed companies before and after publication of annual financial statements and also provide possible guidelines.

Burns and Grove (2011:20) define research methodology as a combination of the research method and research design. A Research design is a plan to answer your research question, to analyse the results to see if there is fluctuation in the market ratio before and after publication. Adams *et al.* (2009:25) defined research technique as the investigation that underlies all philosophical and scientific investigations. The plan's implementation strategy is the research methodology. A solid research design makes sure that the data you acquire will help you answer your research question more effectively, therefore research design and methodologies are distinct but closely connected. Detailed techniques of data collection, analysis, and interpretation are part of a research methodology, which is a plan and procedure that starts with general hypotheses. (Zikmund *et al.* 2013:135). The two main components of the research methodology are data collecting and data analysis.

Qualitative data focusses on context and systems rather than examining or measuring in terms of size, frequency or number. According to Zikmund *et al.* (2013:135), perception and analysis are prioritised. According to De Vos *et al.* (2011:79), the primary goal of qualitative analysis is not to clarify, but to discover.

The quantitative analysis was completed after the qualitative goal of the thesis was achieved and it was used in the analytical study. Brynard *et al.* (2014:39) state that quantitative evidence is gathered by comparing things and objects. To put it another way, Welman *et al.* (2005:8) emphasise the importance of measuring and analysing the relationships between factors. According to Mouton (2011:164), quantitative analysis is preferred by an epistemological stance that uses secondary evidence that already exists. Analysis methodology, according to Burns *et al.* (2011:20), is described as "research method plus research style". Henning *et al.* (2004:36) define methodology as the importance of the sample and the reason why it was selected.

The study used a quantitative method approached. The quantitative empirical study of share prices and volumes was performed through a documentary analysis and analysis of INET BFA data where an analysis is done on different ratios. Lauren and Lawson (2018:20) conclude that documentary analysis of existing information is an effective method to provide a clear explanation of existing problems. Cassim (2014:17) demonstrates analysis on INET BFA is an indicated method to use for ratio related studies.

3.2. EPISTEMOLOGY

The Oxford English Dictionary (2019) explains epistemology" as the theory of knowledge, especially with regard to its methods, validity and scope, and the distinction between justified belief and opinion." Dawid (2013:45) and Lončarski and Vidovič (2019:65) propose that a significant extent of confidence in an empirically unverified theory could be obtained on the principle of non-empirical theory confirmation. Dawid (2013:45) and Lončarski and Vidovič (2019:65) state that non-empirical confirmation, like evidence-based confirmation is based on experimental evidence.

Nevertheless, this evidence does not fall inside the desired framework of the verified principle. In other words, it is not of the type that can be predicted by the hypothesis that it confirms. The variation between empiric and non-empiric evidence can be explained by looking at a specific example. Where knowledge can be split in to two (2) categories, empirical data that represents the truth that can be proven and non-empirical data that is the beliefs that is discussed as literature review.

In this study the quantitative empirical data were of 60 JSE-listed companies based on the market value on 31 December 2018. These companies were divided into three groups namely: high (20), average (20) and low (20) based on the market value. The market value was obtained from the INET BFA data base, on financial year-ends from January 2014 to June 2019 and selected on 31 December 2018 to obtain information from financial websites and determine relationships and correlation between share prices and relevant financial ratios.

As of 5 March 2020, the global COVID-19 virus has invaded South Africa. As the situation got worse the WHO declared the COVID-19 as a global pandemic on 11 March 2020. South Africa moved to lockdown stage five (5), shutting down all businesses except essential goods and services. The state of disaster started March 2020 and is still continuing April 2022. COVID-19 lowered economic growth and resulted in a lot of unemployment.

Jeris and Nath (2020) attempt to investigate how the spread of COVID-19 influences the UK economic. Zhang and Zhang (2020) state that the COVID-19 uncertainty on the economy and company investments. As seen from these published articles the financial situation is not comparable with other years due to the influence of COVID-19 in South Africa and globally.

Qualitative literature was aggregated and analysed from journal articles, relevant textbooks, the internet and INET BFA to determine the indicators that investors base their decisions on. Investigate reasons for volatility of share prices in companies divided into three groups namely: high (20), average (20) and low (20) based on the market value. The market value was obtained from the INET BFA data base, on financial year-ends from January 2014 to June 2019 and selected on 31 December 2018 before and after publication of annual financial statements and examine the literature to determine the relationship between share prices, market-related ratios and beta together determining what influence a beta and how it potentially influences the financial analysis of financial statements.

3.3. RESEARCH PROCESS

Mouton (2011:56) assert that research methodology must reflect on the instruments and processes to be implemented to the research, while concentrating on the individual

stages of the research method. It can then be argued that the phrase "research methodology" relates to the particular study techniques, instruments and processes used in the study process. In this study, the quantitative method was used to analyse the market ratios to the relationship between the share price, financial ration analysis and beta analysis of listed companies before and after publication of annual financial statements. Mouton (2011:56) together with Zikmund *et al.* (2013:59) identify the stages that were taken in this research process as follows in Figure 3.4:

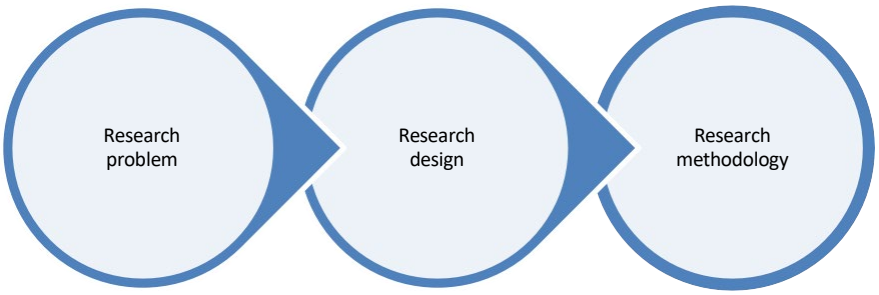

Figure 0-1: The research process

Source: Adjusted Mouton (2011) and Zikmund *et al.* (2013)

2.8.1. The research problem

The Oxford English Dictionary (2019) explains research as "systematic analysis and study of documents and sources in order to create facts and achieve fresh conclusions". Milsom and Coughlin (2015:5-14) argue that research is a detailed investigation method that involves obtaining, recording, evaluating and interpreting data by implementing appropriate analysis methodologies. On the basis of these definitions, the following meaning of the word "research" can derived as a continuous gathering, recording, evaluation and analysis of data that allows the investigator to do so. Bless *et al.* (2006:29) suggest that the research problem is often articulated as a particular issue about the connection between variables. Welman *et al.* (2005:13) reason that a research problem should be closely identified in order to adjust the aim to a particular topic that is specific enough to be carefully studied. Greener (2011:27) concludes that the research problem should state precisely what the research will accomplish and that the aim should be

returned to the study. The concept of the research problem can be illustrated like in Figure 3-5.

Figure 0-2: The research problem

Source: Greener (2011)

Figure 3-5 show the research problem that state precisely what the research will accomplish and what the aim should be returned to the study through questions that complete the research problem and makes it complete (Greener, 2011).

The aim of this study is, as it was outlined in Chapter 1, to analyse the relationship between financial ratios and beta analysis, before and after the publication of annual financial statements". The relationship, similarities and possible indicators between share prices, market-related ratios and beta and possible deviations and reasons between market ratios and beta for the selected JSE-listed companies were analysed.

Using Figure 3-5 as a guideline, the aim of the study was to analyse the market ratios relevant to the relationship between the share price, financial ratio analysis and beta analysis of listed companies before and after publication of annual financial statements by applying the steps. Table 3-1 illustrates the research problem and attempts to give an in-depth context and clarity of the research problem by answering, analysing, focussing and establishing the relevance of the research problem

Table 0-1: Research problem

Question	Application
Answerable	Can the indicators be determined on what investors base their decision on? Reasons for volatility of share prices before and after publication of annual financial statements. What is the relationship between share prices, market-related ratios and beta?
Analytical	A statistical analysis can be done to determine the relationship between share prices, market-related ratios and beta. Statistical correlation can be done between market ratios and beta for the selected JSE-listed companies and identify possible deviations. Identify similarities and identify possible indicators which impacts market ratios, beta and share price.
Focussed	The focus is on the analysis of related financial ratios and beta analysis before and after the publication of annual financial statements.
Relevant	The research is relevant because there is volatility among the behaviour of share price in relation to ratios and therefore the necessity occurred for further research on the impact of publication of financial statements on the share price and market value ratios.

Source: Chapter 2-4

The research problem can now be better understood and be addressed after more clarity was given on the research problem by answering the questions in Table 3.1.

2.8.2. Research design

The research design looks at the method to make the research problem more logical and properly addressed. McMurray (2007:11) remarks that a number of research methods have been adopted from different researchers. Brynard *et al.* (2014:8) explain that a specific field of study is often related to contradictory research designs because of the different approaches that is researched and given a broader view. Kumar (2014:11) illustrates that the purpose of the various types of studies is to determine how suitable a particular research method is by identifying and answering the research issues. The research design used in this study is based on the aim and goal of analysing market ratios fluctuation before and after publication of financial statements. Zikmund *et al.* (2013:52) together with Babbie (2013:42-43), Mouton (2011:56) conclude that there are three kinds of analysis that is frequently used namely: exploratory and descriptive research where the topic at hand is described or defined as analytical and interpretive research Both quantitative and qualitative methods, such as interviews with open-ended questions, observations described in words, and literature reviews that explore concepts, are used in applied and basic research to try to solve a particular problem. Quantitative methods

use experiments, observations that are recorded as numbers, and surveys with closed-ended questions. Below, we'll go into further detail on each.

2.8.2.1. Exploratory approach and descriptive research

Kumar (2014:13) states that exploratory and descriptive research is the most appropriate form of studies that has not been researched a lot. Neuman (2006:33) and Zikmund *et al.* (2013:52) conclude that the exploratory research is generally the first stage in the research process. Exploratory and descriptive research are done to clarify uncertain circumstances to reveal possible opportunities or to justify the actions that need to be taken for a particular outcome (Zikmund 2013:53). Cavana *et al.* (2001:108) surmise that there is a clear understanding of the complexity of issues examined by research like the data that are collected and contribute to the development of the theory.

2.8.2.2. Quantitative and qualitative research

Leedy and Ormrod (2014:101) subject that conventional, experimental or objectivist strategies to research are called quantitative research. Bless *et al*. (2006:44) further point out that research is of a qualitative nature where vocabulary, terms and sentences are used. Zhou (2010:223) contests that quantitative research succeeds in the recognition of statistically significant relationships between variables. Correspondingly, Adams *et al.* (2009:26) concluded that quantitative research is performed by statistical analysis. Quantitative analysis is performed where empirical statistics are evaluated to find associations between variables that can be applied to samples. The analysis of ratios in the study obtained from INET BFA made use of the quantitative research that are evaluated in Chapter 4.

2.8.2.3. Applied and basic research

Bless *et al.* (2006:44) demonstrate that applied research is carried out when a study is concerned with approaching a unique question posed by a given population. Applied research generally relates to the use of the fundamental results of study to address significant issues. Durrheim *et al.* (2006:45) explain that this research is useful to improve decision-making and problem-solving. Kumar (2014:10) states that this also includes the development of critically difficult ideas and concepts to create practical solutions for specific problems.

2.8.3. Research methodology

A research methodology refers to the technique used to collect and analyse the data (Colin, 2014:6). The research methodology is discussed under the following headings: population of the study, sampling method and frame, data collection, data analysis, validity and reliability of data and finally ethical considerations.

2.8.3.1. Population of the study

The target population consists of all JSE-listed companies excluding mining and financial sectors due to the different treatment of certain accounting principles. INET BFA was used for the analysis. INET BFA has ten (10) JSE primary and secondary industries, with defined sectors under each of these ten (10) industries. These industries are categorised as basic materials, consumer goods, consumer services, financials, health care, industrials, oil and gas, technology, telecommunications and utilities. Table 3-2 shows the primary industries used in this study.

Table 0-2: Industry abbreviation

Industry	Abbreviation
Industrials	IND
Chemicals	CHEM
Oil + Gas	O&G
Consumer goods	CG
Technology	TECH
Consumer services	CS
Telecommunications	TC
Utilities	UT

Source: JSE (2019)

The target population consists of all JSE-listed companies n=193x excluding basic materials (mining) and financial sectors due to the different treatment of certain accounting principles for financial year-ends from January 2014 to June 2019. Barac *et al.* (2010:19) and De Villiers (2012:12) together with Robbetze (2015:31) successfully used the top 40 JSE-listed companies with the exclusion of basic materials (mining), health care and financial sectors as a sufficient sample for a meaningful result. A market ratio analysis and a beta analysis of all the companies were done on share prices before and after publishing their financial statements were compiled with data obtained by INET BFA.

The next paragraph discusses the sample method and frame that was used in the study.

2.8.3.2.Sampling method and frame

Sampling is the process of drawing the units of analysis from the larger target population (Fox & Bayat, ,2007:6). Sampling can be classified into two groups as explained by Fink (1995:9) namely, probability sampling and non-probability sampling. Bless *et al.* (2006:100) together with Adams *et al.* (209:89) discuss that probability sampling happens when it is possible to assess the probability of including a population variable in the survey. Probability sampling guarantees that each member of the population has a fair probability of being chosen. Robbetze (2015:87) together with Fink (1995:10-15), Bless *et al.* (2006:101-105), Greener (2011:62-64), Kumar (2011:203) explain that there are four methods of probability sampling: random sampling, systematic sampling, stratified sampling and cluster sampling.

i. Simple random sampling

Robbetze (2015:88), Fink (1995:1 0-17), Bless *et al.* (2006:101-105), Greener (2011:62-64) state that this concept is based on the principle that all prejudices will be omitted before a sample is chosen. It offers a fair and impartial platform for all the components to be chosen, which underpins the idea that there should be no prejudice. It is performed on a “random” basis, which means that there are no collection parameters. It is the most common method of sampling used for the use of probability sampling. Computers are typically used to pick unique items or persons from a population.

ii. Systematic sampling

Robbetze (2015:88) supports Fink (1995:10-17), Bless *et al.* (2006:101-105), and Greener (2011:62-64) in that systematic sampling involves selecting a randomised base point. The elements are chosen manually from the start point. An illustration of this may include the collection of every fifth unit of measure. This is identical to simple random sampling, however, it allows the researcher to apply judgement.

iii. Stratified sampling

Stratified sampling is done by splitting the population into divisions with attributes that are important to the analysis (Robbetze, 2015:88; Fink, 1995:10-17; Bless *et al.*., 2006:101-105; Greener, 2011:62-64). Such attributes that include age, class, race or some other significant characteristics. Every division is randomly sampled in the chapter. Stratified sampling is more accurate than mere random sampling as sampling may be related to the study issue. (Robbetze, 2015:88)

iv. Cluster sampling

Robbetze (2015:88) together with Fink (1995:10-17), Bless *et al.* (2006:101-105), Greener (2011:62-64) subjects that large-scale surveys employ cluster sampling. Classes are divided up in the sample. Clusters are selected at random, and the survey includes every component inside the selected cluster. The cost and amount of time needed to collect data can be reduced via cluster sampling.

None of these probability sampling methods are useful for this study because knowledge must be obtained from the target population and that can be done by non-probability sampling.

v. Non-probability sampling

Non-probability sampling is explained by Uprichard (2013:3) as sampling that is always about the knowledge that was obtained from the target population but to “extend and deepen existing knowledge about the sample”. Bless, Higson-Smith and Kagee (2006:106) explain that with a non-probability sampling the selection probability of the sample is unknown and discusses that there are four basic types of non-probability sampling: convenience sampling, snowball sampling, quota sampling and focus groups. Convenience sampling was used for this study. Greener (2011: 65-67) concludes that convenience sampling is limited to a part of the population that is easily accessible. While Kumar (2011:203) states that there are four categories of non-probability sampling: convenience sampling, snowball sampling, quota sampling and focus groups.

- Convenience sampling

Convenience sampling is where the units or elements that are easily available are used. This is a realistic way of choosing a sample from a large population since it restricts the sample to a subset of the population that can be readily obtained.

- Snowball sampling

Snowball sampling happens as previously identified community members recognise other members of the population. The downside of this approach is that it generates a biased sample and that the analyst has no influence over the choices. This approach may be extended to social science studies, where sampling can be difficult.

- Quota sampling

Sampling quotas includes the division of the population into subgroups such as age, class, ethnic background, etc. The sample is then chosen on the basis of the proportions of subgroups needed to represent the proportions of the population. This approach is known to be a non-probable stratified sampling analogue.

- Focus groups

Groups of 12 to 20 people shall be chosen to serve as members of the community. There is no credible proof that the sample community would be worthy of representing the features of the larger population. However, this approach is helpful to direct the development of the survey. In this study public information were used from a reliable internet source INET BFA that does not use human contact as ethics is not approved for human contact.

After careful consideration of all the options available it was decided to apply non-probability convenience and quota sampling as it would be the most appropriate sample method for this study. Non-probability convenience sampling was chosen as the selection is done because the data are easy accessible and available of information as Swanepoel (2017:10) and Greener (2011:65) illustrate in their research.

Quota sampling was used to select the 60 JSE-listed companies for the study, which was divided into 20 high, 20 average and 20 low listed companies. The companies were sorted according to market capitalisation on 31 December 2018. The study was conducted in 2018 and therefore the financial statements were used when the study first started. The companies' year-ends, however, may differ and any month can be chosen to compare the market. The selection is done because the data are easy accessibility and availability of information. Barac *et al.* (2010:19) and De Villiers (2012:12) supported by Robbetze (2015:31) demonstrate that the top 40 JSE-listed companies are a sufficient sample size. This study, however, make use of a sample of 60 JSE-listed companies, based on market capitalisation, which can be classified as high, medium and low valued companies.

In the Table 3-3 the sample companies are categorised in high, medium and low valued companies as discussed in Chapter 3.

Table 0-3: The sample companies- divided in high, medium, and low

#	JSE code	Company name	Market capitalisation 31 December 2018 Rmil
High 20			
1	ANH	Anheuser-Busch InBev South Africa	1 618 690,00
2	NPN	Naspers Limited -N-	1 268 710,00
3	BTI	British American Tobacco Plc	1 152 770,00
4	CFR	Compagnie Fin Richèmont	488 853,00
5	VOD	Vodacom Group Limited	242 334,00
6	MTN	MTN Group Limited	167 700,00
7	SHP	Shoprite Holdings Limited	112 443,00
8	BCR	Bid Corporation Limited	88 882,12
9	PPH	Pepkor Holdings Limited	72 415,50
10	BVT	Bidvest Limited	69 858,92
11	MRP	Mr Price Group Limited	63 247,19
12	WHL	Woolworths Holdings Limited	57 757,10
13	TBS	Tiger Brands Limited	51 968,63
14	CLS	Clicks Group Limited	48 618,41
15	SPP	The Spar Group Limited	39 964,99
16	TFG	The Foschini Group Limited	39 358,45
17	TRU	Truworths International Limited	39 005,96
18	AVI	Avi Limited	35 855,09
19	PIK	Pick n Pay Stores Limited	33 441,13
20	TKG	Telkom SA SOC Limited	32 350,07
Medium 20			
1	ADR	Adcorp Holdings Limited	2145,215 709
2	ARH	ARB Holdings Limited	1269,000 000
3	AVV	Alviva Holdings Limited	2652,635 339
4	CAT	Caxton and CTP Publishers and Printers Limited	3150,995 312
5	CGR	Calgro M3 Holdings Limited	1542,496 993
6	CIL	Consolidated Infrastructure Group Limited	1423,402 384
7	CMH	Combined Motor Holdings Limited	1667,336 535
8	COM	Comair Limited	2440,520 498
9	ENX	enX Group Limited	2221,142 131
10	GSH	Grindrod Shipping Holdings Limited	1436,650 454
11	HUG	Huge Group Limited	1413,797 969
12	KAL	Kaap Agri Limited	2560,357 962
13	LEW	Lewis Group Limited	2904,544 113
14	MDI	Master Drilling Group Limited	1531,528 542
15	NT1	Universal electronic payment system technologies Incorporation	2832,780 284
16	NVS	Novus Holdings Limited	1417,824 463
17	OAO	Oando Public Company	2486,282 496
18	RBX	Raubex Group Limited	3089,750 612
19	SDO	Stadio Holdings Limited	2853,821 088
20	SUR	Spur Corporation Limited	2419,124 649

Table 0-4: The sample companies- divided in high, medium, and low (cont.)

	JSE code	Company name	Market cap 31 December 2018
Low 20			
1	ACE	Accentuate Limited	68 289 432
2	AHL	All joy foods Proprietary Limited	18 355 199
3	AOO	African and Overseas Enterprises Limited	22 825 000
4	AOVP	African & Over Enterprise Limited	27 500 000
5	BIK	Brikor Limited	58 071 782
6	BSR	Basil Read Holdings Limited	59 813 225
7	CAC	CAFCA Limited	52 020 000
8	CATP	Caxton and CTP Publishers and Printers	9 500 000
9	ESR	Esor Limited	14 819 453
10	GRF	Group Five Limited	22 451 656
11	ILE	Imbalie Beauty Limited	27 680 784
12	MRI	Mine Restoration Investment Limited	25 885 698
13	NCS	Nictus Limited	46 889 580
14	PEM	Pembury Lifestyle Group Limited	60 942 720
15	PMV	Primeserv Group Limited	80 558 273
16	RTO	Rex Trueform Group Limited	66 833 515
17	SVB	SilverBridge Holdings	41 737 766
18	TCS	Total Client Services Limited	4 901 346
19	TLM	TeleMaster Holdings Limited	48 300 000
20	WEA	W G Wearne Limited	8 291 796

Source: INET BFA

The table above categorised the sample of 60 JSE-listed companies based on market capitalisation on 31 December 2018.

3.4. DATA COLLECTION METHOD

Qualitative data were collected from the literature as well as quantitative data from the JSE on INET BFA. Qualitative literature that uses non-numerical data were aggregated and analysed from journal articles, relevant textbooks, the internet and INET BFA to determine the indicators that investors base their decisions on. The quantitative data selection that uses numbers and statistical analysis was based on accessibility and availability as argued by Barac *et al.* (2010:19), Greener (2011:65), De Villiers (2012:12) together with Robbetze (2015:31) and Swanepoel (2017:10) whom successfully used the top 40 JSE-listed companies. This study used 60 companies, evenly spread across high, average and low value for a more diverse sample. The sample excluded mining and financial sectors due to the different treatment of certain accounting principles as illustrated by Barac *et al.* (2010:19), Greener (2011:65), De Villiers (2012:12) and Robbetze (2015:31).

Companies are divided into three (3) groups namely: high (20), average (20) and low (20) based on the market cap. The market value was obtained from the INET BFA data base, on financial year-ends from January 2014 to June 2019 and selected on 31 December 2018 before and after publication of annual financial statements and examine the literature to determine the relationship between share prices, market-related ratios and beta together determining the influence of a beta and how it potentially influences the financial analysis of financial statements.

The sample size and the population of this study were consequently equal because it differentiated between high, average and low companies that strengthen the research findings by comparing same size companies with each other, because the entire population except mining and financial sectors was investigated as part of the research sample.

Validity is associated with accuracy, reliability is all about consistency A consistent method is followed through the analysis of the data by using data from INET BFA database with accuracy that makes the results validated and reliable.

3.5. DATA ANALYSIS

Validation and reliability are a very important part of this study. Chabala (2014:21), successfully used 20 days to analyse share price volatility for a more comprising result one month will be significant. Leedy and Ormrod (2001:252) state that while conducting quantitative research, the researcher examines numerical data in an effort to understand a behavior. Three (3) statistical techniques were employed in this investigation.

- The degree and direction (positive or negative) of the association between two variables may be summarized using Spearman's correlation between share price, financial ratio analysis, and beta analysis before and after publishing. The result is always between 1 and minus 1.

  Hauke and Kossowski (2011:1) state that the Spearman rank correlation coefficient is a non-parametric rank statistic that Charles Spearman devised as a method for evaluating the strength of a link between two variables. It is a monotone association measure applied to scattered data. Without assuming anything about

the probability distribution of the variables, it assesses how effectively an objective simple linear function can describe a correlation between the two variables.

- An ANOVA analysis to find out if the ratios results are significant to see if there is a difference between ratios and beta before and after publication. McHugh (2011:7) states that ANOVA analysis has long been an effective resource for researchers to carry out experiments on several sample groups and one or more controls. Therefore, it is crucial to choose the test that fits the data, the type of group comparison information and the appropriate power of the analysis.

- Regression analysis examines the relationship between market ratios and beta before and after publications. Amstrong (2012:6) stated that the prediction based on regression is most powerful when it comes to a limited number of factors, huge numbers of reliable results, when significant and routine adjustments are expected and where well-established usage is evident. Analysis of regression provides an objective and systematic way of analysing data. Therefore, decisions based on regression are less likely to be skewed, it is logical and the reason for the judgements can be thoroughly clarified and typically, they are useful.

The information was obtained from INET BFA, which is a reliable source that publish all JSE-listed companies published financial statement on the internet. The INET BFA data base is reputable as concluded by Cassim (2014:4), Chabala (2014:127), Philander (2015: 120) and Swart (2018:7).

Based on Chapter 2 a clear indication is given of what market ratios according to the literature review should be used to analyse the data. These selected ratios obtained from INET BFA on the list of 60 JSE-listed companies that were divided into the three groups high (20), average (20) and low (20) based on the market value on 31 December 2018. Ratios were calculated on financial year-ends from January 2014 to June 2019 JSE-listed companies after publication.

Data were collected from INET BFA for the 60 JSE-listed companies that were divided into the three groups high (20), average (20) and low (20) based on the market value on 31 December 2018. Ratios were calculated on financial year-ends from January 2014 to June 2019. The data obtained were sorted in 20 days before publication of the annual financial statements (-20), day of publication (0) and 20 days after publication of the

annual financial statements (+20) for the selected 60 companies. It was calculated for each year (2014–2019) and then for the three time points within each year (-20, 0, 20). Table 3-3 shows all the companies that were selected, and Table 3-4 shows all the ratios that were applied on these companies at three different points during a financial year. Some ratios only have amounts on year-end because the volatility of these ratios only happens once a year and not on a monthly basis. Please refer to Annexure 1 for the amounts relating to each company.

Table 0-5: Ratio's used on specific time periods

Ratio	Period the ratios was taken		
Altman	20 days before publication (-20)	Year-end (0)	20 days after publication (+20)
Beta	20 days before publication (-20)	Year-end (0)	20 days after publication (+20)
Share price	20 days before publication (-20)	Year-end (0)	20 days after publication (+20)
Dividend yield	20 days before publication (-20)	Year-end (0)	20 days after publication (+20)
Earnings yield	20 days before publication (-20)	Year-end (0)	20 days after publication (+20)
Price per earnings	20 days before publication (-20)	Year-end (0)	20 days after publication (+20)
Current ratio		Year-end (0)	
Dividend per share		Year-end (0)	
Dividend cover		Year-end (0)	
Earnings per share		Year-end (0)	
PE-Growth%		Year-end (0)	
Economic value added		Year-end (0)	
Financial leverage multiplier		Year-end (0)	
Share price-to-book value		Year-end (0)	
Return on assets		Year-end (0)	
Return on equity		Year-end (0)	
Du Pont		Year-end (0)	

Some ratios are not done on a monthly basis and use information that is gathered in a years' time. Therefore, some ratios could only be tested yearly.

Source: INET BFA

3.6. VALIDITY AND RELIABILITY OF DATA

The information was obtained from INET BFA, which is a reliable source that publish all JSE-listed companies published financial statement on the internet. The INET BFA data base is reputable as concluded by Cassim (2014:4), Chabala (2014:127), Philander (2015: 120) and Swart (2018: 7). This acknowledges the validity and reliability of the data and point out specific ethical criteria.

The chapter offers details of the terms used when the analysis was done. Refer to Table3-4, illustrating the test problem, the nature of the analysis, how the study sample was chosen and how the data were gathered and analysed as discussed in the previous chapters.

3.7. ETHICAL CONSIDERATIONS

Research must be done ethically to pertain right and wrong in conduct. This study can be seen as a minimal risk study because secondary data from the public domain obtained from INETBFA were used. INET BFA is a reliable public internet site that has been used in past studies like Robbetze (2015) and Cassim (2014). The study was approved by the EMS-REC, which issued the ethic clearance number: NWU-0115-19A4.

3.8. CHAPTER SUMMARY

This chapter explained the research methodology applied in this study. Starting with the epistemology followed by an explanation of the quantitative method with the purpose to make it simple for the reader of this study. By addressing the quantitative method attention was given to explain how it addresses the specific problem whether any fluctuation happen in the market ratios before and after publication. The target population and sample to be used in this study were specified, indicating the criteria used to select the sample. Data were collected from the reputable INET BFA database, for the 60 JSE-listed companies that were divided into the three groups high (20), average (20) and low (20) based on the market value on 31 December 2018. Ratios were calculated on financial year-ends from January 2014 to June 2019 because COVID-19 restricted the economy (Susmitha,2020). The quantitative analysis was completed after the qualitative goal of the thesis was achieved and it was used in the analytical study. This study can be seen as a minimal risk study because secondary data from the public domain obtained

from INET BFA was used. In the next chapter, the study's research findings are provided and in-depth analyzed..

CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS

4.1. INTRODUCTION

In this chapter the data analysis answers the problems statement, which was to determine what the relationship between the market ratios and the beta analysis before and after the publication of annual financial statements according to market ratios was on financial year-ends from January 2014 to June 2019 and selected on 31 December 2018 and also the primary objective of this study as discussed in Chapter 1. The primary objective is to analyse the relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements. The primary objective is supported by the empirical objectives as set out in Chapter 1.

- Perform a statistical analysis to determine the relationship between share prices, market-related ratios and beta.

- Analyse market ratio and beta to see how the relationship between share price and ratios before and after the publication of financial statements differ.

These empirical objectives are achieved by conducting a quantitative method research as explained in Chapter 3. Qualitative and quantitative indicators were determined on market analysis that investors make their decisions on and also the reasons why qualitative and quantitative factors influence the volatility of share prices before and after publication of annual financial statements The following statistical methods, as discussed in Chapter 3, were applied to achieve these empirical objectives:

- Spearman's correlation between share price, financial ratio analysis and beta analysis before and after publication to summarise the strength and direction (negative or positive) of the relationship between two variables with a result always being between one (1) and minus one (-1).
- ANOVA analysis to find out if the ratios results are significant to see if there's a difference between ratios and beta before and after publication.
- Regression analysis examine the relationship between market ratios and beta before and after publications.

The statistical information was obtained by using the IBM SPSS Statistics 27 software package. Statistical analysis was applied to the 60 JSE-listed companies as identified in

Chapter 3. The market capitalisation was selected on the 31 December 2018 and accordingly sorted, see Table 3.3.

The chapter looks at how the data were obtained from financial statements; the data were transformed to fit the ratios to organise the empirical data so the results could be obtained. Figure 4-1 illustrates the unfolding of the results.

Figure 0-1: Unfolding of empirical data

Source: Gouws and Lucouw 1999

The unfolding of empirical data as illustrated in Figure 4-1 start at the financial statements of a company where data are transformed to get empirical findings that gives a result to discuss.

Transformation of data: Transformation of data is the process of converting data from one format to another, from the format of the financial statements into the required statistical analysis.

Organisation of empirical data: Data have to be managed in an orderly way so it can be interpreted correctly.

Results: The results of your statistical analyses help to understand and conclude the problem statement.and conclude the findings.

4.2. FINANCIAL STATEMENTS

As mentioned in Chapter 2, the financial statements can be used by various users with varying intentions. Such actions can be customised to achieve a desired outcome. Consequently, consumers can turn the data they provide into usable knowledge using separate data from the financial statements. Gouws and Lucouw (1999:100-107) stated that the numbers are drawn and the relation between the numbers and the real economy

must be known to make a significant and meaningful conclusion since financial data are in itself complicated because it could be consisting of hidden words. Gouws and Lucouw (1999:108) remark that the role of analyses of the financial statements in the decision-making process is to transform important relationship results, expressed as ratio. This cycle is also called creation:

- Report income reporting accordingly.
- May be used as a preliminary screening tool in investment opportunity selection.
- Future stock market modelling tool, financial environment and risk and efficiency.
- Management and strategic diagnosis
- Tool for benchmarking
- Cognitive assistance to reduce dependence on mere hunches, assumptions and instincts.

In this study the main period is it has to be over a six (6) year period so a trend can be analysed: Financial statements data drawn from the 1st of January 2014 to the 31st of December 2019.

4.3. TRANSFORMATION OF DATA

Data transformation is the process of converting data from one format to another, from the format of the financial statements into the required statistical analysis. The study results analyses start with the correlation investigation during 2014. Market ratios were on the financial year-ends from January 2014 to June 2019 and selected on 31 December 2018. The market capitalisation was selected on the 31 December 2018 and accordingly sorted in Table 3.3.

The data had to be converted prior to the application of statistical methods. Variables have been mathematically modified to allow statistical methods to be implemented effectively, as transformation allows data to best assess statistical analysis. Statistical research can only be done after following these parametric methods. The data are sorted in 20 days before publication of the annual financial statements (-20), day of publication (0) and 20 days after publication of the annual financial statements (+20) for the selected 60 companies.

4.4. ORGANISATION OF EMPIRICAL FINDINGS

Data have to be managed in an orderly way so it can be interpreted correctly. Bless *et al.* (2006:3) and Chenxing (2020:9) claim that empirical approaches are only justified, because they are factually valid and reliable and that research is empirical in nature when knowledge is composed by the observations made and out of this reliable data a conclusion can be made. The purpose of this study is to analyse the relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements. Therefore, the statistical analyses were structured in an informative manner to provide information as follows:

- Identified the applicable year for analysis — The information was obtained from INET BFA of the selected 60 listed companies for a six-year period as information are available for financial year-ends from January 2014 to June 2019.
- Transform data — Data were transformed into natural logarithmic format.
- Spearman's correlation — between share price, financial ratio analysis and beta analysis before and after publication.
- ANOVA analysis — To find out if the ratios results are significant to see if there is a difference between ratios and beta before and after publication.
- Regression analysis — Examines the relationship between market ratios and beta before and after publications.
- Interpreted final result — Analyse the relationship between the market ratios and beta analysis.

Measurements are performed on 60 JSE-listed companies consisting of 20 high, 20 average and 20 low listed companies sorted by market ratio as previously discussed in Chapter 3.

4.5. RESULTS

The results of your statistical analyses help to understand and conclude the problem statement and whether or not the quantitative analysis had a correlation and had a relation.

3.5.1. Descriptive statistics

Descriptive statistics were used to describe the fundamental characteristics of data. The descriptive statistics give a clear result of the data that were used. Descriptive statistics forms the foundation of this quantitative data analysis.

The correlation between share price and different ratios (Variables) beta and share price , dividend yield , earnings yield and price per earnings that forms part of the market value ratios that were analysed. A relation was expected to be observed between share price and the different variables.

In the next paragraph the Spearman's correlation and the different variables are statistical analysed.

3.5.2. Spearman's correlation

Spearman's correlation is calculated between beta and share price, dividend yield , Earnings yield , and price per earnings (PE). This correlation was calculated for each year (2014–2019) and then for the three (3) time points (periods) within each year. The data were sorted in 20 days before publication of the annual financial statements (-20), day of publication (0) and 20 days after publication of the annual financial statements (+20) for the selected 60 companies. The reported values are the correlation coefficient, p-value and the number of companies at each period and expressed as n-value. The n-value is going to be different because some companies were delisted and some became JSE-listed after 2014. Refer to Annexure 1 — Data collection based on the 60 companies at market capitalisation as of 31 December 2018. Correlation coefficient value is interpreted as an effect size as follows:

- close to | 0.1 | small effect/relationship between variables;
- close to | 0.3 | medium effect/relationship between variables; and
- close to | 0.5 | and greater, large effect/relationship between variables

3.5.2.1. Correlations among variables

The correlation between share price and different ratios (variables) that forms part of the market value ratios were analysed. It is expected to see a correlation between the share price and the variables.

Table 0-1: Relationship between dividend yield and share price

Time point			-20			0			20		
			Spearman's rho			Spearman's rho			Spearman's rho		
			SP			SP			SP		
			Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N
Year	2014	DY	0.332*	0,016	52	.324*	0,018	53	0.341*	0,013	53
	2015		0,192	0,163	54	0,167	0,228	54	0,223	0,105	54
	2016		0,182	0,187	54	0,183	0,186	54	0,228	0,097	54
	2017		0,196	0,14	58	0,242	0,067	58	0,233	0,079	58
	2018		0,111	0,408	58	0,184	0,167	58	0,174	0,19	58
	2019		0,151	0,258	58	0,149	0,263	58	0,194	0,145	58

Source: Annexure B

The significant norm is 0.05. Table 4-1 indicates for 2014 the correlation coefficient was for all periods greater than 0.3 that indicates an insignificant relationship between dividend yield and the share price . For 2015 the correlation coefficient was for all periods greater than 0.1, which indicates an insignificant relationship between dividend yield and the share price. For 2016, the correlation coefficient was for all periods greater than 0.1, which indicates an insignificant relationship between dividend yield and the share price. The correlation coefficient for 2017 was for all periods greater than 0.1, which indicates an insignificant relationship between dividend yield and the share price. For 2018 the correlation coefficient was for all periods greater than 0.1, which indicates an insignificant relationship between dividend yield and the share price. For 2019 the correlation coefficient was for all periods greater than 0.1, which indicates an insignificant relationship between dividend yield and the share price. The share price influences the dividend yield as one of the market ratios that fluctuate before and after publications.

Table 0-2: Relationship between earnings yield and share price

Time point			-20			0			20		
			Spearman's rho			Spearman's rho			Spearman's rho		
			SP			SP			SP		
			Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N
Year	2014	EY	0,082	0,557	53	0,052	0,71	53	-0,017	0,905	53
	2015		-0,077	0,58	54	-0,158	0,255	54	-0,024	0,865	54
	2016		0,002	0,989	54	0,012	0,929	54	0,032	0,819	54
	2017		0,035	0,793	58	0,098	0,463	58	0,022	0,871	58
	2018		0,054	0,685	58	0,002	0,987	58	-0,039	0,772	58
	2019		0,139	0,297	58	0,161	0,226	58	0,175	0,189	58

Source: Annexure B

Table 4-2 indicates that for 2014 the correlation coefficient for all period was smaller than 0.1, which indicates a very insignificant relationship between earnings yield and the share price . For 2015 the correlation coefficient for all periods were smaller than 0.1, which indicates a very insignificant relationship between earnings yield and the share price. For 2016 the correlation coefficient for all periods were smaller than 0.1, which indicates a very insignificant relationship between yearnings yield and the share price. For 2017 the correlation coefficient for all periods were smaller than 0.1, which indicates a very insignificant relationship between earnings yield and the share price. For 2018 the correlation coefficient for all periods were smaller than 0.1, which indicates a very insignificant relationship between earnings yield and the share price. For 2019 the correlation coefficient for all periods were smaller than 0.1, which indicates a very insignificant relationship between earnings yield and the share price. The share price influences the earnings yield as one of the market ratios that fluctuate before and after publications.

Table 0-3: Relationship between price per earnings and share price

Time point			-20			0			20		
			Spearman's rho			Spearman's rho			Spearman's rho		
			SP			SP			SP		
			Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N
Year	2014	PE	0.547**	0	53	0.547**	0	53	0.554**	0	53
	2015		0.596**	0	54	0.505**	0	54	0.568**	0	54
	2016		0.467**	0	54	0.510**	0	54	0.499**	0	54
	2017		0.595**	0	58	0.592**	0	58	0.598**	0	58
	2018		0.552**	0	58	0.605**	0	58	0.665**	0	58
	2019	EY	0.543**	0	58	0.533**	0	58	0.525**	0	58

Source**:** Annexure B

Table 4-3 indicates that for 2014 the correlation coefficient for all periods were greater than 0.5, which indicates a large relationship between price per earnings and the share price. For 2015 the correlation coefficient for all periods were greater than 0.5, which indicates a large relationship between price per earnings and the sphere price. For 2016 the correlation coefficient was very near 0.5 for 20 days before the publication date and 20 days after the publication date period. On publication date the relationship was greater than 0.5., which indicates a large relationship between price per earnings and the share price. For 2017 the correlation coefficient was for all period greater than 0.5, which indicate a large relationship between price per earnings and the share price. For 2018 the correlation coefficient for all periods were greater than 0.5, which indicates a large relationship between price per earnings and the share price. For 2019 the correlation coefficient for all period were greater than 0.5, which indicates a large relationship between price per earnings and the share price. The share price influences the price per earnings as one of the market ratios that fluctuate before and after publications.

3.5.2.2. Correlation and p-value

The correlation between the p-value and the market ratios are being analysed for the whole period of the study (2014–2019). It is expected to see a correlation between the p-value and the market ratios.

Table 0-4: Correlation and p-value between market ratios on year-end 2014

		Spearman's rho		
		SP		
		Correlation Coefficient	Sig. (2-tailed)	N
2014	**CR**	0,241	0,082	53
	DE D:E	0,154	0,269	53
	DPS	0.840**	0	53
	DC	0,043	0,76	53
	EPS	0.801**	0	53
	PE growth PE-growth%	0,119	0,397	53
	EVA	0.826**	0	53
	SPBV SP:BV	0.516**	0	53
	ROA	0.523**	0	53
	ROE	0.461**	0,001	53
	DuPont Du Pont	0.405**	0,003	53

Source: Annexure B

Table 4-4 indicates that the current ratio for the 2014 correlation coefficient was greater than 0.1, which indicates an insignificant relationship between current ratio and the share price. The p-value is less than 0.5, which indicates a significant relationship. The dividend to equity of 2014, the correlation coefficient was greater than 0.1, which indicates an

insignificant relationship between dividend to equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. The correlation coefficient of dividend per share was smaller than 0.1, which indicates a very insignificant relationship between dividend per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Regarding dividend cover, the correlation coefficient was smaller than 0.1, which indicates a very insignificant relationship between dividend cover and the share price. The p-value is more than 0.5, which indicates no significant relationship. Earnings per share the correlation coefficient was higher than 0.5, which indicates a large relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship.

Price per earnings growth the correlation coefficient was higher than 0.1, which indicates an insignificant relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Economic value added the correlation coefficient was higher than 0.5, which indicates a large relationship between economic value added and the share price. The p-value is less than 0.5, which indicates a significant relationship. The correlation coefficient was higher than 0.5 with the share price-to-book value, which indicates a large relationship between share price-to-book value and the share price. The p-value is less than 0.5, which indicates a significant relationship. Regarding return on asset, the correlation coefficient was higher than 0.5, which indicates a large relationship between return on asset and the share price. The p-value is less than 0.5, which indicates a significant relationship. With return on equity the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. With the Du Pont analysis, the correlation coefficient was higher than 0.3, which indicates a medium relationship between the Du Pont analysis and the share price. The p-value is less than 0.5, which indicates a significant relationship The p-value indicates a relationship before and after publications.

Table 0-5: Correlation and p-value between market ratios on year-end 2015

		Spearman's rho		
		SP		
		Correlation Coefficient	Sig. (2-tailed)	N
2015	**CR**	0,072	0,605	54
	DE D:E	0,145	0,296	54
	DPS	0.808**	0	54
	DC	-0,028	0,84	54
	EPS	0.856**	0	54
	PE growth PE-growth%	0,034	0,807	54
	EVA	0.814**	0	54
	SPBV SP:BV	0.681**	0	54
	ROA	0.464**	0	54
	ROE	0.469**	0	54
	DuPont Du Pont	0.580**	0	54

Source: Annexure B

Table 4-5 indicates that with the current ratio of 2015 the correlation coefficient was smaller than 0.1, which indicates a very insignificant relationship between current ratio and the share price. The p-value is more than 0.5, which indicates a little significant relationship. The correlation coefficient of dividend to equity of 2015 was greater than 0.1, which indicates an insignificant relationship between dividend to equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. Regarding dividend per share, the correlation coefficient was larger than 0.5, which indicates a large relationship between dividend per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. With dividend cover the correlation coefficient was smaller than 0.1, which indicates a very insignificant relationship between dividend cover and the share price. The p-value is more than 0.5, which indicates no significant relationship. Regarding earnings per share, the correlation coefficient was higher than 0.5, which indicates a large relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. The correlation coefficient was lower than 0.1 of the price per earnings growth, which indicates a very insignificant relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Regarding economic value added, the correlation coefficient was higher than 0.5, which indicates a large relationship between economic value added and the share price. The p-value is less than 0.5, which indicates a significant relationship. With the share price-to-book value the correlation coefficient was higher than 0.5, which indicates a large relationship between share price-

to-book value and the share price. The p-value is less than 0.5, which indicates a significant relationship.

The correlation coefficient of return on asset was higher than 0.3, which indicates a medium relationship between return on asset and the share price. The p-value is less than 0.5, which indicates a significant relationship. Regarding return on equity, the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. Du Pont analysis indicated the correlation coefficient was higher than 0.5, which shows a high relationship between the Du Pont analysis and the share price. The p-value is less than 0.5, which indicates a significant relationship. The p-value indicates a relationship before and after publications for 2015.

Table 0-6: Correlation and p-value between market ratios on year-end 2016

		Spearman's rho		
		SP		
		Correlation Coefficient	Sig. (2-tailed)	N
2016	CR	0,085	0,54	54
	DE D:E	0,181	0,19	54
	DPS	0.778**	0	54
	DC	-0,094	0,497	54
	EPS	0.744**	0	54
	PE growth PE-growth%	0,156	0,259	54
	EVA	0.826**	0	54
	SPBV SP:BV	0.740**	0	54
	ROA	0.472**	0	54
	ROE	0.400**	0,003	54
	DuPont Du Pont	0.485**	0	54

Source: Annexure B

Table 4-6 indicates that with the current ratio of 2016 the correlation coefficient was smaller than 0.1, which indicates a very insignificant relationship between current ratio and the share price. The p-value is more than 0.5, which indicates a little significant relationship. The dividend to equity of 2016, the correlation coefficient was greater than 0.1, which indicates an insignificant relationship between dividend to equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. The correlation coefficient of the dividend per share was larger than 0.5, which indicates a large relationship between dividend per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. The correlation coefficient of dividend cover was smaller than 0.1, which indicates a very insignificant relationship between

dividend cover and the share price. The p-value is less than 0.5, which indicates a significant relationship.

Regarding earnings per share, the correlation coefficient was higher than 0.5, which indicates a large relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Price per earnings growth the correlation coefficient was higher than 0.1, which indicates an insignificant relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Economic value added the correlation coefficient was higher than 0.5, which indicates a large relationship between economic value added and the share price. The p-value is less than 0.5, which indicates a significant relationship. Share price-to-book value the correlation coefficient was higher than 0.5, which indicates a large relationship between share price-to-book value and the share price. The p-value is less than 0.5, which indicates a significant relationship. Return on asset the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on asset and the share price. The p-value is less than 0.5, which indicates a significant relationship. Regarding return on equity the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. The correlation coefficient was higher than 0.3 with the Du Pont analysis, which indicates a medium relationship between the Du Pont analysis and the share price. The p-value is less than 0.5, which indicates a significant relationship. The p-value indicates a relationship before and after publications for 2016.

Table 0-7: Correlation and p-value between market ratios on year-end 2017

		Spearman's rho		
		SP		
		Correlation Coefficient	Sig. (2-tailed)	N
2017	CR	0,116	0,385	58
	DE D:E	0,022	0,869	58
	DPS	0.797**	0	58
	DC	0,005	0,971	58
	EPS	0.800**	0	58
	PE growth PE-growth%	0,152	0,255	58
	EVA	0.790**	0	57
	SPBV SP:BV	0.725**	0	58
	ROA	0.534**	0	58
	ROE	0.461**	0	58
	DuPont Du Pont	0.523**	0	58

Source: Annexure B

Table 4-7 indicates that the current ratio of 2017 for the correlation coefficient was larger than 0.1, which indicates a small relationship between current ratio and the share price. The p-value is less than 0.5, which indicates a significant relationship. Dividend to equity of 2017 for the correlation coefficient was smaller than 0.1, which indicates a very small relationship between dividend to equity and the share price. The p-value is more than 0.5, which indicates a very small significant relationship. Dividend per share the correlation coefficient was larger than 0.5, which indicates a large relationship between dividend per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Dividend cover the correlation coefficient was smaller than 0.1, which indicates a very small relationship between dividend cover and the share price. The p-value is bigger than 0.5, which indicates no significant relationship. Earnings per share the correlation coefficient was higher than 0.5, which indicates a large relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Price per earnings growth the correlation coefficient was higher than 0.1, which indicates an insignificant relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Economic value added the correlation coefficient was higher than 0.5, which indicates a large relationship between economic value added and the share price. The p-value is less than 0.5, which indicates a significant relationship. Share price-to-book value the correlation coefficient was higher than 0.5, which indicates a large relationship between share price-to-book value and the share price. The p-value is less than 0.5, which indicates a significant relationship.

Return on asset the correlation coefficient was higher than 0.5, which indicates a large relationship between return on asset and the share price. The p-value is less than 0.5, which indicates a significant relationship. With regard to return on equity the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. With the Du Pont analysis, the correlation coefficient was higher than 0.5, which indicates a large relationship between the Du Pont analysis and the share price. The p-value is less than 0.5, which indicates a significant relationship. The p-value indicates a relationship before and after publications for 2017.

Table 0-8: Correlation and p-value between market ratios on year-end 2018

		Spearman's rho		
		SP		
		Correlation Coefficient	Sig. (2-tailed)	N
2018	CR	0,082	0,543	58
	DE D:E	0,041	0,758	58
	DPS	0.772**	0	58
	DC	-0,098	0,464	58
	EPS	0.737**	0	58
	PE growth PE-growth%	0,048	0,721	58
	EVA	0.775**	0	58
	SPBV SP:BV	0.728**	0	58
	ROA	0.434**	0,001	58
	ROE	0.331*	0,011	58
	DuPont Du Pont	0.429**	0,001	58

Source: Annexure B

Table 4-8 indicates that the current ratio of 2018 for the correlation coefficient was smaller than 0.1, which that indicates a very small relationship between current ratio and the share price. The p-value is more than 0.5, which indicates a little significant relationship. Dividend to equity of 2018, the correlation coefficient was smaller than 0.1, which indicates a very small relationship between dividend to equity and the share price. The p-value is more than 0.5, which indicates a very small significant relationship. Dividend per share the correlation coefficient was larger than 0.5, which indicates a large relationship between dividend per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Dividend cover the correlation coefficient was smaller than 0.1, which indicates a very small relationship between dividend cover and the share price. The p-value is bigger than 0.5, which indicates no significant relationship.

Earnings per share the correlation coefficient was higher than 0.5, which indicates a large relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Price per earnings growth the correlation coefficient was smaller than 0.1, which indicates an insignificant relationship between earnings per share and the share price. The p-value is more than 0.5, which indicates a no significant relationship. Economic value added the correlation coefficient was higher than 0.5, which indicates a large relationship between economic value added and the share price. The p-value is less than 0.5, which indicates a significant relationship. Share price-to-book value the correlation coefficient was higher than 0.5, which indicates a large relationship between share price-to-book value and the share price. The p-value is less than 0.5, which indicates a significant relationship. Return on asset the correlation

coefficient was higher than 0.3, which indicates a medium relationship between return on asset and the share price. The p-value is less than 0.5, which indicates a significant relationship. With return on equity the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. With the Du Pont analysis the correlation coefficient was higher than 0.3, which indicates a medium relationship between the Du Pont analysis and the share price. The p-value is less than 0.5, which indicates a significant relationship. The p-value indicates a relationship before and after publications for 2018.

Table 0-9: Correlation and p-value between market ratios on year-end 2019

		Spearman's rho		
		SP		
		Correlation Coefficient	Sig. (2-tailed)	N
2019	CR	0,168	0,206	58
	DE D:E	0,063	0,639	58
	DPS	0.785**	0	58
	DC	-0,022	0,868	58
	EPS	0.739**	0	58
	PE growth PE-growth%	0,218	0,101	58
	EVA	0.779**	0	58
	SPBV SP:BV	0.777**	0	58
	ROA	0.447**	0	58
	ROE	0.313*	0,017	58
	DuPont Du Pont	0.377**	0,003	58

Source: Annexure B

Table 4- 9 indicates that the current ratio for 2019 of the correlation coefficient was bigger than 0.1, which indicates a small relationship between current ratio and the share price. The p-value is less than 0.5, which indicates a significant relationship. Dividend to equity of 2019 for the correlation coefficient was smaller than 0.1, which indicates a very small relationship between dividend to equity and the share price. The p-value is more than 0.5, which indicates a very small significant relationship. Dividend per share the correlation coefficient was larger than 0.5, which indicates a large relationship between dividend per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Dividend cover the correlation coefficient was smaller than 0.1, which indicates a very small relationship between dividend cover and the share price. The p-value is bigger than 0.5, which indicates no significant relationship. Earnings per share the correlation coefficient was higher than 0.5, which indicates a large relationship between earnings per share and the share price. The p-value is less than 0.5, which

indicates a significant relationship. Price per earnings growth the correlation coefficient was larger than 0.1, which indicates a small relationship between earnings per share and the share price. The p-value is less than 0.5, which indicates a significant relationship. Economic value added the correlation coefficient was higher than 0.5, which indicates a large relationship between economic value added and the share price. The p-value is less than 0.5, which indicates a significant relationship. Share price-to-book value the correlation coefficient was higher than 0.5, which indicates a large relationship between share price-to-book value and the share price. The p-value is less than 0.5, which indicates a significant relationship.

Return on asset the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on asset and the share price. The p-value is less than 0.5, which indicates a significant relationship. Return on equity the correlation coefficient was higher than 0.3, which indicates a medium relationship between return on equity and the share price. The p-value is less than 0.5, which indicates a significant relationship. With the Du Pont analysis the correlation coefficient was higher than 0.3, which indicates a medium relationship between the Du Pont analysis and the share price. The p-value is less than 0.5, which indicates a significant relationship. The p-value indicates a relationship before and after publications for 2019.

3.5.3. Analysis of variance (ANOVA)

ANOVA is used to compare differences of means among more than two groups. If the differences between the means are greater than 0,05 (5%) it is significant. The means of 2014 till 2019 were calculated for beta, share price, dividend yield, earnings yield and share price per earnings. In Table 4-10 – 4-15 the ANOVA analysis is relevant to see if there are fluctuations in the ratios before and after publication.

Table 0-10: ANOVA 2014

Ratio	Time point	N	Mean	Std. Deviation	Effect Size	
					-20	0
Beta	-20	52	0,29	0,38		
	0	52	0,29	0,36	0,01	
	20	53	0,64	2,81	0,13	0,12
SP	-20	53	8777,23	19056,94		
	0	53	9024,06	19942,63	0,01	
	20	53	10169,49	21530,92	0,06	0,05
DY	-20	52	2,54	1,46		
	0	53	2,51	1,54	0,02	
	20	53	2,51	1,48	0,02	0,00
EY	-20	53	-3,25	56,55		
	0	53	-2,24	55,75	0,02	
	20	53	-1,37	55,67	0,03	0,02
PE	-20	53	14,09	21,88		
	0	53	18,33	34,94	0,12	
	20	53	13,84	19,89	0,01	0,13
Beta	-20	52	0,29	0,38		
	0	52	0,29	0,36	0,01	
	20	53	0,64	2,81	0,13	0,12
SP	-20	53	8777,23	19056,94		
	0	53	9024,06	19942,63	0,01	
	20	53	10169,49	21530,92	0,06	0,05
DY	-20	52	2,54	1,46		
	0	53	2,51	1,54	0,02	
	20	53	2,51	1,48	0,02	0,00
EY	-20	53	-3,25	56,55		
	0	53	-2,24	55,75	0,02	
	20	53	-1,37	55,67	0,03	0,02
PE	-20	53	14,09	21,88		
	0	53	18,33	34,94	0,12	
	20	53	13,84	19,89	0,01	0,13

Source: Annexure B

Table 4-10 indicated that the beta for 2014 only shows significant differences for the 20 days after publication because it is bigger than 0.05. The share price, dividend yield and earnings yield do not show any differences because the differences are smaller than 0.05. Only price per earnings show a relationship before publication and after publication for 2014.

Table 0-11: ANOVA 2015

Ratio	Time point	N	Mean	Std. Deviation	Effect Size	
					-20	0
Beta	-20	53	0,29	0,34		
	0	53	0,28	0,35	0,02	
	20	54	0,29	0,32	0,00	0,02
	Total	160	0,29	0,33		
SP	-20	54	15293,00	34386,09		
	0	54	13623,39	32218,93	0,05	
	20	54	13689,26	33665,90	0,05	0,00
	Total	162	14201,89	33236,48		
DY	-20	54	2,57	1,55		
	0	54	2,59	1,69	0,01	
	20	54	2,66	1,67	0,05	0,04
	Total	162	2,61	1,63		
EY	-20	54	-4,32	67,62		
	0	54	-2,98	70,60	0,02	
	20	54	-4,47	68,56	0,00	0,02
	Total	162	-3,92	68,51		
PE	-20	54	20,18	28,85		
	0	54	19,70	29,17	0,02	
	20	54	19,51	29,12	0,02	0,01
	Total	162	19,79	28,87		

Source: Annexure B

Table 4- 11 indicates that the beta, share price, dividend yield, earnings yield and price per earnings do not show any significant differences for 2015. There is not a relationship before and after publication for 2015.

Table 0-12: ANOVA 2016

Ratio	Time point	N	Mean	Std. Deviation	Effect Size	
					-20	0
Beta	-20	53	0,25	0,41		
	0	53	0,32	0,31	0,19	
	20	54	0,31	0,33	0,15	0,04
	Total	160	0,29	0,35		
SP	-20	54	14151,13	36949,06		
	0	54	13889,91	36325,92	0,01	
	20	54	14245,93	37496,57	0	0,01
	Total	162	14095,65	36697,18		
DY	-20	54	2,81	1,95		
	0	54	2,78	1,87	0,02	
	20	54	2,82	1,89	0	0,02
	Total	162	2,81	1,89		
EY	-20	54	-50,35	355,43		
	0	54	-51,24	361,68	0	
	20	54	-57,4	396,63	0,02	0,02
	Total	162	-53	369,38		
PE	-20	54	72,17	446,9		
	0	54	72,56	451,24	0	
	20	54	13,15	35,29	0,13	0,13
	Total	162	52,63	366,02		

Source: Annexure B

Table 4- 12 indicates that beta for 2016 show only significant differences before and after publication and on the publication date. Share price, dividend yield and earnings yield do not show any significant differences. Price per earnings only show significant differences between publication and after publication.

Table 0-13: ANOVA 2017

Ratio	Time point	N	Mean	Std. Deviation	Effect Size	
					-20	0
Beta	-20	57	0,26	0,39		
	0	57	0,24	0,37	0,06	
	20	57	0,19	0,32	0,18	0,12
	Total	171	0,23	0,36		
SP	-20	58	11366,87	36307,63		
	0	58	13586,5	38973,76	0,06	
	20	58	13704	40164,86	0,06	0
	Total	174	12885,79	38307,75		
DY	-20	58	2,52	1,65		
	0	58	2,42	1,6	0,06	
	20	58	2,49	1,66	0,02	0,04
	Total	174	2,48	1,63		
EY	-20	58	-3,56	67,2		
	0	58	-7,26	73,61	0,05	
	20	58	-5,47	69,97	0,03	0,02
	Total	174	-5,43	69,92		
PE	-20	58	12,99	38,48		
	0	58	13,12	38,37	0	
	20	58	13,89	38,52	0,02	0,02
	Total	174	13,33	38,24		

Source: Annexure B

Table 4- 13 indicates that the beta for 2017 shows only significant differences for the 20 days after publication and on the publication date. Share price, dividend yield, earnings yield and share price per earnings do not show any significant differences.

Table 0-14: ANOVA 2018

Ratio	Time point	N	Mean	Std. Deviation	Effect Size	
					-20	0
Beta	-20	58	0,35	0,82		
	0	58	0,15	0,9	0,22	
	20	57	0,33	0,74	0,03	0,2
	Total	173	0,28	0,82		
SP	-20	58	14070,88	46143,66		
	0	58	14792,48	51845,71	0,01	
	20	58	14310,24	47648,78	0,01	0,01
	Total	174	14391,2	48325,13		
DY	-20	58	2,66	1,95		
	0	58	2,6	1,99	0,03	
	20	58	2,68	1,89	0,01	0,04
	Total	174	2,65	1,93		
EY	-20	58	-0,71	177,29		
	0	58	-2,4	184,02	0,01	
	20	58	-25,5	319,81	0,08	0,07
	Total	174	-9,54	235,25		
PE	-20	58	18,18	35,68		
	0	58	15,96	40,86	0,05	
	20	58	12,38	29,23	0,16	0,09
	Total	174	15,51	35,45		

Source: Annexure B

Table 4-14 indicates that the beta for 2018 only shows significant differences for the 20 days after the publication date. Share price, dividend yield and earnings yield do not show any significant differences. Price per earnings only show significant difference 20 days after the publication date.

Table 0-15: ANOVA 2019

Ratio	Time point	N	Mean	Std. Deviation	Effect Size	
					-20	0
Beta	-20	58	0,3	0,56		
	0	58	0,11	1,05	0,18	
	20	58	0,21	1,13	0,09	0,08
	Total	174	0,21	0,95		
SP	-20	58	13841,24	47668,68		
	0	58	14251,64	48419,57	0,01	
	20	58	13139,78	46360,23	0,01	0,02
	Total	174	13744,22	47217,39		
DY	-20	58	2,85	2,1		
	0	58	2,86	2,07	0	
	20	58	2,8	2,15	0,02	0,02
	Total	174	2,84	2,1		
EY	-20	58	-36,36	173,85		
	0	58	-37,31	175,95	0,01	
	20	58	-31,85	163,69	0,03	0,03
	Total	174	-35,17	170,27		
PE	-20	58	13,35	14,73		
	0	58	13,01	14,54	0,02	
	20	58	12,01	15,81	0,08	0,06
	Total	174	12,79	14,96		

Source: Annexure B

Table 4-15 indicates that the beta, share price, dividend yield, earnings yield and share price per earnings do not show any significant differences for 2019.

3.5.4. Beta analysis

The beta analysis with the share price was done to measure the market risk and if it will remain fairly stable over time the over the period (2014–2019) and if there is a relationship before and after publication.

Table 0-16: Relationship between share price and beta

		Time point	-20			0			20		
			Spearman's rho			Spearman's rho			Spearman's rho		
			SP			SP			SP		
			Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N
Year	2014	Beta	0.614**	0	52	0.563**	0	52	0.536**	0	53
	2015		0.571**	0	53	0.463**	0	53	0.520**	0	54
	2016		0.446**	0,001	53	0.330*	0,016	53	0.262	0,055	54
	2017		0.405**	0,002	57	0.379**	0,004	57	0.562**	0	57
	2018		0.229	0,083	58	0.249	0,059	58	0.125	0,353	57
	2019		0.199	0,134	58	0.297*	0,024	58	0.212	0,109	58

Source: Annexure B

Table 4-16 indicates that for 2014 the correlation coefficient for all periods were greater than 0.5, which indicates a large relationship between beta and the share price. For 2015 the correlation coefficient was greater than 0.5 for 20 days before the publication date and 20 days after the publication date period and on the publication date there was a 0.5 correlation coefficient, which indicates a large relationship between beta and the share price. For 2016 the correlation coefficient was for 20 days before correlation and on the publication date it was greater than 0.3, which indicates a medium relationship between beta and the share price. For 2017 the correlation coefficient was 20 days before correlation and on the publication date it was greater than 0.3, which indicates a medium relationship between beta and the share price and for 20 days after publication it was greater than 0.5, which indicates a large relationship between beta and the share price. For 2018 the correlation coefficient was for all periods greater than 0.1, which indicates a small relationship between beta and the share price. For 2019 the correlation coefficient was for all periods greater than 0.1, which indicates a small relationship between beta

and the share price. There is a relationship between beta and share price from 2014–2019 before and after publication.

4.6. DISCUSSION OF RESULTS

The discussion's goal is to explain any new knowledge or insights that resulted from your investigation, as well as to evaluate and convey the importance of your findings in light of the research challenge and previous knowledge. Robbetze (2015:190) used the two-tailed test to proof a 99% significance.

3.6.1. Two-tailed t-test

A two-tailed test determines if the analysis done is in range of values by using a two-sided critical area of a distribution. Two-tailed tests evaluate significance at the 5% level, which means each side of the distribution is clipped at 2.5%.
If the p-value is less than 0.05, it means that there is a statistically significant relationship between the two variables and that analysis of this study are significant.

Table 0-17: P-value between beta and share price

Time point			-20		0		20	
			SP		SP		SP	
			Sig. (2-tailed)	N	Sig. (2-tailed)	N	Sig. (2-tailed)	N
Year	2014	Beta	0	52	0	52	0	53
	2015		0	53	0	53	0	54
	2016		0,001	53	0,016	53	0,055	54
	2017		0,002	57	0,004	57	0	57
	2018		0,083	58	0,059	58	0,353	57
	2019		0,134	58	0,024	58	0,109	58

Source: Annexure B

Table 4-17 indicates that for 2014 the p-value was for all periods less than 0.5, which indicates a significant relationship between beta and the share price. For 2015 the p-value was for all periods less than 0.5, which indicates a significant relationship between beta and the share price. For 2016 the p-value was for only for 20 days after publication a little bit more than 0.5, which still indicates a significant relationship between beta and the share price. For 2017 the p-value was for all periods less than 0.5, which indicates a significant relationship between beta and the share price.

For 2018 the p-value was for all periods more than 0.5, which indicates a no significant relationship between beta and the share price. For 2019 the p-value was for 20 days

before and after publication date period more than 0.5, which indicates a no significant relationship between beta and the share price. The conclusion about the p-value is that there is definitely a significant relationship between beta and the share price.

Table 0-18: P-value between share price and dividend yield

Time point			-20		0		20	
			SP		SP		SP	
			Sig. (2-tailed)	N	Sig. (2-tailed)	N	Sig. (2-tailed)	N
Year	2014	DY	0,016	52	0,018	52	0,013	53
	2015		0,163	53	0,228	53	0,105	54
	2016		0,187	53	0,186	53	0,097	54
	2017		0,14	57	0,067	57	0,079	57
	2018		0,408	58	0,167	58	0,19	57
	2019		0,258	58	0,263	58	0,145	58

Source: Annexure B

Table 4-18 indicates that for 2014 the p-value was for all periods less than 0.5, which indicates a significant relationship between dividend yield and the share price. For 2015 the p-value was for all periods more than 0.5, which indicates a no significant relationship between dividend yield and the share price. For 2016 the p-value was more than 0.5 for all periods, which indicates a no significant relationship between dividend yield and the share price. For 2017 the p-value was for all period more than 0.5, which indicates a no significant relationship between dividend yield and the share price. For 2018 the p-value was for all periods more than 0.5, which indicates a no significant relationship between dividend yield and the share price. For 2019 the p-value was for all periods more than 0.5, which indicates a no significant relationship between dividend yield and the share price. The conclusion about the p-value is that there is not a significant relationship between dividend yield and the share price.

Table 0-19: P-value between share price and earnings yield

Time point			-20		0		20	
			SP		SP		SP	
			Sig. (2-tailed)	N	Sig. (2-tailed)	N	Sig. (2-tailed)	N
Year	2014	EY	0,557	52	0,71	52	0,905	53
	2015		0,58	53	0,255	53	0,865	54
	2016		0,989	53	0,929	53	0,819	54
	2017		0,793	57	0,463	57	0,871	57
	2018		0,685	58	0,987	58	0,772	57
	2019		0,297	58	0,226	58	0,189	58

Source: Annexure B

Table 4-19 indicates that for 2014 the p-value was for all periods less than 0.5, which indicates a significant relationship between earnings yield and the share price. For 2015 the p-value was for all periods less than 0.5, which indicates a significant relationship between earnings yield and the share price. For 2016 the p-value was for all periods less than 0.5, which indicates a significant relationship between earnings yield and the share price. For 2017 the p-value was for all periods less than 0.5, which indicates a significant relationship between earnings yield and the share price. For 2018 the p-value was for all period less than 0.5, which indicates a significant relationship between earnings yield and the share price. For 2019 the p-value was for all periods less than 0.5, which indicates a significant relationship between earnings yield and the share price. The conclusion about the p-value is that there is not a significant relationship between earnings yield and the share price.

Table 4-20: P-value between share price and shares per earnings

Time point			-20		0		20	
			SP		SP		SP	
			Sig. (2-tailed)	N	Sig. (2-tailed)	N	Sig. (2-tailed)	N
Year	2014	PE	0	52	0	52	0	53
	2015		0	53	0	53	0	54
	2016		0	53	0	53	0	54
	2017		0	57	0	57	0	57
	2018		0	58	0	58	0	57
	2019		0	58	0	58	0	58

Source: Annexure B

Table 4-20 indicates that for 2014 the p-value was for all periods less than 0.5, which indicates a significant relationship between share price per earnings and the share price. For 2015 the p-value was for all periods less than 0.5, which indicates a significant relationship between share price per earnings and the share price. For 2016 the p-value was for all period less than 0.5, which indicates a significant relationship between share price per earnings and the share price. For 2017 the p-value was for all periods less than 0.5, which indicates a significant relationship between share price per earnings and the share price. For 2018 the p-value was for all period less than 0.5, which indicates a significant relationship between share price per earnings and the share price. For 2019 the p-value was for all periods less than 0.5, which indicates a significant relationship between share price per earnings and the share price. The conclusion about the p- value is that there is definitely a significant relationship between share price per earnings and the share price. The data that were used were evenly spread and were significant.

3.6.2. Correlation analysis

The conclusion about the correlation is that there is definitely a relationship between dividend yield and the share price for all the identified years. The conclusion about the correlation is that there is a very small relationship between earnings yield and the share price for all the identified years. The conclusion about the correlation is that there is a large relationship between price per earnings and the share price for all the identified years. The correlation between the share price and the different variable market ratios showed a relationship that indicates a relationship before and after publication of financial statements.

3.6.3. Analysis of variance (ANOVA)

Only beta and share price per earnings show in some years a significant difference. Therefore, it is seen that the ANOVA test did not show any significant differences between mean from the time period December 2014–December 2018. It indicates that not many statistical differences appeared before and after publication of the financial statements.

3.6.4. Beta analysis

The conclusion about the correlation is that there is definitely a relationship between beta and the share price for all the identified years. That indicates a relationship before and after publication of financial statements.

4.7. CHAPTER CONCLUSION

The data were collected and the following statistical analysis was done. The correlation coefficient, p-value, ANOVA, beta and two-tailed test. The correlation coefficient showed a relationship before and after publication of financial statements, p-value showed relationship before and after publication of financial statements, ANOVA did not show any significance; beta showed a relationship before and after publication of financial statements and the two-tailed test showed that the data were in the range that was used. Taken all the above conclusions it reveal that there is strong relationship between the market ratios and share price of the 60 selected companies consisting of 20 high, 20 average and 20 low listed companies sorted by market price with a significant relationship between the market ratios, beta and share price with little differences between the data.

The conclusion and recommendations of this study are discussed in the next chapter.

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1. INTRODUCTION

Data from the samples that was being evaluated were gathered in the previous chapter with the intention of analyzing and interpreting the data. The goal of this chapter is to summarize the findings from the applied interpretations. Under the investigation in this study is whether raw data can be extracted from financial statements and analysing market ratios fluctuation before and after publication of financial statements. This chapter revisits the study's objectives to determine if the targets have been met as indicated in Chapter 1. In Chapter 2 a literature review was conducted to address the research problem in order to achieve the secondary research objectives. The research methodology was discussed in Chapter 3, while Chapter 4 discussed the research findings and Chapter 5 concludes the study and makes some recommendations.

5.2. RESEARCH OBJECTIVES

The primary objectives of this study were to analyse the relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements. This section revisits the objectives as determined in Chapter 1, in order to determine if the theoretical and empirical objectives were achieved. To achieve the primary goal, the following secondary objectives were set in Chapter 1. The theoretical objectives are as follows:

- Investigate the historical background on the development of financial ratio analysis as discussed in Chapter 2.
- Determine qualitative and quantitative indicators that influence investors decisions as discussed in the literature review of Chapter 2.
- Identifying the commonly used financial ratio analysis methods discussed in the literature review of Chapter 2.
- Identifying the share valuation methods discussed in the literature review of Chapter 2.

- Investigate reasons how qualitative and quantitative factors influence the volatility of share prices before and after publication of annual financial statements as discussed in Chapter 2.

- Determine what influence and potential impact beta on the financial analysis of financial statements and the share price will have, as analysed in Chapter 4 and Annexure A with the conclusion that there is an influence.

- Determine the relationship between market ratios and beta on share price as analysed in Chapter 4 and Annexure A with the conclusion that there is a relationship.

The following empirical objectives were formulated in Section 1.3.2:

- Perform a statistical analysis to determine the relationship between share prices, market-related ratios and beta as in Chapter 4 and Annexure A with the conclusion that there is a relationship.

- Analyse to see how the relationship between share price and ratios before and after the publication of financial statements as in Chapter 4 and Annexure A with the conclusion that there is a relationship.

The theoretical and empirical objectives were formulated in order to address the problem statement.

4.2.1. Theoretical objectives

This section demonstrates how each of these theoretical objectives were attained in support of the primary objective.

Theoretical objective 1 — Investigate the historical background on the development of financial ratio analysis.

Financial ratios have been developed throughout the history to strengthen the outcomes.

Theoretical objective 2 — Determine qualitative and quantitative indicators that influence investors' decisions.

Determine quantitative indicators that influence investors' decisions to use a quantitative method to analyse the study.

Theoretical objective 3 — Identifying the commonly used financial ratio analysis methods.

Identifying the commonly used financial ratio analysis methods to find the most relevant ratios to be useful in the study. The market ratios were used.

Theoretical objective 4 — Identifying the share valuation methods.

Identifying the share valuation methods to use the most suitable methods to determine if there is a relationship before and after publication of financial statements.

Theoretical objective 5 — Investigate the historical background on the development of financial ratio analysis.

Theoretical objective 6 — Investigate reasons how qualitative and quantitative factors influence the volatility of share prices before and after publication of annual financial statements.

Investigate reasons why qualitative and quantitative factors influence the volatility of share prices before and after publication of annual financial statements for investors' decision-making.

Theoretical objective 7 — Determine what influence and potential impact beta will have on the financial analysis of financial statements and the share price as analysed.

Determine what influence and potential impact beta has on the financial analysis of financial statements and the share price was analysed to determine the risk there is for the investors.

Theoretical objective 8 — Analyse to see how the relationship between share price and ratios before and after the publication of financial statements differ.

The analyses that were done showed a relationship between share price and ratios before and after the publication of financial statements

4.2.2. Empirical objectives

This section demonstrates how each of these empirical objectives were attained in support of the primary objective.

Empirical objective 1 — Perform a statistical analysis to determine the relationship between share prices, market-related ratios and beta.

The statistical analysis to determine the relationship between share prices, market-related ratios and beta analyses was done, which indicated a relationship between share price and ratios before and after the publication of financial statements

Empirical objective 2 — Analyse to see how the relationship between share price and ratios before and after the publication of financial statements differ.

The analyses that were done showed a relationship between share price and ratios before and after the publication of financial statements.

5.3. PROBLEM STATEMENT

The problem statement has also been addressed through achieving the theoretical and empirical research that there is a fluctuation between the market ratios and the beta analysis before and after the publication of annual financial statements according to market ratios.

5.4. OVERVIEW — SUMMARY OF PREVIOUS CHAPTERS

The purpose of this chapter is to provide a summary of the research and explain how each of the research goals of this thesis were accomplished. Recommendations have been made to researchers, investors and other investors affected with regard to which investors should consider the category of beta and market ratios.
In Chapter 1 the analysis was ready with an answer concerning problem statements.

Chapter 2 can be tied up by summarising the literature review performed, it was noticed that determination of ratios went as far back as 300 BC. Chapter 2 evaluated qualitative and quantitative market valuation from which investors base their choices on, examine the explanations why qualitative and quantitative considerations affect the performance of share prices before and after the publication of the annual financial reports, assess the

relationship between the market ratios and the beta and evaluate the effect of the beta and the impact the financial analysis has on financial statements and the share price.

The purpose of Chapter 3 was to define the study problem and to explain how the problem was constructed. The research involved the choice of exploratory research and the use of secondary data. Credibility and accuracy were obtained through a target population of 60 JSE-listed companies. Consisting of 20 high, 20 average and 20 low listed companies sorted by market price. Data were collected from a reputable INET BFA database, the JSE website.

Chapter 4 illustrated the various methods used in the research. Including a quantitative method obtained from secondary data. An exploratory form of study was practical implemented despite the minimal research done with a view to have a deeper understanding of this research problem.

5.5. LIMITATIONS OF THIS STUDY

The limitations of the study are those elements of the approach that affected how your research's findings were understood and may be improved.
The limitations and shortcomings of the study can be indicated as follows:

- The study's limitation was due to lack of financial reporting details. This limitation was resolved by the acquisition of data over a continuous five-year duration to find a trend for the companies and discover any changes in the trend.
- The research assessed statistical relationships between the market ratios and beta of the 20 high, 20 medium and 20 low companies based on the company’s market cap listed on the JSE. Therefore, the generalisability of the results to other companies and countries is limited.
- Under the literature review, the report used 2014–2019 financial information. Empirical results may be changed if financial information were to be analysed over much longer periods.
- Adapt a model to accurately understand the fluctuation of market ratios before and after annual financial statements.

5.6. AREAS OF FUTHER STUDIES

Further studies are required to support the South African stakeholder's companies to accurately understand the fluctuation of market ratios before and after annual financial statements by designing an adapted model.

The primary objective has been achieved when the literature was considered against previous research and the objectives of this study that was outlined in Chapter 1 to analyse the relationship between the market ratios and beta analysis of listed companies before and after publication of annual financial statements.

The conclusion of this study was based on the data analysis of the 60 JSE selected companies (high, medium and low market cap). This illustrated that there is a relationship in the fluctuations of the market ratios and beta before and after publications at the company's annual published financial statements. Using different market ratios and beta intensify the effectiveness of the results.

5.7. RECCOMADATIONS

The financial ratios which are a basis of evidence are found in the annual reports. Where financial statements have separate goals like statement of financial positions gives balances as at a specific period of time and the statement of comprehensive income and statement of cash flow is over a period of time. To allow the interpretations to be more relevant, quarterly financial statements can be used rather than annual statement to identify any deviation at the earliest moment.

A larger study can also be conducted where random companies can be picked and their financial statement can be analysed.

Instead of using the market ratio as an indication for selecting companies share price can be used as basis for the selection of the companies to analyse.

5.8. CONCLUSION AND CLOSING REMARKS

The purpose of this chapter was to provide an overview of the study and discuss how the research objectives of this study were achieved and conclude on it. After the correlation

and ANOVA test have been conducted the study found a relationship between market ratios and beta before and after publishing of annual financial statements. The results of this analysis are reliable and constant with the findings of prior studies. The findings of the study indicate that there is a relationship between share prices, market-related ratios and beta. The research question of the analysis was also answered by the achievement of the primary objective.

REFERENCE LIST

Adams, J., Khan, H.T.A., Reaside, R. & White, D. 2009. *Research methods for graduate business and social science students*. Singapore: Sage.

Al-Ajmi, J. 2008. Audit and reporting delays: evidence from an emerging market. *Advances in Accounting*, 24(2):217-266.

Alexander, D. & Nobes, C. 2014. *Financial accounting: an international introduction.* 2nd ed. Sydney: Pearson Education.

Altman, E.I. & Hotchkiss, E. 2006. *Corporate financial distress and bankruptcy: predict and avoid bankruptcy, analyse and invest in distress debt*. 3rd ed. New York: Wiley.

Altman, E.I. 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23(4):589-610.

Anis, C., Dalea, I. & Cican, S. 2012. Performance measurement through financial indicators. *Annals of University of Craiova, Faculty of Economics and Business Administration*, 1(40):89-94.

Anjum, S. 2012. Business bankruptcy prediction models: a significant study of the Altman's Z-score model. *Asian Journal of Management Research*, 3(1):212-219.

Arkan, T. 2016. The importance of financial ratios in predicting stock price trends: a case study in emerging markets. *Wydawnictwo Naukowe Uniwersytetu Szczecińskiego,* 79(1):13-26.

Babbie, E. 2013. *The practice of social research.* 13th ed. Wadsworth: Cengage Learning.

Barac, K. & Moloi, T. 2010. Assessment of corporate governance reporting in the annual reports of South African companies. *Southern Africa Journal of Accountability and Auditing Research,* 10(1):19-31.

Beaver, W.H. 1966. Financial ratios as predictors of failure: empirical research in accounting: selected studies. *Journal of Accounting Research*, 4:71-111.

Bless, C., Higson-Smith, C. & Kagee, A. 2006. *Fundamentals of social research methods: an African perspective*. 4th ed. Cape Town: Juta.

Bliss, J.H. 1923. *Financial and operating ratios in management*. New York: Ronald Press.

Block, S.B., Hirt, G.A. & Danielsen, B.R. 2009. *Foundations of financial management*. New York: McGraw-Hill.

Blume, M.E. & Friend, I. 1978. *The changing role of the individual investor: a twentieth century fund report*. New York: Wiley

Borde, S.F. 1998. Risk diversity across restaurants: an empirical analysis. *Cornell Hotel and Restaurant Administration Quarterly*, 39(2):64-69.

Bouwman, M.J. & Frishkoff, P. 1995. The relevance of GAAP-based information: a case study exploring some uses and limitations. *Accounting Horizons,* 9(4):22-47.

Brady, R.T. 1999. *Framework for financial ratio analysis of audited federal financial reports*. Monterey, Calif.: Naval Postgraduate School. (Thesis - PhD.)

Brigham, E.F. & Ehrhardt, M.C. 2007. *Financial management*. Wadsworth: Cengage Learning.

Brown, I. 1955. *The historical development of the use of ratios in financial statement analysis to 1933*. Washington, D.C.: Catholic University of American Press.

Brynard, D.J., Hanekom, S.X. & Brynard, P.A. 2014. *Introduction to research*. 3rd ed. Pretoria: Van Schaik.

Cassim, R.J. 2014. *The value of financial ratio analysis in predicting the failure of JSEs listed companies*. North-West University, Vaal Triangle Campus. (Dissertation - MCom.)

Chatfield, C. & Xing, H. 2019. *The analysis of time series: an introduction with R.* 7th ed. New York: CRC Press.

Chenxing, L. 2020. Three essays on forecasting return distributions with mixture modelling. *Journal of Finance,* 30(4):5-9.

Cho, V. & Wuthrich, B. 1999. Combining forecasts from multiple textual data sources. In *Pacific-Asia Conference on Knowledge Discovery and Data Mining.* Berlin: Springer. pp. 174-179.

Colin, N. 2014. *Introduction to research and research methods*. http://www.pasadena.edu/files/syllabi/stvillanueva_37670.pdf Date of access: 28 September 2021.

Correia, C., Flynn, D. Uliana, E. & Wormald, M. 2019 *Management accounting: information for managing and creating value*. 8th ed. Lansdowne: Juta.

Creswell, J.W. 2014. *Research design: qualitative, quantitative, and mixed methods approach*. 4th ed. Newbury Park, Calif.: Sage.

Da Fonseca, J. 2013. A Euro area stock market model with betas dependent on the financial markets cycle. *International Journal of Monetary Economics and Finance*, 6(4):302-308.

Dawid, R. 2013. *String theory and the scientific method.* Cambridge: Cambridge University Press.

De Villiers, R.R. 2012. *The impact of capitalising long-term operating leases on the financial ratios of the top forty JSE-listed companies*. North-West University, Potchefstroom Campus. (Dissertation - MCom.)

De Vos, A.S., Strydom, H., Fouche, C.B. & Delport, C.S.L. 2011. *Research at grass roots: for social science and human service professions*. 4th ed. Pretoria: Van Schaik.

De Wet, J.H.V.H. & Du Toit, E. 2007. Return on equity: a popular, but flawed measure of corporate financial performance. *South African Journal of Business Management*, 38(1):59-69.

Doorasamy, M. 2019 Using DuPont analysis to assess the financial performance of the top 3 JSE listed companies in the food industry. *Investment Management and Financial Innovations*, 13(2):29-44.

Du Pont de Nemours, E.I. & Company, Executive Committee Control Charts. 1961. *A description of the Du Pont chart system for appraising operating performance*. New York: American Management Association.

Durrheim, K. & Painter, D. 2006. *Research in practice: applied methods for social sciences*. Cape Town: Juta Legal.

Eidleman, G.J. 1995. Z-scores: a guide to failure prediction. *CPA Journal,* 65(2):52-54.

Elliott, L. 2011. Global financial crisis: five key stages 2007-2011. *The Guardian*, 7 August. Available: http://www.theguardian.com/business/2011/aug/07/global-financial-crisis-keystages. Date of access: 24 March 2020.

Eluyela, F.D., Adetula, D.T., Oladipo, O.A., Nwanji, T.I., Ajayi, A. & Faleye, A. 2019. Pre and post adoption of IFRS based financial statement of listed small medium scale enterprises in Nigeria. *International Journal of Civil Engineering and Technology* (IJCIET), 10(1):1097-1108.

Erasmus, P.D. 2010. Earnings, dividends and cash flow volatility: a South African perspective. *Corporate Ownership & Control*, 8(1):508-514.

Fenster, M. 2017. Transparency in Trump's America. *Governance*, 30(2):173-175.

Finegan, P.T. 1991. Maximising shareholder value at the private company. *Journal of Applied Corporate Finance*, 4(1):30-45.

Fink, A. 1995. *How to sample surveys*. Thousand Oaks, Calif.: Sage.

Firer, C., Ross, S.A., Westerfield, R.W. & Jordan, B.D. 2004. *Fundamentals of corporate finance.* 3rd SA ed. New York: McGraw-Hill.

Fitzpatrick, P.J. 1931. *Symptoms of industrial failures.* Washington, D.C.: Catholic University of America Press.

Florea, G.C. 2020. Financial statements forecast. *CPA Journal*, 78(2):3-25.

Foulke, R.A. 1961. *Practical financial statement analysis*. 5th ed. New York: McGraw-Hill.

Fox, W. & Bayat, M.S. 2007. *A guide to managing research*. 3rd ed. Cape Town: Juta.

Fraenkel, J.R., Wallen, N.E., Hyun, H.H. 2019. *How to design and evaluate research in education*. 10th ed. New York: McGraw Hill Publishers.

Fulbier, R.U. 2008. Impact of lease capitalization on financial ratios of listed German companies. *Schmalenbach Business Review,* 60(31):122-144.

Garret, B. 2003. *Thin on top: why corporate governance matter and how to measure, manage and improve board performance*. London: Nicholas Brealey.

Garrison, R., Noreen, E. & Brewer, P. 2012. *Managerial accounting*. 14th ed. New York: McGraw-Hill.

Gilman, S. 1925. *Analyzing financial statements*. New York: Ronald Press.

Gouws, D.G. & Lucouw, P. 1999. The process beyond the numbers and ratios. *Mediatrix Accountancy Research*, 32(7):99-122.

Greener, I. 2011. *Designing social research: a guide for the bewildered*. Thousand Oaks, Calif.: Sage Publications.

Grove, S.K., Burns, N. & Gray, J.R. 2012. *Practice of nursing research: appraisal, synthesis and generation of evidence*. 7th ed. Hong Kong: Elsevier.

Guay, W., Samuels, D. & Taylor, D. 2016. Guiding through the fog: financial statement complexity and voluntary disclosure. *Journal of Accounting and Economics,* 62(2-3):234-269.

Haque, S. & Faruquee, M. 2013. Impact of fundamental factors on stock prices: a case-based approach on pharmaceutical companies listed with Dhaka Stock Exchange. *International Journal of Business and Management Invention*, 2(9):34-41.

Hart, C. 2018. *Doing a literature review*. 2nd ed. London: Sage Publications.

Hattingh, C., De Waal, A. & Parsons, P. 2018. Assessing high performance: a South African case study. *South African journal of Business Management*, 49(1):3-5.

Hauke, J. & Kossowski, T. 2011. Comparison of values of Pearson's and Spearman's correlation coefficient on the same sets of data. *Quaestiones Geographicae,* 30(2):87-93.

Henning, E., Van Rensburg, W. & Smit, B. 2004. *Finding your way in qualitative research*. Pretoria: Van Schaik.

Higgins, R.C. 2009. *Analysis for financial management*. 9th ed. New York: McGraw-Hill.

Hong, H. & Stein, J. 2003. Difference of opinion, short-sale constraints, and market crashes. *Review of Financial Studies*, 16(1):487-525.

Hornell, E. & Cikotic, A. 2020. *Liquidity is not a matter of life and death, it's more important than that: how does working capital management affect the profitability of Swedish SMEs?* London: Sage Publications.

Horngren, C.T., Sundem, G.L., Elliott, J.A. & Philbrick, D. 2013. *Introduction to financial accounting.* 11th ed. Upper Saddle Riiver, N.J.: Pearson.

Horrigan, J.O. 1968. A short history of financial ratio analysis. *The Accounting Review*, 3(2):284-294.

Ion, E. & Criveanu, M. 2016. Financial and non-financial indicators for organizational performance measurement. *Annals of University of Craiova: Economic Sciences Series*, *University of Craiova, Faculty of Economics and Business Administration,* 1(44):252-263.

Iqbal, A., Ahmed, F., Zaidi, S.S.Z. & Raza, H. 2015. Determinants of SPs, evidence from Oil and Gas and Cement sector of Karachi Stock Exchange. (A panel data approach.) *Journal of Poverty, Investment and Development*, 8(1):14-19.

Jaffer, P., Odendaal, E, & Theron, H. 2019. Auditors' evaluation of ethical leadership as part of management integrity. *Southern African Journal of Accountability and Auditing Research,* 21(1):99-109.

Jagongo, A. & Mutswenje, V.S. 2014. A survey of the factors influencing investment decisions: the case of individual investors at the NSE. *International Journal of Humanities and Social Science*, 4(4):92-101.

Jensen, M.C. & Meckling, W.H. 1999. Specific knowledge and divisional performance measurement. *Journal of Applied Corporate Finance*, 12(2):8-17.

Jeris, S.S. & Nath, R.D. 2020. Covid-19, oil price and UK economic policy uncertainty: evidence from the ARDL approach. *Quantitative Finance and Economic Journal,* 4(3):503-514.

Kaplan, R.S. & Norton, D.P. 2008. *Strategy maps: converting intangible assets into tangible outcomes*. Boston, Mass.: Harvard Business School Press.

Kennon, J. 2014. *Basic earnings vs diluted earnings per share: analysing an income statement*. http://www.beginnersinvest.about.com/od/incomestatementanalysis/ a/basic-eps-diluted-eps.htm Date of access: 14 Oct. 2019.

Koen, M. & Oberholster, J.G.I. 1999. *Analysis and interpretation of financial statements*. 2nd ed. Kenwyn: Juta.

Koller, T., Goedehart, M. & Wessels, D. 2010. *Valuation*: *measuring and managing the value of companies*. 5th ed. Hong Kong: McKinsey & Company.

Kotane, I. & Kuzmina-Merlino, I. 2011. *Non-financial indicators for evaluation of business.* London: Sage Publications.

Kumar, R. 2014. *Research methodology: a step-by-step guide for beginners*. 4th ed. Thousand Oaks, Calif.: Sage Publications.

Lallemand, J. & Strauss, J. 2016. Can we count on accounting fundamentals for industry portfolio allocation? *The Journal of Portfolio Management*, 432(4):70-87.

Lauren, V. & Lawson, D.N.P. 2018. Documentary analysis as an assessment tool*. Public Health Nursing*, 35(6):563-567.

Leedy, P.D. & Ormrod, J.E. 2014. *Practical research: planning and design*. Upper Saddle River, N.J.: Pearson.

Lietz, G. 2019. *Why we work won't.* London: Sage Publications.

Litwin, M.S. 1995. *How to measure survey reliability and validity.* London: Sage Publications.

Lorencic, E. & Festic, M. 2022. The impact of seven macroprudential policy instruments of financial stability in six-euro area economics. *Economic Perspective Journal,* 21(3):142-170.

Marx, J., Mpofu, R. & Van De Venter, G. 2003*. Investment management*. Pretoria: Van Schaik.

Masa'deh, R., Tayeh, M., Jarrah, I. & Tarhini, A. 2015. Accounting vs. market-based measures of firm performance related to information technology investments*. International Review of Social Sciences and Humanities,* 9(1):129-145.

McHugh, M.L. 2011. *Multiple comparison analysis testing in ANOVA*. London: Sage Publications.

Menaje, P.M. 2012. Impact of selected financial variables on SP of publicly listed firms in the Philippines. *American International Journal of Contemporary Research*, 2(9):98-104.

Menike, M.G.P.D. & Prabath, U.S. 2014. The impact of accounting variables on stock price: evidence from the Colombo Stock Exchange, Sri Lanka. *International Journal of Business and Management*, 9(5):125-137.

Merwin, C.L. 1942. *Financing small corporations: in five manufacturing industries*, *1926-36.* New York: National Bureau of Economics Research.

Milsom, A. & Coughlin, J. 2015. Satisfaction with college major: a grounded theory study. *The Journal of the National Academic Advising Association*, 35(2):5-14.

Mitrache, M. & Boitout, N. 2009. Tracking financial bubbles on Romania Stock Market. *Financial Studies*, 21(1):41-62.

Moles, P., Parrino, R. & Kidwell, D. 2011. *Corporate finance*. London: Wiley.

Mossman, C.E., Bell, G.G., Swartz, L.M. & Turtle, H. 1998. An empirical comparison of bankruptcy models. *The Financial Review*, 33(2):35-54.

Mouton, J. 2011. *How to succeed in your master's and doctoral studies: a South African guide and resources book.* 14th ed. Pretoria: Van Schaik.

Nagy, R.A. & Obenberger, R.W. 1994. Factors influencing individual investor behaviour. *Financial Analysts Journal*, 50(4):63-68.

Neuman, W.L. 2006. *Social research methods: qualitative and quantitative approaches.* 6th ed. Upper Saddle River, N.J.: Pearson.

Novak, J. 2020. *CAPM Beta, size, book-to-market, and momentum in realized stock returns*. London: Sage Publications.

Ou, J.A.& Penman, S.H. 1989. Financial statement analysis and the prediction of stock returns. *Journal of Accounting and Economics*, 11(4):295-329.

Outecheva, N. 2007. *Corporate financial distress: an empirical analysis of distress risk.* St. Gallen: University of St. Gallen. (Dissertation - PhD.)

Oxford English Dictionary. 2019. *Globalization*. http://oxforddictionaries.com/ definition/ english/globalization Date of access: 14 Dec. 2019.

Parker, M. & Media, D. 2014. *Supply and demand in the stock market*. http://www. finance.zacks.com/supply-demand-stock-market-6993.html Date of access: 01 Nov. 2018.

Philander, K.D. 2015 *The usefulness of fair value measurement in financial statements of South African listed companies*. North-West University: Vaal Triangle Campus. (Dissertation - MCom.)

Phu, M., Van, C., Kim, C., Van, H., Thuy, N. & Cong, B. 2020. Dynamics of capital structure, risk-taking behavior, and profitability across the Vietnamese banking system: evidence from a panel vector autoregression. *Journal of Advanced Research in Law & Economics*, 8(46):2474-2489.

Piotroski, J.D. 2000. Value investing: the use of historical financial statement information to separate winners from losers. *Journal of Accounting Research,* 38(15):1-41.

Poincelot, E. & Wegmann, G. 2008. What are the motives of the managers using non-financial indicators? *Compatibility Control Audit,* 1(1):69-92.

Prusak, B. 2017 The accuracy of alternative stock valuation methods: the case of the Warsaw Stock Exchange. *Economic Research-Ekonomska Istraživanja*, 30(1):416-438.

Ramser, J.R. & Foster, L.O. 1931. A demonstration of ratio analysis. *Bureau of Business Research Bulletin,* 40:52.

Reimann, B.C. 1989. *Managing for value: a guide to value-based strategic management*. Oxford: Basil Blackwell.

Reynders, H.J.J., Lambrechts, I.J. & Scheurkogel, A.E. 1984. *Financial management*. Pretoria: Van Schaik.

RMA (Risk Management Association). 2011. *Annual statement studies: financial ratio benchmarks 2011-2012*. https://www.irmsa.org.za/default.aspx Date of access: 25 Aug. 2020.

Robbetze, N. 2015. *The effect of earnings per share categories on the SPs of the top 40 JSE listed companies*. North-West University, Vaal Triangle Campus. (Dissertation - MCom.)

Roelofs, P. 2018. *Transparency and mistrust: who or what should be made transparent.* https:// doi.org: 10.1111/gove.12402 Date of access: 25 Apr. 2020.

Schaberl, P.D. 2016. Beyond accounting and back: an empirical examination of the relative relevance of earnings and “other” information. *Advances in Accounting*, Elsevier, 35(C):98-113.

Seng, D. & Hancock, J. 2012. Fundamental analysis and the prediction of earnings. *International Journal of Business and Management*, 7(3):32-46.

Service, C.L. 2013. *Gripping GAAP: your guide to international financial reporting standards*. 14th ed. Durban: Lexis Nexis.

Sharif, S. 2020. *Does enhancement of security-wise price bands bring efficiency to the Pakistan Stock Exchange?* SOUTHASIA, 24(5):33-34.

Sloan, A.P. 1963. *My years with General Motors: transformation of the automobile market.* New York: Doubleday.

Smart, S.B. & Graham, J.R. 2012. *Introduction to financial management*. 3rd ed. Boston, Mass.: Cengage Learning.

Smith, D.E. 1925. *History of mathematics*, v. 2. Toronto: General Publishing Company.

Stickney, C.P. & Weil, R.L. 2007. *Financial accounting: an introduction to concepts, methods, and rules*. Hinsdale, Ill.: Dryden Press.

Stittle, J. 2004. The reformation of European corporate reporting: towards a model of convergence or confusion? *European Business Review*, 16(2):135-159.

Stowe, J.D., Robinson, T.R., Pinto, J.E. & Mcleavy, D.W. 2002. *Analysis of equity investments: valuation.* Baltimore: AIMR.

Styan, J. 2018. *Steinhoff en die Stellenbosch boys*. Pretoria: LAPA Uitgewers.

Subramanian, V., Semenzin, E. & Hristozov, D. 2016. Sustainable nanotechnology decision support system: bridging risk management, sustainable innovation and risk governance. *Journal of Nanoparticle Research,* 1(2):34-40.

Susmitha, R. 2020. *Impact of the 2019 Covid crisis on the global economy and other sectors worldwide*. E-book.

Swanepoel, M.J. 2017. *The development of an integrated financial decision: making model using lean accounting*. North-West University, Vaal Triangle Campus. (PhD Thesis.)

Swart, J.J. 2018. *Audit methodologies: developing an integrated planning model incorporating audit materiality, risk and sampling*. North-West University, Vaal Triangle Campus. (Dissertation - DCom.)

Trevino, R. & Robertson, F. 2002. P/E ratios and stock market returns. *Journal of Financial Planning*, 15(2):76-84.

Tudose, M.B., Rusu, V.D. & Avasilcai, S. 2022 .Financial performance determinants and intendencies between measurement indicators. *Vilnius Journal,* 20(1):119-139.

Uprichard, E. 201*3.* Sampling: bridging probability and non-probability designs. *International Journal of Social Research Methodology,* 16(1):1-11.

Vimrova, H. 2015. Financial analysis tools from traditional indicators through contemporary instruments to complex performance measurement and management in the Czech business practise. *Procedia Economics and Finances*, 16(25):166-175.

Weetman, P. 2019. *Financial and management accounting financial and management accounting*. 4th ed. Upper Saddle River, N.J.: Pearson. Chapter 4.

Welman, C., Kruger, F. & Mitchell, B. 2005. *Research methodology*. 3rd ed. Cape Town: Oxford University Press.

Winakor, A. & Smith, R. 1935. Changes in the financial structure of unsuccessful industrial corporations. *Bureau of Business Research Bulletin*, 51:1-44.

Yadav, R.A. 1986. *Financial ratios and the prediction of corporate failure*. New Delhi: Naurang Rai Concept Publishing Company.

Yang, Y. 2021. Stability analysis of financial ratios*. IDEAL 2000 Journal,* 81(1):812-819.

Zhang, J. & Zhang, S. 2020). The economic policy uncertainty and firm investment in Australia. *Applied Economics,* 52(31):3354-3378.

Zhou, L .2010. The research on issues and countermeasures of accounting information of SMEs. *International Journal Business Management*, 5(3):223-225.

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

ANNEXURE A: ABBRIVATIONS

Data collection based on the 60 companies at market capitalisation as at 31 December 2018

Abbreviation	Word
YE	: Year-end
SO	: SP
DY	: Dividend yield
EY	: Earnings yield
PE	: Price per earnings
CR	: Current ratio
DPS	: Dividend per share
DC	: Dividend cover
EPS	: Earnings per share
PE – GROWTH %	: Price per Earnings-Growth%
EVA	: Economic value added
ROA	: Return on assets
ROE	: Return on equity

ANNEXURE B: DATA COLLECTION

DATA COLLECTION BASED ON THE 60 COMPANIES AT MARKET CAPITALISATION AS AT 31 DECEMBER 2018

DATA 20 DAYS BEFORE PUBLICATION (-20), YEAR-END (0) AND 20 DAYS AFTER PUBLICATION(+20)

No	JSE code	Company name	JSE Industry	Year	Time point	Beta	SP	DY	EY	PE
1	ABIT	Anheuser-Busch Inbev Sa	consumer services	14	-20					
1	ABIT	Anheuser-Busch Inbev Sa	consumer services	15	-20	0	140541	1,75	0,03	21,54
1	ABIT	Anheuser-Busch Inbev Sa	consumer services	16	-20	0	141 999	1,73	0,03	3 287,07
1	ABIT	Anheuser-Busch Inbev Sa	consumer services	17	-20	0,23	3282,46	1,33	4,05	24,82
1	ABIT	Anheuser-Busch Inbev Sa	consumer services	18	-20	0,25	116 310	0,7	2,51	39,9
1	ABIT	Anheuser-Busch Inbev Sa	consumer services	19	-20	0,27	112 739	1,66	4,8	20,83
2	NPN	Naspers Ltd -N-	technology	14	-20	0,71	117 518	0,28	1,54	64,75
2	NPN	Naspers Ltd -N-	technology	15	-20	0,57	179 704	0,2	0,96	104,54
2	NPN	Naspers Ltd -N-	technology	16	-20	0,53	225 001	0,18	0,93	107,35
2	NPN	Naspers Ltd -N-	technology	17	-20	0,11	268 303	0,16	1,03	97,44
2	NPN	Naspers Ltd -N-	technology	18	-20	-0,31	333 999	0,14	1,03	97,27
2	NPN	Naspers Ltd -N-	technology	19	-20	-0,78	345 975	0,14	3,06	32,67

No	JSE code	Company name	JSE industry	Year	Time point	Beta	SP	DY	EY	PE
3	BTI	British American Tob Plc	Consumer services	14	-20	0,15	67641,00	3,48	4,48	22,32
3	BTI	British American Tob Plc	Consumer services	15	-20	0,11	86099,00	3,16	4,76	20,99
3	BTI	British American Tob Plc	Consumer services	16	-20	0,10	82132,00	2,88	4,99	20,06
3	BTI	British American Tob Plc	Consumer services	17	-20	0,02	70675,00	1,98	17,01	5,88
3	BTI	British American Tob Plc	Consumer services	18	-20	0,00	51181,00	3,84	23,27	4,30
3	BTI	British American Tob Plc	Consumer services	19	-20	0,00	60789,00	5,05	8,13	12,30
4	CFR	Compagnie Fin Richemont	Consumer services	14	-20	1,49	10656,00	0,66	4,35	23,00
4	0	Compagnie Fin Richemont	Consumer services	15	-20	1,10	10759,00	0,99	4,31	23,21
4	0	Compagnie Fin Richemont	Consumer services	16	-20	0,85	9551,00	1,54	3,92	25,50
4	0	Compagnie Fin Richemont	Consumer services	17	-20	0,27	11241,00	1,44	2,82	35,45
4	0	Compagnie Fin Richemont	Consumer services	18	-20	0,00	11822,00	1,23	3,45	29,00
4	0	Compagnie Fin Richemont	Consumer services	19	-20	0,13	10506,00	1,82	3,37	29,67
5	VOD	Vodacom Group Ltd	Telecom	14	-20	0,33	13203,00	5,31	6,93	14,43
5	0	Vodacom Group Ltd	Telecom	15	-20	0,30	14781,00	4,63	5,90	16,95
5	0	Vodacom Group Ltd	Telecom	16	-20	0,24	16746,00	4,04	5,28	19,92
5	0	Vodacom Group Ltd	Telecom	17	-20	0,29	15218,00	4,44	5,80	17,23
5	0	Vodacom Group Ltd	Telecom	18	-20	0,09	15700,00	4,20	5,91	16,92
5	0	Vodacom Group Ltd	Telecom	19	-20	-0,06	11132,00	5,89	7,77	12,87

No	JSE code	Company name	JSE Industry	Year	Time point	Beta	SP	DY	EY	PE
6	MTN	Mtn Group Ltd	Telecom	14	-20	0,49	22630,00	4,68	6,79	14,73
6	0	Mtn Group Ltd	Telecom	15	-20	0,72	14941,00	7,45	4,99	20,03
6	0	Mtn Group Ltd	Telecom	16	-20	0,00	12100,00	4,73	-0,64	-157,40
6	0	Mtn Group Ltd	Telecom	17	-20	2,05	11872,00	4,72	1,53	65,23
6	0	Mtn Group Ltd	Telecom	18	-20	0,52	10530,00	3,80	4,61	21,71
6	0	Mtn Group Ltd	Telecom	19	-20	0,76	4476,00	9,83	10,46	9,56
7	SHP	Shoprite Holdings Ltd	Consumer goods	14	-20	0,59	14575,00	2,04	4,79	20,89
7	0	Shoprite Holdings Ltd	Consumer goods	15	-20	0,64	15590,00	2,10	4,96	20,17
7	0	Shoprite Holdings Ltd	Consumer goods	16	-20	0,73	18600,00	2,07	4,86	20,50
7	0	Shoprite Holdings Ltd	Consumer goods	17	-20	0,16	21475,00	1,88	4,76	20,99
7	0	Shoprite Holdings Ltd	Consumer goods	18	-20	0,35	19350,00	2,00	4,84	20,64
7	0	Shoprite Holdings Ltd	Consumer goods	19	-20	0,00	11973,00	2,13	6,52	15,32
8	BCH	Bid Corporation Ltd	Consumer services	14	-20	0,33	15599,00	1,89	4,49	22,27
8	0	Bid Corporation Ltd	Consumer services	15	-20	0,25	16857,00	1,82	4,32	23,14
8	0	Bid Corporation Ltd	Consumer services	16	-20	0,00	24715,00	0,75	0,00	0,00
8	0	Bid Corporation Ltd	Consumer services	17	-20	0,00	31500,00	0,86	3,56	28,12
8	0	Bid Corporation Ltd	Consumer services	18	-20	0,00	27386,00	1,55	4.46	22,43
8	0	Bid Corporation Ltd	Consumer services	19	-20	0,00	30425,00	1,55	3,84	26,05
9	PPH	Pepkor Holdings Ltd	Consumer services	14	-20	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	15	-20	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	16	-20	0,00	0,00	0,00	0,00	0,00

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
9	0	Pepkor Holdings Ltd	Consumer services	17	-20	0,00	1644,00	0,81	8,13	12,31
9	0	Pepkor Holdings Ltd	Consumer services	18	-20	0,64	2060,00	1,08	4,10	24,38
9	0	Pepkor Holdings Ltd	Consumer services	19	-20	0,67	1818,00	0,92	5,32	18,78
10	BVT	Bidvest Ltd	Industrials	14	-20	0,63	27619,00	2,49	6,28	15,93
10	0	Bidvest Ltd	Industrials	15	-20	0,68	34601,00	2,23	5,44	18,38
10	0	Bidvest Ltd	Industrials	16	-20	0,56	16290,00	2,20	6,47	15,45
10	0	Bidvest Ltd	Industrials	17	-20	0,59	17979,00	2,18	6,16	16,22
10	0	Bidvest Ltd	Industrials	18	-20	0,56	17591,00	2,53	7,00	14,28
10	0	Bidvest Ltd	Industrials	19	-20	0,57	19794,00	2,42	6,83	14,64
11	MRP	Mr Price Group Ltd	Consumer services	14	-20	0,79	16755,00	2,20	4,10	24,38
11	0	Mr Price Group Ltd	Consumer services	15	-20	0,91	24613,00	1,81	3,38	29,61
11	0	Mr Price Group Ltd	Consumer services	16	-20	1,00	17910,00	2,96	5,45	18,35
11	0	Mr Price Group Ltd	Consumer services	17	-20	1,06	14811,00	3,71	6,70	14,92
11	0	Mr Price Group Ltd	Consumer services	18	-20	0,96	26521,00	2,17	3,74	26,73
11	0	Mr Price Group Ltd	Consumer services	19	-20	0,90	21173,00	2,74	5,44	18,39
12	WHL	Woolworths Holdings Ltd	Consumer services	14	-20	0,75	7946,00	2,69	4,60	21,76
12	0	Woolworths Holdings Ltd	Consumer services	15	-20	0,89	99502,00	2,11	3,72	26,91
12	0	Woolworths Holdings Ltd	Consumer services	16	-20	0,61	8064,00	3,30	5,65	17,70

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
12	0	Woolworths Holdings Ltd	Consumer services	17	-20	0,60	5934,00	4,22	7,09	14,10
12	0	Woolworths Holdings Ltd	Consumer services	18	-20	0,55	5422,00	3,53	6,39	15,66
12	0	Woolworths Holdings Ltd	Consumer services	19	-20	0,52	5518,00	2,76	6,21	16,09
13	TBS	Tiger Brands Ltd	Consumer goods	14	-20	0,60	32998,00	2,28	5,54	18,06
13	0	Tiger Brands Ltd	Consumer goods	15	-20	0,69	32495,00	2,48	5,54	18,03
13	0	Tiger Brands Ltd	Consumer goods	16	-20	0,71	37765,00	2,19	5,05	19,80
13	0	Tiger Brands Ltd	Consumer goods	17	-20	0,76	39000,00	2,31	5,61	17,82
13	0	Tiger Brands Ltd	Consumer goods	18	-20	0,76	27159,00	3,18	7,35	13,61
13	0	Tiger Brands Ltd	Consumer goods	19	-20	0,77	21300,00	3,25	5,88	17,02
14	CLS	Clicks Group Ltd	Consumer goods	14	-20	0,61	6348,00	2,32	4,98	20,06
14	0	Clicks Group Ltd	Consumer goods	15	-20	0,74	9641,00	1,78	3,79	26,36
14	0	Clicks Group Ltd	Consumer goods	16	-20	0,62	25503,00	1,73	3,56	28,09
14	0	Clicks Group Ltd	Consumer goods	17	-20	0,76	15726,00	1,51	3,15	31,76
14	0	Clicks Group Ltd	Consumer goods	18	-20	0,76	16600,00	1,62	3,46	28,88
14	0	Clicks Group Ltd	Consumer goods	19	-20	0,86	24240,00	1,31	2,63	38,02
15	SPP	The Spar Group Ltd	Consumer services	14	-20	0,57	12652,00	3,37	5,74	17,43
15	0	The Spar Group Ltd	Consumer services	15	-20	0,43	19712,00	2,52	4,39	22,78
15	0	The Spar Group Ltd	Consumer services	16	-20	0,38	19185,00	2,87	4,48	22,31
15	0	The Spar Group Ltd	Consumer services	17	-20	0,37	16682,00	3,21	6,02	16,60
15	0	The Spar Group Ltd	Consumer services	18	-20	0,43	17210,00	3,28	5,92	16,90
15	0	The Spar Group Ltd	Consumer services	19	-20	0,52	20029,00	2,97	4,73	21,13

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
16	TFG	The Foschini Group Limit	Consumer services	14	-20	0,57	11299,00	4,03	8,04	12,43
16	0	The Foschini Group Limit	Consumer services	15	-20	0,56	16250,00	3,08	5,45	18,35
16	0	The Foschini Group Limit	Consumer services	16	-20	0,62	13985,00	4,20	7,55	13,25
16	0	The Foschini Group Limit	Consumer services	17	-20	0,56	13880,00	4,26	7,92	12,63
16	0	The Foschini Group Limit	Consumer services	18	-20	0,66	17820,00	3,34	6,38	15,60
16	0	The Foschini Group Limit	Consumer services	19	-20	0,77	17358,00	3,59	6,84	14,62
17	TRU	Truworths Int Ltd	Consumer services	14	-20	0,96	7350,00	4,33	7,83	12,78
17	0	Truworths Int Ltd	Consumer services	15	-20	0,87	8253,00	4,17	6,97	14,34
17	0	Truworths Int Ltd	Consumer services	16	-20	0,84	8998,00	4,15	7,38	13,55
17	0	Truworths Int Ltd	Consumer services	17	-20	0,54	7647,00	4,85	8,57	11,67
17	0	Truworths Int Ltd	Consumer services	18	-20	0,80	7800,00	4,54	8,32	12,01
17	0	Truworths Int Ltd	Consumer services	19	-20	0,87	6320,00	5,16	9,46	10,57
18	AVI	Avi Ltd	Consumer services	14	-20	0,58	6634,00	3,84	5,78	17,29
18	0	Avi Ltd	Consumer services	15	-20	0,51	7840,00	3,57	5,35	18,68
18	0	Avi Ltd	Consumer services	16	-20	0,55	9271,00	3,21	4,89	20,05

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
18	0	Avi Ltd	Consumer services	17	-20	0,46	9735,00	3,33	5,22	19,17
18	0	Avi Ltd	Consumer services	18	-20	0,39	11316,00	3,08	4,80	20,83
18	0	Avi Ltd	Consumer services	19	-20	0,41	8571,00	3,87	6,08	16,59
19	PIK	Pick N Pay Stores Ltd	Consumer services	14	-20	0,43	5882,00	1,33	2,35	42,47
19	0	Pick N Pay Stores Ltd	Consumer services	15	-20	0,44	5700,00	1,76	3,11	32,16
19	0	Pick N Pay Stores Ltd	Consumer services	16	-20	0,51	7410,00	1,71	3,02	33,07
19	0	Pick N Pay Stores Ltd	Consumer services	17	-20	0,56	6070,00	2,35	4,35	22,98
19	0	Pick N Pay Stores Ltd	Consumer services	18	-20	0,53	7661,00	1,97	3,62	27,66
19	0	Pick N Pay Stores Ltd	Consumer services	19	-20	0,55	6690,00	2,76	5,18	19,30
20	TKG	Telkom Sa Soc Ltd	Telecom	14	-20	0,18	3861,00	3,04	18,44	5,42
20	0	Telkom Sa Soc Ltd	Telecom	15	-20	0,57	7430,00	3,06	5,62	17,80
20	0	Telkom Sa Soc Ltd	Telecom	16	-20	0,72	5402,00	3,36	8,63	11,58
20	0	Telkom Sa Soc Ltd	Telecom	17	-20	0,65	7660,00	4,45	7,78	12,85
20	0	Telkom Sa Soc Ltd	Telecom	18	-20	0,58	5460,00	5,79	12,20	8,19
20	0	Telkom Sa Soc Ltd	Telecom	19	-20	0,62	8620,00	3,24	6,74	14,83
21	CAT	Caxton Ctp Publish Print	Consumer services	14	-20	0,05	1508,00	3,53	6,53	15,33
21	0	Caxton Ctp Publish Print	Consumer services	15	-20	0,03	1890,00	2,92	5,76	17,37
21	0	Caxton Ctp Publish Print	Consumer services	16	-20	-0,01	1350,00	4,41	8,62	11,60
21	0	Caxton Ctp Publish Print	Consumer services	17	-20	-0,02	1334,00	4,20	8,66	11,54
21	0	Caxton Ctp Publish Print	Consumer services	18	-20	0,28	906,00	5,30	12,03	8,31
21	0	Caxton Ctp Publish Print	Consumer services	19	-20	0,36	760,00	6,32	13,37	7,48

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
22	RBX	Raubex Group Ltd	Industrials	14	-20	0,42	2080,00	2,66	8,99	11,12
22	0	Raubex Group Ltd	Industrials	15	-20	0,48	2050,00	2,94	10,20	9,80
22	0	Raubex Group Ltd	Industrials	16	-20	0,42	1822,00	3,64	12,86	7,77
22	0	Raubex Group Ltd	Industrials	17	-20	0,43	2408,00	3,08	8,38	11,94
22	0	Raubex Group Ltd	Industrials	18	-20	0,36	2250,00	2,77	10,16	9,84
22	0	Raubex Group Ltd	Industrials	19	-20	0,39	1933,00	1,41	2,95	33,91
23	LEW	Lewis Group Ltd	Consumer services	14	-20	0,57	6530,00	6,73	14,11	7,09
23	0	Lewis Group Ltd	Consumer services	15	-20	0,57	9494,00	4,63	9,30	10,76
23	0	Lewis Group Ltd	Consumer services	16	-20	0,33	4300,00	10,22	14,46	6,92
23	0	Lewis Group Ltd	Consumer services	17	-20	0,20	3269,00	5,05	12,24	8,17
23	0	Lewis Group Ltd	Consumer services	18	-20	0,22	3013,00	5,31	10,04	9,96
23	0	Lewis Group Ltd	Consumer services	19	-20	0,23	3310,00	5,66	11,37	8,80
24	SDO	Stadio Holdings Limited	Consumer goods	14	-20	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	15	-20	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	16	-20	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	17	-20	0,00	705,00	0,02	10,40	75,26
24	0	Stadio Holdings Limited	Consumer goods	18	-20	1,18	360,00	0,05	0,43	234,78
24	0	Stadio Holdings Limited	Consumer goods	19	-20	0,71	160,00	1,10	5,88	17,02
25	NT1	Net 1 Ueps Tech Inc	Industrials	14	-20	0,10	14300,00	2,58	10,84	9,23
25	0	Net 1 Ueps Tech Inc	Industrials	15	-20	0,25	22800,00	2,60	10,14	9,86
25	0	Net 1 Ueps Tech Inc	Industrials	16	-20	0,17	13900,00	3,40	17,10	5,85
25	0	Net 1 Ueps Tech Inc	Industrials	17	-20	0,03	13200,00	2,70	13,69	7,31
25	0	Net 1 Ueps Tech Inc	Industrials	18	-20	0,26	10865,00	2,74	13,37	7,48

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
25	0	Net 1 Ueps Tech Inc	Industrials	19	-20	0,27	5100,00	1,12	-121,87	-0,82
26	AVV	Alviva Holdings Ltd	Technology	14	-20	0,32	125,00	2,79	16,58	6,03
26	0	Alviva Holdings Ltd	Technology	15	-20	0,30	1265,00	1,15	11,98	8,35
26	0	Alviva Holdings Ltd	Technology	16	-20	0,69	1540,00	0,75	12,77	7,83
26	0	Alviva Holdings Ltd	Technology	17	-20	0,70	2080,00	0,82	10,09	9,91
26	0	Alviva Holdings Ltd	Technology	18	-20	0,44	1851,00	1,08	14,63	6,84
26	0	Alviva Holdings Ltd	Technology	19	-20	0,32	1600,00	1,35	17,90	5,59
27	KAL	Kaap Agri Limited	Consumer services	14	-20	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	15	-20	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	16	-20	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	17	-20	0,00	4900,00	1,25	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	18	-20	-0,05	3600,00	1,70	10,49	9,53
27	0	Kaap Agri Limited	Consumer services	19	-20	0,18	2488,00	3,80	14,16	7,06
28	OAO	Oando Plc	Oil and gas	14	-20	0,04	135,00	2,91	4,03	24,79
28	0	Oando Plc	Oil and gas	15	-20	-0,06	92,00	5,88	10,13	9,88
28	0	Oando Plc	Oil and gas	16	-20	0,03	56,00	4,54	-2568,40	-0,04
28	0	Oando Plc	Oil and gas	17	-20	0,02	23,00	3,54	-10,11	-9,89
28	0	Oando Plc	Oil and gas	18	-20	-0,13	30,00	2,75	1020,11	0,10
28	0	Oando Plc	Oil and gas	19	-20	0,01	25,00	3,23	-457,59	-0,22
29	COM	Comair Limited	Consumer services	14	-20	0,11	446,00	2,86	14,75	6,78
29	0	Comair Limited	Consumer services	15	-20	0,03	310,00	4,93	19,71	5,07

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
29	0	Comair Limited	Consumer services	16	-20	0,15	330,00	3,86	7,09	14,10
29	0	Comair Limited	Consumer services	17	-20	0,08	575,00	2,60	11,51	8,69
29	0	Comair Limited	Consumer services	18	-20	0,15	468,00	3,25	14,49	6,90
29	0	Comair Limited	Consumer services	19	-20	0,21	315,00	5,59	16,86	5,93
30	SUR	Spur Corporation Ltd	Consumer services	14	-20	0,26	3141,00	3,27	5,03	19,89
30	0	Spur Corporation Ltd	Consumer services	15	-20	0,22	3430,00	3,27	4,45	22,45
30	0	Spur Corporation Ltd	Consumer services	16	-20	0,36	3300,00	3,61	5,18	19,31
30	0	Spur Corporation Ltd	Consumer services	17	-20	0,42	2925,00	3,61	4,78	20,94
30	0	Spur Corporation Ltd	Consumer services	18	-20	0,36	2351,00	4,18	6,84	14,62
30	0	Spur Corporation Ltd	Consumer services	19	-20	0,05	2497,00	4,36	6,96	14,38
31	ENX	Enx Group Limited	Industrials	14	-20	0,09	2101,21	3,35	1,05	95,50
31	0	Enx Group Limited	Industrials	15	-20	0,21	2585,26	3,69	2,34	42,73
31	0	Enx Group Limited	Industrials	16	-20	0,21	1995,00	3,88	4,58	21,85
31	0	Enx Group Limited	Industrials	17	-20	0,16	1370,00	4,19	-20,15	-4,96
31	0	Enx Group Limited	Industrials	18	-20	0,09	1300,00	4,10	-20,56	-4,86
31	0	Enx Group Limited	Industrials	19	-20	0,12	1099,00	3,90	13,81	7,24
32	ADR	Adcorp Holdings Limited	Industrials	14	-20	0,24	3489,00	3,41	5,41	18,50
32	0	Adcorp Holdings Limited	Industrials	15	-20	0,17	3269,00	3,85	9,13	10,95
32	0	Adcorp Holdings Limited	Industrials	16	-20	0,23	1550,00	7,40	19,33	5,17
32	0	Adcorp Holdings Limited	Industrials	17	-20	0,12	1078,00	1,58	-2,59	-38,64

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
32	0	Adcorp Holdings Limited	Industrials	18	-20	0,11	1855,00	2,12	-7,68	-13,02
32	0	Adcorp Holdings Limited	Industrials	19	-20	0,03	2449,00	3,14	10,00	9,99
33	CMH	Combined Motor Holdings Ltd	Consumer services	14	-20	0,37	1225,00	5,41	14,82	6,75
33	0	Combined Motor Holdings Ltd	Consumer services	15	-20	0,19	1500,00	4,68	10,95	9,13
33	0	Combined Motor Holdings Ltd	Consumer services	16	-20	0,08	1500,00	6,32	13,74	7,28
33	0	Combined Motor Holdings Ltd	Consumer services	17	-20	0,12	2046,00	5,82	13,00	7,69
33	0	Combined Motor Holdings Ltd	Consumer services	18	-20	0,10	3060,00	4,21	9,68	10,33
33	0	Combined Motor Holdings Ltd	Consumer services	19	-20	0,17	2035,00	6,92	16,37	6,11
34	CGR	Calgro M3 Holdings Ltd	Industrials	14	-20	0,00	700,00	1,70	11,88	8,71
34	0	Calgro M3 Holdings Ltd	Industrials	15	-20	0,03	1367,00	2,49	6,87	17,55
34	0	Calgro M3 Holdings Ltd	Industrials	16	-20	0,22	1950,00	2,29	6,41	15,60
34	0	Calgro M3 Holdings Ltd	Industrials	17	-20	0,32	1728,00	4,20	7,98	12,54
34	0	Calgro M3 Holdings Ltd	Industrials	18	-20	0,28	1220,00	5,08	9,48	10,55
34	0	Calgro M3 Holdings Ltd	Industrials	19	-20	0,29	565,00	3,35	8,06	12,41
35	MDI	Master Drilling Group Ltd	Basic	14	-20	-0,46	1000,00	3,69	8,30	12,05
35	0	Master Drilling Group Ltd	Basic	15	-20	0,09	1300,00	3,88	8,69	11,50
35	0	Master Drilling Group Ltd	Basic	16	-20	0,18	1110,00	4,19	13,11	7,63
35	0	Master Drilling Group Ltd	Basic	17	-20	0,06	1800,00	4,10	11,03	9,07
35	0	Master Drilling Group Ltd	Basic	18	-20	0,20	1270,00	3,90	15,70	6,37
35	0	Master Drilling Group Ltd	Basic	19	-20	0,31	960,00	2,17	14,59	6,86
36	GSH	Grindrod Shipping Holdings	Industrials	14	-20	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	15	-20	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	16	-20	0,00	0,00	0,00	0,00	0,00

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
36	0	Grindrod Shipping Holdings	Industrials	17	-20	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	18	-20	0,00	7220,00	1,70	-18,72	-5,34
36	0	Grindrod Shipping Holdings	Industrials	19	-20	0,43	4250,00	2,55	37,74	2,65
37	CIL	Cons Infrastructure Group	Industrials	14	-20	0,08	2223,00	2,76	6,20	16,30
37	0	Cons Infrastructure Group	Industrials	15	-20	0,00	2830,00	4,20	6,64	15,07
37	0	Cons Infrastructure Group	Industrials	16	-20	0,36	2693,00	4,57	8,20	12,20
37	0	Cons Infrastructure Group	Industrials	17	-20	-0,02	2165,00	3,32	11,59	8,63
37	0	Cons Infrastructure Group	Industrials	18	-20	0,23	435,00	3,70	-17,91	-5,58
37	0	Cons Infrastructure Group	Industrials	19	-20	0,16	315,00	3,62	-228,95	-0,44
38	NVS	Novus Holdings Limited	Industrials	14	-20	0,00	0,00	0,00	0,00	0,00
38	0	Novus Holdings Limited	Industrials	15	-20	0,00	1640,00	3,32	7,78	12,85
38	0	Novus Holdings Limited	Industrials	16	-20	0,32	1100,00	5,41	12,68	7,89
38	0	Novus Holdings Limited	Industrials	17	-20	0,26	785,00	5,71	14,11	14,11
38	0	Novus Holdings Limited	Industrials	18	-20	0,30	390,00	10,67	26,38	3,79
38	0	Novus Holdings Limited	Industrials	19	-20	-0,03	420,00	5,71	14,38	6,95
39	HUG	Huge Group Ltd	Telecom	14	-20	0,23	165,00	1,05	-4,88	-20,47
39	0	Huge Group Ltd	Telecom	15	-20	0,14	324,00	1,20	5,18	19,30
39	0	Huge Group Ltd	Telecom	16	-20	0,10	545,00	1,25	2,38	41,99
39	0	Huge Group Ltd	Telecom	17	-20	0,12	860,00	1,10	2,23	44,89
39	0	Huge Group Ltd	Telecom	18	-20	0,21	750,00	0,67	4,71	21,22
39	0	Huge Group Ltd	Telecom	19	-20	0,17	580,00	0,58	9,61	10,41
40	ARH	Arb Holdings Limited	Industrials	14	-20	0,02	735,00	1,84	6,21	16,10
40	0	Arb Holdings Limited	Industrials	15	-20	0,00	585,00	2,89	8,53	11,73
40	0	Arb Holdings Limited	Industrials	16	-20	0,18	525,00	3,21	10,02	9,98
40	0	Arb Holdings Limited	Industrials	17	-20	0,34	630,00	3,07	9,46	10,55
40	0	Arb Holdings Limited	Industrials	18	-20	0,44	590,00	3,34	12,03	8,31
40	0	Arb Holdings Limited	Industrials	19	-20	0,28	468,00	4,22	12,14	8,24
41	PMV	Primeserv Group Ltd	Industrials	14	-20	-0,24	39,00	1,24	16,69	5,99

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
41	0	Primeserv Group Ltd	Industrials	15	-20	-0,11	58,00	1,47	21,95	4,56
41	0	Primeserv Group Ltd	Industrials	16	-20	-0,35	50,00	2,30	27,72	3,61
41	0	Primeserv Group Ltd	Industrials	17	-20	-0,51	56,00	2,89	31,73	3,15
41	0	Primeserv Group Ltd	Industrials	18	-20	-0,18	59,00	4,20	36,78	2,72
41	0	Primeserv Group Ltd	Industrials	19	-20	0,19	65,00	4,72	40,09	2,49
42	ACE	Accentuate Limited	Industrials	14	-20	-0,01	47,00	0,02	9,49	10,54
42	0	Accentuate Limited	Industrials	15	-20	-0,04	63,00	0,02	6,30	15,87
42	0	Accentuate Limited	Industrials	16	-20	0,27	90,00	0,02	7,02	14,24
42	0	Accentuate Limited	Industrials	17	-20	0,59	75,00	0,02	0,99	10,53
42	0	Accentuate Limited	Industrials	18	-20	0,40	45,00	0,02	-35,22	-2,84
42	0	Accentuate Limited	Industrials	19	-20	0,18	40,00	0,02	-52,23	-1,91
43	RTO	Rex Trueform Group Ltd	Consumer services	14	-20	0,07	1200,00	0,27	-3,42	-29,27
43	0	Rex Trueform Group Ltd	Consumer services	15	-20	0,10	1200,00	0,27	4,32	8,49
43	0	Rex Trueform Group Ltd	Consumer services	16	-20	-0,30	1425,00	0,27	3,80	26,34
43	0	Rex Trueform Group Ltd	Consumer services	17	-20	-0,20	2300,00	0,27	0,76	132,10
43	0	Rex Trueform Group Ltd	Consumer services	18	-20	-0,09	1600,00	0,27	3,89	25,72
43	0	Rex Trueform Group Ltd	Consumer services	19	-20	0,06	1865,00	0,27	3,92	25,51
44	PEM	Pembury Lifestyle Grp Lt	Consumer services	14	-20	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	15	-20	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	16	-20	0,00	0,00	0,00	0,00	0,00

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
44	0	Pembury Lifestyle Grp Lt	Consumer services	17	-20	0,00	53,00	0,41	-10,14	-9,86
44	0	Pembury Lifestyle Grp Lt	Consumer services	18	-20	-0,03	32,00	0,32	-16,80	-5,95
44	0	Pembury Lifestyle Grp Lt	Consumer services	19	-20	-0,83	10,00	0,24	-40,20	-2,49
45	0	Basil Read Holdings Ltd	Industrials	14	-20	0,31	849,00	1,70	-9,52	-10,50
45	BSR	Basil Read Holdings Ltd	Industrials	15	-20	0,33	357,00	1,62	-28,37	-3,53
45	0	Basil Read Holdings Ltd	Industrials	16	-20	0,20	360,00	1,58	-49,78	-2,01
45	0	Basil Read Holdings Ltd	Industrials	17	-20	0,17	210,00	1,90	62,49	1,59
45	0	Basil Read Holdings Ltd	Industrials	18	-20	-0,75	24,00	2,10	-758,43	-0,13
45	0	Basil Read Holdings Ltd	Industrials	19	-20	0,06	4,00	1,75	-1076,69	-0,01
46	BIK	Brikor Ltd	Industrials	14	-20	0,00	9,00	1,12	42,22	2,37
46	0	Brikor Ltd	Industrials	15	-20	0,00	9,00	1,05	42,22	2,37
46	0	Brikor Ltd	Industrials	16	-20	0,00	9,00	1,13	32,22	3,10
46	0	Brikor Ltd	Industrials	17	-20	-0,18	9,00	1,73	29,56	3,38
46	0	Brikor Ltd	Industrials	18	-20	-0,09	9,00	1,82	13,33	7,50
46	0	Brikor Ltd	Industrials	19	-20	0,00	9,00	2,00	7,78	12,86
47	CAC	Cafca Limited	Consumer services	14	-20	0,11	180,00	2,89	27,62	3,62
47	0	Cafca Limited	Consumer services	15	-20	0,06	150,00	2,73	46,36	2,16
47	0	Cafca Limited	Consumer services	16	-20	0,05	150,00	1,09	27,32	3,66
47	0	Cafca Limited	Consumer services	17	-20	0,06	150,00	1,57	14,63	6,84
47	0	Cafca Limited	Consumer services	18	-20	-0,05	170,00	0,93	52,26	1,91

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
47	0	Cafca Limited	Consumer services	19	-20	0,09	100,00	0,24	189,90	0,53
48	TLM	Telemaster Holdings Ltd	Telecom	14	-20	0,25	110,00	3,48	5,75	17,38
48	0	Telemaster Holdings Ltd	Telecom	15	-20	0,31	130,00	2,62	5,03	19,88
48	0	Telemaster Holdings Ltd	Telecom	16	-20	-0,38	70,00	3,04	6,89	17,52
48	0	Telemaster Holdings Ltd	Telecom	17	-20	0,72	45,00	4,50	13,00	7,69
48	0	Telemaster Holdings Ltd	Telecom	18	-20	0,44	75,00	5,87	9,81	10,19
48	0	Telemaster Holdings Ltd	Telecom	19	-20	0,90	75,00	4,27	3,31	30,24
49	NCS	Nictus Ltd	Consumer services	14	-20	0,56	96,00	3,54	8,10	12,22
49	0	Nictus Ltd	Consumer services	15	-20	0,37	133,00	3,20	4,53	22,09
49	0	Nictus Ltd	Consumer services	16	-20	0,03	104,00	2,86	3,06	32,70
49	0	Nictus Ltd	Consumer services	17	-20	0,01	29,00	5,78	19,86	5,03
49	0	Nictus Ltd	Consumer services	18	-20	0,61	94,00	3,40	8,47	11,81
49	0	Nictus Ltd	Consumer services	19	-20	0,97	63,00	6,98	5,98	16,71
50	SVB	Silverbridge Holdings	Tegnology	14	-20	-0,44	80,00	0,98	14,88	6,72
50	0	Silverbridge Holdings	Tegnology	15	-20	-0,45	174,00	1,36	11,38	8,79
50	0	Silverbridge Holdings	Tegnology	16	-20	0,39	295,00	1,44	9,22	10,85
50	0	Silverbridge Holdings	Tegnology	17	-20	0,51	202,00	2,52	15,80	6,33
50	0	Silverbridge Holdings	Tegnology	18	-20	0,36	112,00	5,00	30,52	3,28
50	0	Silverbridge Holdings	Tegnology	19	-20	-0,30	90,00	4,00	7,70	12,99
51	ILE	Imbalie Beauty Limited	Consumer goods	14	-20	1,30	17,00	0,83	4,00	25,00
51	0	Imbalie Beauty Limited	Consumer goods	15	-20	0,97	12,00	0,53	-5,67	-17,65
51	0	Imbalie Beauty Limited	Consumer goods	16	-20	0,10	12,00	0,14	-2,42	-41,38

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
51	0	Imbalie Beauty Limited	Consumer goods	17	-20	-0,19	6,00	0,27	-41,67	-2,40
51	0	Imbalie Beauty Limited	Consumer goods	18	-20	0,24	2,00	0,20	-149,00	-0,67
51	0	Imbalie Beauty Limited	Consumer goods	19	-20	0,14	2,00	0,20	-12,00	-8,33
52	MRI	Mine restoration investments ltd	Industrials	14	-20	0,00	10,00	0,95	-74,70	-1,34
52	0	Mine restoration investments ltd	Industrials	15	-20	0,00	5,00	0,43	-44,80	-2,23
52	0	Mine restoration investments ltd	Industrials	16	-20	-1,51	3,00	0,53	-7,00	-37,50
52	0	Mine restoration investments ltd	Industrials	17	-20	0,00	3,00	0,14	-2,67	-37,50
52	0	Mine restoration investments ltd	Industrials	18	-20	5,99	3,00	0,27	-9,67	-10,35
52	0	Mine restoration investments ltd	Industrials	19	-20	3,44	3,00	0,20	-16,33	-6,12
53	AOO	African & Over Enterprise Ltd	Consumer services	14	-20	0,04	1200,00	2,85	-3,49	-28,64
53	0	African & Over Enterprise Ltd	Consumer services	15	-20	0,07	1200,00	2,54	0,57	176,47
53	0	African & Over Enterprise Ltd	Consumer services	16	-20	0,34	1100,00	2,70	10,13	9,87
53	0	African & Over Enterprise Ltd	Consumer services	17	-20	0,53	1500,00	0,96	-0,54	-185,19
53	0	African & Over Enterprise Ltd	Consumer services	18	-20	0,19	1600,00	0,72	1,23	81,22
53	0	African & Over Enterprise Ltd	Consumer services	19	-20	0,02	2650,00	0,58	3,92	25,48
54	GRF	Group Five Ltd	Consumer services	14	-20	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	15	-20	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	16	-20	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	17	-20	0,00	0,00	0,00	0,00	0,00

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
54	0	Group Five Ltd	Consumer services	18	-20	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	19	-20	0,00	0,00	0,00	0,00	0,00
55	AHL	Ah-Vest Limited	Consumer services	14	-20	0,06	24,00		-12,80	-7,81
55	0	Ah-Vest Limited	Consumer services	15	-20	-0,18	32,00	0,00	5,75	17,39
55	0	Ah-Vest Limited	Consumer services	16	-20	-0,38	38,00	0,00	4,18	23,90
55	0	Ah-Vest Limited	Consumer services	17	-20	-0,19	18,00	0,00	10,39	9,63
55	0	Ah-Vest Limited	Consumer services	18	-20	-0,37	45,00	0,00	6,02	16,61
55	0	Ah-Vest Limited	Consumer services	19	-20	-0,51	37,00	0,00	4,62	21,64
56	ESR	Esor Limited	Consumer services	14	-20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	15	-20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	16	-20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	17	-20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	18	-20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	19	-20	0,00	0,00	0,00	0,00	0,00
57	CATP	Caxton Ctp Publish	Consumer services	14	-20	0,04	19000,00	2,20	8,60	5,52

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
57	0	Caxton Ctp Publish	Consumer services	15	-20	0,03	19000,00	2,37	14,02	5,29
57	0	Caxton Ctp Publish	Consumer services	16	-20	0,00	19000,00	2,55	15,04	5,12
57	0	Caxton Ctp Publish	Consumer services	17	-20	0,00	19000,00	2,40	17,03	4,84
57	0	Caxton Ctp Publish	Consumer services	18	-20	0,00	18500,00	2,12	23,80	4,75
57	0	Caxton Ctp Publishers	Consumer services	19	-20	0,00	16000,00	2,45	24,50	4,20
58	WEA	Wg Wearne Ltd	Consumer services	14	-20	0,04	12,00	2,13	-62,42	-1,60
58	0	Wg Wearne Ltd	Consumer services	15	-20	0,10	8,00	2,29	-83,50	-1,20
58	0	Wg Wearne Ltd	Consumer services	16	-20	0,87	11,00	2,50	-24,45	-4,09
58	0	Wg Wearne Ltd	Consumer services	17	-20	0,13	6,00	2,04	-138,83	-0,72
58	0	Wg Wearne Ltd	Consumer services	18	-20	0,00	6,00	1,78	-240,67	-0,42
58	0	Wg Wearne Ltd	Consumer services	19	-20	0,00	3,00	1,53	-481,33	-0,21
59	TCS	Total Client Services Ltd	Consumer services	14	-20	0,00	1,00	2,56	-389,00	-0,26
59	0	Total Client Services Ltd	Consumer services	15	-20	0,00	1,00	2,40	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	16	-20	0,00	1,00	2,20	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	17	-20	0,00	1,00	2,30	-476,00	-0,21

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
59	0	Total Client Services Ltd	Consumer services	18	-20	0,00	1,00	2,02	-288,00	-0,35
59	0	Total Client Services Ltd	Consumer services	19	-20	0,00	1,00	1,89	-288,00	-0,35
60	AOVP	African & Overseas Enterprises Ltd P	Consumer services	14	-20	-0,19	1250,00	4,50	8,90	92,70
60	0	African & Over Enterprise Ltd	Consumer services	15	-20	0,04	1250,00	4,80	11,84	92,59
60	0	African & Over Enterprise Ltd	Consumer services	16	-20	0,20	1250,00	4,90	12,54	92,47
60	0	African & Over Enterprise Ltd	Consumer services	17	-20	0,20	1400,00	2,25	13,56	92,35
60	0	African & Over Enterprise Ltd	Consumer services	18	-20	0,20	1052,00	0,91	21,52	92,27
60	0	African & Over Enterprise Ltd	Consumer services	19	-20	0,20	1000,00	0,96	29,20	92,18
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	14	0	0,00	0,00	0,00	0,00	0,00
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	15	0	0,00	142652,00	1,17	0,03	20,90
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	16	0	0,00	143094,00	1,17	0,03	3319,50
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	17	0	0,12	148732,00	1,37	4,17	24,00
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	18	0	0,00	95597,00	0,60	2,46	40,73
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	19	0	0,00	144949,00	0,90	7,09	14,01
2	NPN	Naspers Ltd -N-	Technology	14	0	0,82	124982,00	0,28	1,21	82,55
2	0	Naspers Ltd -N-	Technology	15	0	0,56	175105,00	0,20	0,93	107,04

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
2	0	Naspers Ltd -N-	Technology	16	0	0,45	219000,00	0,20	1,06	94,71
2	0	Naspers Ltd -N-	Technology	17	0	-0,22	254998,00	0,18	0,99	101,52
2	0	Naspers Ltd -N-	Technology	18	0	-0,22	384500,00	0,15	1,56	64,51
2	0	Naspers Ltd -N-	Technology	19	0	-0,01	341952,00	0,17	3,46	28,90
3	BTI	British American Tob Plc	Consumer services	14	0	0,23	65477,00	3,43	4,63	21,60
3	0	British American Tob Plc	Consumer services	15	0	0,06	88301,00	3,08	4,64	2,53
3	0	British American Tob Plc	Consumer services	16	0	0,05	81178,00	2,91	5,04	19,83
3	0	British American Tob Plc	Consumer services	17	0	0,10	66991,00	2,09	17,95	5,57
3	0	British American Tob Plc	Consumer services	18	0	-0,07	59230,00	4,67	8,04	12,44
3	0	British American Tob Plc	Consumer services	19	0	0,00	53350,00	7,34	9,27	10,79
4	CFR	Compagnie Fin Richemont	Consumer services	14	0	1,05	10555,00	0,16	0,48	209,19
4	0	Compagnie Fin Richemont	Consumer services	15	0	1,33	10748,00	0,99	4,31	23,19
4	0	Compagnie Fin Richemont	Consumer services	16	0	1,03	9628,00	1,52	3,89	25,72
4	0	Compagnie Fin Richemont	Consumer services	17	0	0,61	10871,00	1,44	2,71	36,92
4	0	Compagnie Fin Richemont	Consumer services	18	0	0,23	12232,00	1,19	3,33	30,00
4	0	Compagnie Fin Richemont	Consumer services	19	0	0,15	9869,00	1,93	3,59	27,87
5	VOD	Vodacom Group Ltd	Telecom	14	0	0,30	12832,00	5,46	6,98	14,32
5	0	Vodacom Group Ltd	Telecom	15	0	0,48	13362,00	4,93	6,44	15,54

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
5	0	Vodacom Group Ltd	Telecom	16	0	0,15	16440,00	4,11	5,37	18,62
5	0	Vodacom Group Ltd	Telecom	17	0	0,23	16526,00	4,14	5,29	17,90
5	0	Vodacom Group Ltd	Telecom	18	0	0,14	14350,00	5,54	6,43	15,55
5	0	Vodacom Group Ltd	Telecom	19	0	0,09	11880,00	5,35	7,31	13,69
6	MTN	Mtn Group Ltd	Telecom	14	0	0,43	21610,00	4,90	7,11	14,07
6	0	Mtn Group Ltd	Telecom	15	0	0,76	14503,00	7,68	5,14	19,44
6	0	Mtn Group Ltd	Telecom	16	0	0,69	12230,00	4,68	-0,63	-158,83
6	0	Mtn Group Ltd	Telecom	17	0	1,65	13201,00	4,24	1,38	72,53
6	0	Mtn Group Ltd	Telecom	18	0	0,70	9292,00	4,30	5,22	19,16
6	0	Mtn Group Ltd	Telecom	19	0	0,73	6280,00	6,62	5,05	19,81
7	SHP	Shoprite Holdings Ltd	Consumer goods	14	0	0,55	13997,00	2,13	4,98	20,06
7	0	Shoprite Holdings Ltd	Consumer goods	15	0	0,64	15716,00	2,09	4,92	20,33
7	0	Shoprite Holdings Ltd	Consumer goods	16	0	0,73	19131,00	2,01	4,72	21,16
7	0	Shoprite Holdings Ltd	Consumer goods	17	0	0,11	20689,00	1,95	4,95	20,22
7	0	Shoprite Holdings Ltd	Consumer goods	18	0	0,30	19165,00	2,02	4,89	20,44
7	0	Shoprite Holdings Ltd	Consumer goods	19	0	0,00	12264,00	2,08	6,37	15,71
8	BCH	Bid Corporation Ltd	Consumer services	14	0	0,46	14800,00	2,01	4,71	21,22
8	0	Bid Corporation Ltd	Consumer services	15	0	0,26	16484,00	1,99	4,69	21,33
8	0	Bid Corporation Ltd	Consumer services	16	0	0,00	27050,00	0,76	3,99	25,05
8	0	Bid Corporation Ltd	Consumer services	17	0	0,00	29850,00	1,34	3,96	25,28
8	0	Bid Corporation Ltd	Consumer services	18	0	0,00	30706,00	1,46	3,67	27,24
8	0	Bid Corporation Ltd	Consumer services	19	0	0,00	31100,00	1,65	4,31	23,20

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
9	PPH	Pepkor Holdings Ltd	Consumer services	14	0	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	15	0	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	16	0	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	17	0	0,00	2150,00	0,81	6,12	16,09
9	0	Pepkor Holdings Ltd	Consumer services	18	0	0,54	2075,00	1,07	4,07	24,56
9	0	Pepkor Holdings Ltd	Consumer services	19	0	0,68	1672,00	1,00	5,79	17,27
10	BVT	Bidvest Ltd	Industrials	14	0	0,64	30337,00	2,27	5,72	17,50
10	0	Bidvest Ltd	Industrials	15	0	0,90	35400,00	2,18	5,32	18,81
10	0	Bidvest Ltd	Industrials	16	0	0,44	16741,00	2,14	6,30	18,88
10	0	Bidvest Ltd	Industrials	17	0	0,51	17150,00	2,29	6,46	15,48
10	0	Bidvest Ltd	Industrials	18	0	0,54	18377,00	2,42	6,70	14,92
10	0	Bidvest Ltd	Industrials	19	0	0,61	20606,00	2,33	6,56	15,24
11	MRP	Mr Price Group Ltd	Consumer services	14	0	0,81	17043,00	2,40	4,49	22,28
11	0	Mr Price Group Ltd	Consumer services	15	0	0,86	24152,00	2,04	3,81	26,26
11	0	Mr Price Group Ltd	Consumer services	16	0	1,02	18450,00	2,84	5,29	19,90
11	0	Mr Price Group Ltd	Consumer services	17	0	1,00	15000,00	3,63	6,08	16,46
11	0	Mr Price Group Ltd	Consumer services	18	0	1,10	25100,00	2,29	3,95	25,30
11	0	Mr Price Group Ltd	Consumer services	19	0	1,01	19715,00	2,99	5,93	16,87

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
12	WHL	Woolworths Holdings Ltd	Consumer services	14	0	0,75	7305,00	2,76	4,72	21,18
12	0	Woolworths Holdings Ltd	Consumer services	15	0	0,84	9904,00	2,12	3,73	26,79
12	0	Woolworths Holdings Ltd	Consumer services	16	0	0,61	7985,00	3,33	5,71	17,53
12	0	Woolworths Holdings Ltd	Consumer services	17	0	0,64	6089,00	4,11	6,91	14,47
12	0	Woolworths Holdings Ltd	Consumer services	18	0	0,53	5100,00	3,75	6,79	14,73
12	0	Woolworths Holdings Ltd	Consumer services	19	0	0,51	5822,00	2,62	5,89	16,98
13	TBS	Tiger Brands Ltd	Consumer goods	14	0	0,67	38800,00	2,06	4,68	21,37
13	0	Tiger Brands Ltd	Consumer goods	15	0	0,70	35966,00	2,25	4,96	20,14
13	0	Tiger Brands Ltd	Consumer goods	16	0	0,68	38459,00	2,15	4,96	20,17
13	0	Tiger Brands Ltd	Consumer goods	17	0	0,71	40350,00	2,33	5,42	18,44
13	0	Tiger Brands Ltd	Consumer goods	18	0	0,76	28400,00	3,04	5,59	17,88
13	0	Tiger Brands Ltd	Consumer goods	19	0	0,74	21669,00	2,60	6,10	16,39
14	CLS	Clicks Group Ltd	Consumer goods	14	0	0,64	7695,00	2,10	4,44	22,52
14	0	Clicks Group Ltd	Consumer goods	15	0	0,76	10500,00	1,90	3,80	26,30
14	0	Clicks Group Ltd	Consumer goods	16	0	0,76	12249,00	1,89	3,78	3,78
14	0	Clicks Group Ltd	Consumer goods	17	0	0,67	15860,00	1,62	3,38	29,59
14	0	Clicks Group Ltd	Consumer goods	18	0	0,79	19618,00	1,55	3,12	32,04
14	0	Clicks Group Ltd	Consumer goods	19	0	0,83	25000,00	1,42	2,74	36,56
15	SPP	The Spar Group Ltd	Consumer services	14	0	0,60	14500,00	3,17	5,39	18,55
15	0	The Spar Group Ltd	Consumer services	15	0	0,00	19300,00	2,78	4,33	23,10
15	0	The Spar Group Ltd	Consumer services	16	0	0,39	17287,00	3,19	4,97	20,10

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
15	0	The Spar Group Ltd	Consumer services	17	0	0,36	16650,00	3,25	6,10	16,40
15	0	The Spar Group Ltd	Consumer services	18	0	0,44	17755,00	3,18	5,73	17,44
15	0	The Spar Group Ltd	Consumer services	19	0	0,52	19801,00	3,00	4,79	20,88
16	TFG	The Foschini Group Limit	Consumer services	14	0	0,57	11448,00	3,98	7,94	12,60
16	0	The Foschini Group Limit	Consumer services	15	0	0,65	15668,00	3,19	5,65	17,69
16	0	The Foschini Group Limit	Consumer services	16	0	0,64	14135,00	4,16	7,47	13,39
16	0	The Foschini Group Limit	Consumer services	17	0	0,69	14046,00	4,21	7,83	12,78
16	0	The Foschini Group Limit	Consumer services	18	0	0,72	18139,00	3,29	6,27	15,96
16	0	The Foschini Group Limit	Consumer services	19	0	0,70	18182,00	3,43	6,53	15,32
17	TRU	Truworths Int Ltd	Consumer services	14	0	0,97	6899,00	4,61	8,34	11,99
17	0	Truworths Int Ltd	Consumer services	15	0	0,00	8208,00	4,19	7,01	14,26
17	0	Truworths Int Ltd	Consumer services	16	0	0,88	9310,00	4,01	7,14	14,01
17	0	Truworths Int Ltd	Consumer services	17	0	0,60	7634,00	4,86	8,58	11,65
17	0	Truworths Int Ltd	Consumer services	18	0	0,57	7958,00	4,45	8,16	12,26
17	0	Truworths Int Ltd	Consumer services	19	0	0,94	5790,00	5,64	10,32	9,69

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
18	AVI	Avi Ltd	Consumer services	14	0	0,56	6948,00	3,67	5,52	18,11
18	0	Avi Ltd	Consumer services	15	0	0,50	8725,00	3,21	4,81	20,79
18	0	Avi Ltd	Consumer services	16	0	0,56	9450,00	4,91	4,91	20,36
18	0	Avi Ltd	Consumer services	17	0	0,46	9685,00	3,35	5,24	19,08
18	0	Avi Ltd	Consumer services	18	0	0,39	10506,00	3,31	5,17	19,34
18	0	Avi Ltd	Consumer services	19	0	0,42	8322,00	3,99	6,21	16,11
19	PIK	Pick N Pay Stores Ltd	Consumer services	14	0	0,40	5900,00	1,33	2,35	42,60
19	0	Pick N Pay Stores Ltd	Consumer services	15	0	0,45	5630,00	1,78	3,15	31,76
19	0	Pick N Pay Stores Ltd	Consumer services	16	0	0,64	7109,00	1,79	3,15	31,73
19	0	Pick N Pay Stores Ltd	Consumer services	17	0	0,56	5680,00	2,51	4,65	21,49
19	0	Pick N Pay Stores Ltd	Consumer services	18	0	0,61	7574,00	1,99	3,66	27,34
19	0	Pick N Pay Stores Ltd	Consumer services	19	0	0,53	7200,00	2,57	4,82	20,77
20	TKG	Telkom Sa Soc Ltd	Telecom	14	0	0,24	3583,00	3,04	19,87	5,03
20	0	Telkom Sa Soc Ltd	Telecom	15	0	0,43	6970,00	3,07	5,99	16,70
20	0	Telkom Sa Soc Ltd	Telecom	16	0	0,71	5813,00	3,13	8,02	12,46
20	0	Telkom Sa Soc Ltd	Telecom	17	0	0,70	7615,00	4,48	7,85	12,77
20	0	Telkom Sa Soc Ltd	Telecom	18	0	0,58	5170,00	5,49	11,55	8,66
20	0	Telkom Sa Soc Ltd	Telecom	19	0	0,55	9000,00	3,21	8,02	12,46

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
21	CAT	Caxton Ctp Publish Print	Consumer services	14	0	0,02	1470,00	3,62	6,69	14,94
21	0	Caxton Ctp Publish Print	Consumer services	15	0	0,03	1790,00	3,09	6,08	16,45
21	0	Caxton Ctp Publish Print	Consumer services	16	0	0,07	1320,00	4,51	8,82	11,34
21	0	Caxton Ctp Publish Print	Consumer services	17	0	-0,02	1316,00	4,26	8,78	11,38
21	0	Caxton Ctp Publish Print	Consumer services	18	0	0,19	899,00	5,34	12,12	8,25
21	0	Caxton Ctp Publish Print	Consumer services	19	0	0,38	725,00	6,62	14,01	7,14
22	RBX	Raubex Group Ltd	Industrials	14	0	0,40	2105,00	2,42	8,19	12,21
22	0	Raubex Group Ltd	Industrials	15	0	0,32	1980,00	3,05	10,56	9,47
22	0	Raubex Group Ltd	Industrials	16	0	0,37	1955,00	3,39	11,99	8,34
22	0	Raubex Group Ltd	Industrials	17	0	0,35	2364,00	3,14	8,53	11,72
22	0	Raubex Group Ltd	Industrials	18	0	0,44	1975,00	3,16	11,57	8,64
22	0	Raubex Group Ltd	Industrials	19	0	0,44	1880,00	1,45	3,03	32,98
23	LEW	Lewis Group Ltd	Consumer services	14	0	0,55	6300,00	6,98	14,62	6,84
23	0	Lewis Group Ltd	Consumer services	15	0	0,54	7243,00	6,07	12,19	8,21
23	0	Lewis Group Ltd	Consumer services	16	0	0,39	4510,00	9,74	13,78	7,25
23	0	Lewis Group Ltd	Consumer services	17	0	0,22	3125,00	5,28	12,80	7,81
23	0	Lewis Group Ltd	Consumer services	18	0	0,26	2757,00	5,80	10,90	9,11
23	0	Lewis Group Ltd	Consumer services	19	0	0,32	3215,00	5,82	11,70	8,55

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
24	SDO	Stadio Holdings Limited	Consumer goods	14	0	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	15	0	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	16	0	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	17	0	0,00	600,00	0,02	10,40	75,26
24	0	Stadio Holdings Limited	Consumer goods	18	0	0,94	360,00	0,05	0,43	234,78
24	0	Stadio Holdings Limited	Consumer goods	19	0	0,50	165,00	1,10	5,70	17,55
25	NT1	Net 1 Ueps Tech Inc	Industrials	14	0	-0,24	13000,00	2,58	11,92	8,39
25	0	Net 1 Ueps Tech Inc	Industrials	15	0	0,29	23600,00	0,60	9,79	10,21
25	0	Net 1 Ueps Tech Inc	Industrials	16	0	0,21	14700,00	3,40	16,17	6,19
25	0	Net 1 Ueps Tech Inc	Industrials	17	0	0,01	12992,00	2,70	13,98	7,15
25	0	Net 1 Ueps Tech Inc	Industrials	18	0	0,18	9910,00	2,74	14,66	6,82
25	0	Net 1 Ueps Tech Inc	Industrials	19	0	-0,20	4000,00	1,12	-155,39	-0,64
26	AVV	Alviva Holdings Ltd	Technology	14	0	0,55	1251,00	2,79	13,31	7,51
26	0	Alviva Holdings Ltd	Technology	15	0	0,00	1249,00	1,15	16,64	6,83
26	0	Alviva Holdings Ltd	Technology	16	0	0,27	1820,00	0,93	10,87	9,20
26	0	Alviva Holdings Ltd	Technology	17	0	0,70	1933,00	1,03	12,62	7,93
26	0	Alviva Holdings Ltd	Technology	18	0	0,57	1825,00	1,18	14,97	6,68
26	0	Alviva Holdings Ltd	Technology	19	0	0,45	1649,00	1,31	17,37	5,76
27	KAL	Kaap Agri Limited	Consumer services	14	0	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	15	0	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	16	0	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	17	0	0,00	4780,00	1,32	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	18	0	-0,11	3500,00	2,67	9,97	10,03

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
27	0	Kaap Agri Limited	Consumer services	19	0	-0,02	3090,00	3,20	12,88	7,77
28	OAO	Oando Plc	Oil and gas	14	0	0,07	123,00	3,20	4,43	22,59
28	0	Oando Plc	Oil and gas	15	0	-0,06	77,00	7,02	12,10	8,27
28	0	Oando Plc	Oil and gas	16	0	0,06	55,00	4,54	-2615,10	-0,04
28	0	Oando Plc	Oil and gas	17	0	0,13	27,00	3,45	-8,61	-11,62
28	0	Oando Plc	Oil and gas	18	0	0,18	30,00	2,75	1020,11	0,10
28	0	Oando Plc	Oil and gas	19	0	0,24	24,00	3,23	-476,66	-0,21
29	COM	Comair Limited	Consumer services	14	0	0,11	430,00	3,56	13,44	7,44
29	0	Comair Limited	Consumer services	15	0	0,09	275,00	4,64	17,42	5,74
29	0	Comair Limited	Consumer services	16	0	0,02	390,00	3,49	9,36	10,68
29	0	Comair Limited	Consumer services	17	0	0,12	565,00	2,97	11,86	8,43
29	0	Comair Limited	Consumer services	18	0	0,13	520,00	3,38	13,37	7,48
29	0	Comair Limited	Consumer services	19	0	0,23	339,00	5,43	58,17	1,72
30	SUR	Spur Corporation Ltd	Consumer services	14	0	0,35	3000,00	3,43	5,26	19,00
30	0	Spur Corporation Ltd	Consumer services	15	0	0,35	3350,00	3,35	4,56	21,93
30	0	Spur Corporation Ltd	Consumer services	16	0	0,36	3225,00	3,69	5,30	18,87
30	0	Spur Corporation Ltd	Consumer services	17	0	0,40	2723,00	3,88	5,13	19,49

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
30	0	Spur Corporation Ltd	Consumer services	18	0	0,27	2350,00	4,19	6,84	14,62
30	0	Spur Corporation Ltd	Consumer services	19	0	0,34	2655,00	4,10	6,54	15,29
31	ENX	Enx Group Limited	Industrials	14	0	0,17	2090,00	3,34	1,05	95,00
31	0	Enx Group Limited	Industrials	15	0	0,31	2530,25	3,75	2,39	41,82
31	0	Enx Group Limited	Industrials	16	0	0,19	1815,00	3,88	5,03	19,88
31	0	Enx Group Limited	Industrials	17	0	-0,01	1448,00	4,19	-19,07	-5,24
31	0	Enx Group Limited	Industrials	18	0	0,08	1279,00	4,10	12,35	8,09
31	0	Enx Group Limited	Industrials	19	0	0,09	1011,00	3,90	15,00	6,66
32	ADR	Adcorp Holdings Limited	Industrials	14	0	0,24	3390,00	3,51	5,56	17,97
32	0	Adcorp Holdings Limited	Industrials	15	0	0,18	3250,00	3,87	9,18	10,89
32	0	Adcorp Holdings Limited	Industrials	16	0	0,11	1940,00	5,91	15,44	6,48
32	0	Adcorp Holdings Limited	Industrials	17	0	0,13	1300,00	1,31	-2,15	-46,59
32	0	Adcorp Holdings Limited	Industrials	18	0	0,13	1700,00	2,12	-8,38	-11,93
32	0	Adcorp Holdings Limited	Industrials	19	0	0,04	2351,00	3,27	10,42	9,60
33	CMH	Combined Motor Holdings Ltd	Consumer services	14	0	0,20	1250,00	5,30	14,52	6,89
33	0	Combined Motor Holdings Ltd	Consumer services	15	0	0,13	1460,00	4,80	11,25	8,89
33	0	Combined Motor Holdings Ltd	Consumer services	16	0	0,08	1580,00	6,00	13,04	7,67
33	0	Combined Motor Holdings Ltd	Consumer services	17	0	0,09	1975,00	6,03	13,46	7,43
33	0	Combined Motor Holdings Ltd	Consumer services	18	0	0,08	3000,00	4,29	9,87	10,13
33	0	Combined Motor Holdings Ltd	Consumer services	19	0	0,27	2050,00	6,87	16,25	6,15
34	CGR	Calgro M3 Holdings Ltd	Industrials	14	0	-0,04	701,00	1,70	11,47	8,72

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
34	0	Calgro M3 Holdings Ltd	Industrials	15	0	0,01	1480,00	2,49	6,35	15,75
34	0	Calgro M3 Holdings Ltd	Industrials	16	0	0,13	2055,00	2,29	6,08	16,44
34	0	Calgro M3 Holdings Ltd	Industrials	17	0	0,20	1745,00	4,20	7,90	12,66
34	0	Calgro M3 Holdings Ltd	Industrials	18	0	0,28	1405,00	5,08	8,23	12,15
34	0	Calgro M3 Holdings Ltd	Industrials	19	0	0,13	595,00	3,35	7,65	13,07
35	MDI	Master Drilling Group Ltd	Basic	14	0	-0,39	1020,00	3,69	8,14	12,29
35	0	Master Drilling Group Ltd	Basic	15	0	-0,28	1305,00	3,88	8,66	11,55
35	0	Master Drilling Group Ltd	Basic	16	0	0,39	1230,00	4,19	11,83	8,45
35	0	Master Drilling Group Ltd	Basic	17	0	0,06	1780,00	1,35	11,80	8,48
35	0	Master Drilling Group Ltd	Basic	18	0	0,09	1375,00	1,51	11,23	8,90
35	0	Master Drilling Group Ltd	Basic	19	0	0,17	950,00	2,19	14,76	6,78
36	GSH	Grindrod Shipping Holdings	Industrials	14	0	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	15	0	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	16	0	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	17	0	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	18	0	0,00	7398,00	1,70	-18,27	-5,47
36	0	Grindrod Shipping Holdings	Industrials	19	0	0,46	4650,00	2,55	34,49	2,90
37	CIL	Cons Infrastructure Group	Industrials	14	0	0,13	2360,00	2,76	5,84	17,13
37	0	Cons Infrastructure Group	Industrials	15	0	0,16	2566,00	4,20	7,32	13,66
37	0	Cons Infrastructure Group	Industrials	16	0	0,36	2660,00	4,57	8,30	12,05
37	0	Cons Infrastructure Group	Industrials	17	0	-0,02	2293,00	3,32	10,94	9,14
37	0	Cons Infrastructure Group	Industrials	18	0	0,39	395,00	3,70	-19,72	-5,07
37	0	Cons Infrastructure Group	Industrials	19	0	0,00	280,00	3,62	-257,57	-0,39
38	NVS	Novus Holdings Limited	Industrials	14	0	0,00	0,00	0,00	0,00	0,00
38	0	Novus Holdings Limited	Industrials	15	0	0,00	1640,00	3,32	7,78	12,85
38	0	Novus Holdings Limited	Industrials	16	0	0,31	1100,00	5,41	12,68	7,89
38	0	Novus Holdings Limited	Industrials	17	0	0,24	725,00	6,18	15,28	6,54
38	0	Novus Holdings Limited	Industrials	18	0	0,21	398,00	10,45	25,85	3,87

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
38	0	Novus Holdings Limited	Industrials	19	0	0,26	350,00	6,86	17,26	5,76
39	HUG	Huge Group Ltd	Telecom	14	0	0,01	165,00	1,05	-4,88	-20,47
39	0	Huge Group Ltd	Telecom	15	0	0,19	309,00	1,10	4,14	24,18
39	0	Huge Group Ltd	Telecom	16	0	0,36	510,00	0,67	3,63	27,55
39	0	Huge Group Ltd	Telecom	17	0	0,13	750,00	1,10	3,51	28,52
39	0	Huge Group Ltd	Telecom	18	0	0,18	830,00	0,67	4,26	23,48
39	0	Huge Group Ltd	Telecom	19	0	0,10	530,00	0,58	10,52	9,51
40	ARH	Arb Holdings Limited	Industrials	14	0	0,05	680,00	1,99	6,71	14,90
40	0	Arb Holdings Limited	Industrials	15	0	0,00	575,00	2,94	8,68	11,53
40	0	Arb Holdings Limited	Industrials	16	0	0,22	533,00	3,16	9,89	10,13
40	0	Arb Holdings Limited	Industrials	17	0	0,15	595,00	3,25	10,01	9,90
40	0	Arb Holdings Limited	Industrials	18	0	0,20	635,00	3,11	11,18	8,95
40	0	Arb Holdings Limited	Industrials	19	0	0,03	420,00	4,70	13,53	7,39
41	PMV	Primeserv Group Ltd	Industrials	14	0	0,12	36,00	1,24	18,08	5,53
41	0	Primeserv Group Ltd	Industrials	15	0	-0,14	50,00	1,70	25,46	3,93
41	0	Primeserv Group Ltd	Industrials	16	0	0,04	45,00	2,55	30,80	3,25
41	0	Primeserv Group Ltd	Industrials	17	0	-0,29	58,00	2,76	30,68	3,26
41	0	Primeserv Group Ltd	Industrials	18	0	-0,51	59,00	4,20	36,78	2,72
41	0	Primeserv Group Ltd	Industrials	19	0	-0,28	70,00	4,57	37,23	2,69
42	ACE	Accentuate Limited	Industrials	14	0	0,26	68,00	0,02	9,29	10,76
42	0	Accentuate Limited	Industrials	15	0	0,00	63,00	0,02	6,30	15,87
42	0	Accentuate Limited	Industrials	16	0	0,26	68,00	0,02	9,29	10,76
42	0	Accentuate Limited	Industrials	17	0	0,60	75,00	0,02	0,99	10,35
42	0	Accentuate Limited	Industrials	18	0	0,33	45,00	0,02	-35,72	-2,84
42	0	Accentuate Limited	Industrials	19	0	0,18	40,00	0,02	-43,65	-2,29
43	RTO	Rex Trueform Group Ltd	Consumer services	14	0	0,08	1255,00	0,27	-3,27	-30,61

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
43	0	Rex Trueform Group Ltd	Consumer services	15	0	0,10	1201,00	0,27	8,50	11,76
43	0	Rex Trueform Group Ltd	Consumer services	16	0	-0,13	1425,00	0,27	3,80	26,34
43	0	Rex Trueform Group Ltd	Consumer services	17	0	-0,24	2300,00	0,27	0,76	132,18
43	0	Rex Trueform Group Ltd	Consumer services	18	0	-0,08	2250,00	0,27	2,76	36,17
43	0	Rex Trueform Group Ltd	Consumer services	19	0	0,01	1865,00	0,27	3,92	25,51
44	PEM	Pembury Lifestyle Grp Lt	Consumer services	14	0	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	15	0	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	16	0	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	17	0	0,00	41,00	0,41	-13,11	-7,63
44	0	Pembury Lifestyle Grp Lt	Consumer services	18	0	0,00	32,00	0,32	-23,53	-4,25
44	0	Pembury Lifestyle Grp Lt	Consumer services	19	0	-0,64	6,00	0,24	-67,00	-1,49
45	0	Basil Read Holdings Ltd	Industrials	14	0	0,31	840,00	1,70	10,50	9,53
45	BSR	Basil Read Holdings Ltd	Industrials	15	0	0,28	240,00	1,62	-150,87	-0,60
45	0	Basil Read Holdings Ltd	Industrials	16	0	0,36	345,00	1,58	-51,94	-1,93
45	0	Basil Read Holdings Ltd	Industrials	17	0	0,18	230,00	1,90	-9,47	-10,56
45	0	Basil Read Holdings Ltd	Industrials	18	0	-0,51	22,00	2,10	-827,38	-0,12
45	0	Basil Read Holdings Ltd	Industrials	19	0	0,08	4,00	1,75	-1076,69	-0,01
46	BIK	Brikor Ltd	Industrials	14	0	0,00	9,00	1,12	42,22	2,37

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
46	0	Brikor Ltd	Industrials	15	0	0,00	9,00	1,05	42,22	2,37
46	0	Brikor Ltd	Industrials	16	0	0,00	9,00	1,13	32,22	3,10
46	0	Brikor Ltd	Industrials	17	0	-0,18	9,00	1,73	29,56	3,38
46	0	Brikor Ltd	Industrials	18	0	-0,05	9,00	1,82	13,33	7,50
46	0	Brikor Ltd	Industrials	19	0	0,00	9,00	2,00	7,78	12,86
47	CAC	Cafca Limited	Consumer services	14	0	0,11	180,00	2,89	27,62	3,62
47	0	Cafca Limited	Consumer services	15	0	0,06	150,00	2,73	46,36	2,16
47	0	Cafca Limited	Consumer services	16	0	0,05	150,00	1,09	27,32	3,66
47	0	Cafca Limited	Consumer services	17	0	-0,03	150,00	1,57	19,07	5,24
47	0	Cafca Limited	Consumer services	18	0	0,36	170,00	0,93	88,50	1,13
47	0	Cafca Limited	Consumer services	19	0	0,09	100,00	0,24	189,90	0,53
48	TLM	Telemaster Holdings Ltd	Telecom	14	0	0,25	110,00	3,48	5,75	17,38
48	0	Telemaster Holdings Ltd	Telecom	15	0	1,08	126,00	2,70	5,19	19,27
48	0	Telemaster Holdings Ltd	Telecom	16	0	-0,08	62,00	3,43	7,77	12,86
48	0	Telemaster Holdings Ltd	Telecom	17	0	-0,37	45,00	4,50	13,00	7,69
48	0	Telemaster Holdings Ltd	Telecom	18	0	1,12	75,00	5,87	9,81	10,19
48	0	Telemaster Holdings Ltd	Telecom	19	0	0,86	70,00	4,57	3,54	28,23
49	NCS	Nictus Ltd	Consumer services	14	0	0,43	90,00	3,50	9,61	10,40
49	0	Nictus Ltd	Consumer services	15	0	0,37	133,00	3,20	4,53	22,09
49	0	Nictus Ltd	Consumer services	16	0	-0,14	123,00	2,42	2,59	38,68

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
49	0	Nictus Ltd	Consumer services	17	0	0,87	75,00	2,20	8,29	12,06
49	0	Nictus Ltd	Consumer services	18	0	0,47	89,00	3,60	8,94	11,18
49	0	Nictus Ltd	Consumer services	19	0	0,93	73,00	6,03	5,16	19,36
50	SVB	Silverbridge Holdings	Tegnology	14	0	-0,45	125,00	0,98	9,52	10,50
50	0	Silverbridge Holdings	Tegnology	15	0	0,00	204,00	1,36	9,71	10,30
50	0	Silverbridge Holdings	Tegnology	16	0	0,39	280,00	1,52	9,71	10,29
50	0	Silverbridge Holdings	Tegnology	17	0	0,39	300,00	1,70	10,64	9,40
50	0	Silverbridge Holdings	Tegnology	18	0	0,34	120,00	0,00	16,94	5,90
50	0	Silverbridge Holdings	Tegnology	19	0	-0,46	60,00	6,00	11,55	8,66
51	ILE	Imbalie Beauty Limited	Consumer goods	14	0	1,30	18,00	0,83	3,78	26,47
51	0	Imbalie Beauty Limited	Consumer goods	15	0	0,66	15,00	0,53	-4,53	-22,06
51	0	Imbalie Beauty Limited	Consumer goods	16	0	0,46	11,00	0,14	-2,64	-37,93
51	0	Imbalie Beauty Limited	Consumer goods	17	0	-0,19	6,00	0,27	-41,67	-2,40
51	0	Imbalie Beauty Limited	Consumer goods	18	0	0,16	2,00	0,20	-149,00	-149,00
51	0	Imbalie Beauty Limited	Consumer goods	19	0	0,17	2,00	0,20	-12,00	-8,33
52	MRI	Mine restoration investments ltd	Industrials	14	0	0,00	11,00	0,95	-35,82	-2,79
52	0	Mine restoration investments ltd	Industrials	15	0	0,03	7,00	0,43	-32,00	-3,13
52	0	Mine restoration investments ltd	Industrials	16	0	0,61	2,00	0,53	-4,00	-25,00
52	0	Mine restoration investments ltd	Industrials	17	0	0,00	3,00	0,14	0,14	0,14
52	0	Mine restoration investments ltd	Industrials	18	0	-6,11	3,00	0,27	-14,32	-6,98
52	0	Mine restoration investments ltd	Industrials	19	0	-7,28	3,00	0,20	-16,33	-6,12
53	AOO	African & Over Enterprise Ltd	Consumer services	14	0	0,00	1200,00	2,85	-3,49	-28,64
53	0	African & Over Enterprise Ltd	Consumer services	15	0	0,07	1200,00	2,45	0,57	176,47

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
53	0	African & Over Enterprise Ltd	Consumer services	16	0	0,34	1100,00	2,70	10,13	9,87
53	0	African & Over Enterprise Ltd	Consumer services	17	0	0,53	1500,00	0,96	-0,54	-185,19
53	0	African & Over Enterprise Ltd	Consumer services	18	0	0,19	1600,00	0,72	1,23	81,22
53	0	African & Over Enterprise Ltd	Consumer services	19	0	0,02	2650,00	0,58	3,92	25,48
54	GRF	Group Five Ltd	Consumer services	14	0	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	15	0	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	16	0	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	17	0	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	18	0	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	19	0	0,00	0,00	0,00	0,00	0,00
55	AHL	Ah-Vest Limited	Consumer services	14	0	0,06	23,00	0,00	-13,36	-7,49
55	0	Ah-Vest Limited	Consumer services	15	0	-0,20	33,00	0,00	5,58	17,93
55	0	Ah-Vest Limited	Consumer services	16	0	-0,39	38,00	0,00	4,18	23,90
55	0	Ah-Vest Limited	Consumer services	17	0	-0,19	18,00	0,00	10,39	9,63
55	0	Ah-Vest Limited	Consumer services	18	0	-0,37	45,00	0,00	6,02	16,61

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
55	0	Ah-Vest Limited	Consumer services	19	0	-0,51	37,00	0,00	4,62	21,64
56	ESR	Esor Limited	Consumer services	14	0	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	15	0	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	16	0	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	17	0	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	18	0	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	19	0	0,00	0,00	0,00	0,00	0,00
57	CATP	Caxton Ctp Publish	Consumer services	14	0	0,04	19000,00	2,20	8,60	5,52
57	0	Caxton Ctp Publish	Consumer services	15	0	0,03	19000,00	2,37	14,02	5,29
57	0	Caxton Ctp Publish	Consumer services	16	0	0,00	19000,00	2,55	15,04	5,12
57	0	Caxton Ctp Publish	Consumer services	17	0	0,00	19000,00	2,40	17,03	4,84
57	0	Caxton Ctp Publish	Consumer services	18	0	0,00	19000,00	2,06	23,80	4,75
57	0	Caxton Ctp Publishers	Consumer services	19	0	0,00	15250,00	2,57	24,50	4,20
58	WEA	Wg Wearne Ltd	Consumer services	14	0	0,05	13,00	2,13	-57,62	-1,74
58	0	Wg Wearne Ltd	Consumer services	15	0	0,10	8,00	2,29	83,50	-1,20

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
58	0	Wg Wearne Ltd	Consumer services	16	0	0,81	9,00	2,50	-29,89	-3,35
58	0	Wg Wearne Ltd	Consumer services	17	0	0,00	3,00	2,04	-277,67	-0,36
58	0	Wg Wearne Ltd	Consumer services	18	0	0,02	5,00	1,78	-288,80	-0,35
58	0	Wg Wearne Ltd	Consumer services	19	0	0,00	3,00	1,53	-481,33	-0,21
59	TCS	Total Client Services Ltd	Consumer services	14	0	0,00	1,00	2,56	-389,00	-0,26
59	0	Total Client Services Ltd	Consumer services	15	0	0,00	1,00	2,40	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	16	0	0,00	1,00	2,20	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	17	0	0,00	1,00	2,30	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	18	0	0,00	1,00	2,02	-288,00	-0,35
59	0	Total Client Services Ltd	Consumer services	19	0	0,00	1,00	1,89	-288,00	-0,35
60	AOVP	African & Overseas Enterprises Ltd P	Consumer services	14	0	-0,19	1250,00	4,50	8,90	92,70
60	0	African & Over Enterprise Ltd	Consumer services	15	0	0,04	1250,00	4,80	11,84	92,59
60	0	African & Over Enterprise Ltd	Consumer services	16	0	0,20	1250,00	4,90	12,54	92,47
60	0	African & Over Enterprise Ltd	Consumer services	17	0	0,20	1400,00	2,25	13,56	92,35
60	0	African & Over Enterprise Ltd	Consumer services	18	0	0,20	1052,00	0,91	21,52	92,27

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
60	0	African & Over Enterprise Ltd	Consumer services	19	0	0,20	1000,00	0,96	29,20	92,18
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	14	20	0,00	0,00	0,00	0,00	0,00
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	15	20	0,00	140322,00	1,17	0,74	21,64
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	16	20	0,00	141901,00	1,68	0,74	134,31
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	17	20	0,22	116837,00	3,18	4,59	21,80
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	18	20	0,00	118434,00	1,58	2,46	40,63
1	ABIT	Anheuser-Busch Inbev Sa	Consumer services	19	20	0,00	60113,00	1,42	11,10	9,01
2	NPN	Naspers Ltd -N-	Technology	14	20	0,81	130000,00	0,28	1,16	85,87
2	0	Naspers Ltd -N-	Technology	15	20	0,62	192500,00	0,21	0,93	107,42
2	0	Naspers Ltd -N-	Technology	16	20	0,51	226819,00	0,19	1,02	98,05
2	0	Naspers Ltd -N-	Technology	17	20	0,19	278909,00	0,17	0,90	111,94
2	0	Naspers Ltd -N-	Technology	18	20	-0,25	344850,00	0,15	1,57	63,83
2	0	Naspers Ltd -N-	Technology	19	20	-0,09	346001,00	0,17	3,42	29,24
3	BTI	British American Tob Plc	Consumer services	14	20	0,17	65099,00	3,45	4,66	21,48
3	0	British American Tob Plc	Consumer services	15	20	0,03	87800,00	3,10	4,67	21,41
3	0	British American Tob Plc	Consumer services	16	20	0,00	92150,00	2,57	4,44	22,51
3	0	British American Tob Plc	Consumer services	17	20	0,00	72810,00	1,92	16,51	6,06
3	0	British American Tob Plc	Consumer services	18	20	-0,14	56582,00	4,89	8,42	11,88

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
3	0	British American Tob Plc	Consumer services	19	20	0,00	66090,00	5,93	7,48	13,37
4	CFR	Compagnie Fin Richemont	Consumer services	14	20	1,00	11154,00	1,24	5,51	22,17
4	0	Compagnie Fin Richemont	Consumer services	15	20	0,81	10564,00	1,63	3,13	31,91
4	0	Compagnie Fin Richemont	Consumer services	16	20	1,04	9224,00	1,52	4,75	21,05
4	0	Compagnie Fin Richemont	Consumer services	17	20	0,38	10787,00	1,44	2,73	36,64
4	0	Compagnie Fin Richemont	Consumer services	18	20	0,16	11685,00	1,19	3,08	32,42
4	0	Compagnie Fin Richemont	Consumer services	19	20	0,29	11274,00	1,93	3,67	27,25
5	VOD	Vodacom Group Ltd	Telecom	14	20	0,53	13540,00	5,18	6,62	15,11
5	0	Vodacom Group Ltd	Telecom	15	20	0,33	13700,00	4,81	6,28	15,93
5	0	Vodacom Group Ltd	Telecom	16	20	0,39	16264,00	4,15	5,43	18,42
5	0	Vodacom Group Ltd	Telecom	17	20	0,17	16767,00	4,08	5,50	18,17
5	0	Vodacom Group Ltd	Telecom	18	20	0,02	12775,00	5,10	7,23	13,84
5	0	Vodacom Group Ltd	Telecom	19	20	-0,43	12557,00	5,06	6,91	14,47
6	MTN	Mtn Group Ltd	Telecom	14	20	0,54	20500,00	5,16	7,49	13,35
6	0	Mtn Group Ltd	Telecom	15	20	0,46	13520,00	8,24	5,52	18,12
6	0	Mtn Group Ltd	Telecom	16	20	0,40	12200,00	4,69	-0,63	-158,44
6	0	Mtn Group Ltd	Telecom	17	20	0,82	11902,00	4,71	1,53	65,53
6	0	Mtn Group Ltd	Telecom	18	20	0,00	8862,00	4,51	5,47	18,27
6	0	Mtn Group Ltd	Telecom	19	20	0,95	4835,00	9,09	9,67	10,34
7	SHP	Shoprite Holdings Ltd	Consumer goods	14	20	0,62	13900,00	2,14	5,02	19,93
7	0	Shoprite Holdings Ltd	Consumer goods	15	20	0,62	14647,00	2,24	5,28	18,95
7	0	Shoprite Holdings Ltd	Consumer goods	16	20	0,22	19437,00	1,98	4,65	21,49

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
7	0	Shoprite Holdings Ltd	Consumer goods	17	20	0,16	21150,00	1,91	4,84	20,67
7	0	Shoprite Holdings Ltd	Consumer goods	18	20	0,37	18162,00	2,13	5,16	19,37
7	0	Shoprite Holdings Ltd	Consumer goods	19	20	0,00	13148,00	1,94	5,94	16,84
8	BCH	Bid Corporation Ltd	Consumer services	14	20	0,32	14687,00	2,03	4,75	21,05
8	0	Bid Corporation Ltd	Consumer services	15	20	0,34	15475,00	2,12	4,99	20,02
8	0	Bid Corporation Ltd	Consumer services	16	20	0,00	26742,00	0,77	4,04	24,76
8	0	Bid Corporation Ltd	Consumer services	17	20	0,00	30502,00	1,31	3,87	25,83
8	0	Bid Corporation Ltd	Consumer services	18	20	0,00	30800,00	1,45	3,66	27,32
8	0	Bid Corporation Ltd	Consumer services	19	20	0,00	32407,00	1,55	4,14	24,18
9	PPH	Pepkor Holdings Ltd	Consumer services	14	20	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	15	20	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	16	20	0,00	0,00	0,00	0,00	0,00
9	0	Pepkor Holdings Ltd	Consumer services	17	20	0,00	2013,00	0,81	6,64	15,09
9	0	Pepkor Holdings Ltd	Consumer services	18	20	0,71	1929,00	1,15	4,35	22,83
9	0	Pepkor Holdings Ltd	Consumer services	19	20	0,62	1621,00	1,03	5,97	16,75
10	BVT	Bidvest Ltd	Industrials	14	20	0,91	31040,00	2,22	5,59	17,90
10	0	Bidvest Ltd	Industrials	15	20	0,68	34870,00	2,22	5,40	18,53
10	0	Bidvest Ltd	Industrials	16	20	0,00	16101,00	2,22	6,55	15,27

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
10	0	Bidvest Ltd	Industrials	17	20	0,36	18762,00	2,09	5,91	19,93
10	0	Bidvest Ltd	Industrials	18	20	0,41	19311,00	2,30	6,38	15,68
10	0	Bidvest Ltd	Industrials	19	20	0,55	22139,00	2,17	6,11	16,37
11	MRP	Mr Price Group Ltd	Consumer services	14	20	0,80	17817,00	2,30	4,29	23,29
11	0	Mr Price Group Ltd	Consumer services	15	20	0,92	24240,00	2,03	3,79	26,36
11	0	Mr Price Group Ltd	Consumer services	16	20	1,05	20098,00	2,82	5,26	19,00
11	0	Mr Price Group Ltd	Consumer services	17	20	1,07	14975,00	3,67	6,63	15,09
11	0	Mr Price Group Ltd	Consumer services	18	20	1,02	22578,00	2,46	4,87	20,52
11	0	Mr Price Group Ltd	Consumer services	19	20	1,06	20733,00	2,84	5,64	17,74
12	WHL	Woolworths Holdings Ltd	Consumer services	14	20	0,76	6888,00	2,96	5,05	19,81
12	0	Woolworths Holdings Ltd	Consumer services	15	20	0,92	10100,00	2,08	3,66	27,32
12	0	Woolworths Holdings Ltd	Consumer services	16	20	0,66	7875,00	3,38	5,79	17,28
12	0	Woolworths Holdings Ltd	Consumer services	17	20	0,63	6060,00	4,13	6,95	14,40
12	0	Woolworths Holdings Ltd	Consumer services	18	20	0,52	4940,00	3,95	7,15	13,98
12	0	Woolworths Holdings Ltd	Consumer services	19	20	0,42	5472,00	2,79	6,27	15,96
13	TBS	Tiger Brands Ltd	Consumer goods	14	20	0,57	37261,00	2,14	4,87	20,52
13	0	Tiger Brands Ltd	Consumer goods	15	20	0,67	32464,00	2,49	5,50	18,18
13	0	Tiger Brands Ltd	Consumer goods	16	20	0,85	38500,00	2,35	5,52	18,10

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
13	0	Tiger Brands Ltd	Consumer goods	17	20	0,68	42322,00	2,04	5,11	19,58
13	0	Tiger Brands Ltd	Consumer goods	18	20	0,63	27032,00	3,20	5,88	17,01
13	0	Tiger Brands Ltd	Consumer goods	19	20	0,75	20519,00	2,75	6,44	15,52
14	CLS	Clicks Group Ltd	Consumer goods	14	20	0,00	7960,00	2,03	4,29	23,30
14	0	Clicks Group Ltd	Consumer goods	15	20	0,74	9638,00	2,07	4,14	24,14
14	0	Clicks Group Ltd	Consumer goods	16	20	0,73	12043,00	1,92	3,84	3,84
14	0	Clicks Group Ltd	Consumer goods	17	20	0,76	17400,00	1,48	3,08	32,44
14	0	Clicks Group Ltd	Consumer goods	18	20	0,71	19141,00	1,59	3,20	31,26
14	0	Clicks Group Ltd	Consumer goods	19	20	0,81	25035,00	1,42	2,73	36,61
15	SPP	The Spar Group Ltd	Consumer services	14	20	0,49	15205,00	3,02	5,14	19,45
15	0	The Spar Group Ltd	Consumer services	15	20	0,30	18489,00	2,91	4,52	22,13
15	0	The Spar Group Ltd	Consumer services	16	20	0,38	18976,00	2,98	5,38	18,60
15	0	The Spar Group Ltd	Consumer services	17	20	0,35	19731,00	2,74	4,83	20,71
15	0	The Spar Group Ltd	Consumer services	18	20	0,44	19800,00	2,95	4,80	20,50
15	0	The Spar Group Ltd	Consumer services	19	20	0,48	20261,00	3,16	5,57	17,94
16	TFG	The Foschini Group Limit	Consumer services	14	20	0,48	11435,00	3,98	7,95	12,58
16	0	The Foschini Group Limit	Consumer services	15	20	0,55	14800,00	3,38	5,98	16,71
16	0	The Foschini Group Limit	Consumer services	16	20	0,64	13648,00	4,30	7,74	12,93
16	0	The Foschini Group Limit	Consumer services	17	20	0,61	13905,00	4,25	7,88	12,69

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
16	0	The Foschini Group Limit	Consumer services	18	20	0,67	17390,00	3,43	3,43	15,30
16	0	The Foschini Group Limit	Consumer services	19	20	0,68	17901,00	3,49	6,65	15,08
17	TRU	Truworths Int Ltd	Consumer services	14	20	1,00	7560,00	4,33	7,65	13,11
17	0	Truworths Int Ltd	Consumer services	15	20	0,92	8739,00	3,94	6,79	14,22
17	0	Truworths Int Ltd	Consumer services	16	20	0,90	7600,00	5,06	8,78	14,38
17	0	Truworths Int Ltd	Consumer services	17	20	0,63	8300,00	4,36	7,98	12,54
17	0	Truworths Int Ltd	Consumer services	18	20	0,59	8311,00	4,04	7,41	13,50
17	0	Truworths Int Ltd	Consumer services	19	20	0,67	5357,00	5,73	10,51	9,52
18	AVI	Avi Ltd	Consumer services	14	20	0,57	6729,00	3,79	5,70	17,54
18	0	Avi Ltd	Consumer services	15	20	0,51	8530,00	3,28	4,92	20,32
18	0	Avi Ltd	Consumer services	16	20	0,43	9377,00	4,95	4,95	20,20
18	0	Avi Ltd	Consumer services	17	20	0,46	9589,00	3,38	5,29	18,89
18	0	Avi Ltd	Consumer services	18	20	0,41	9980,00	3,42	5,34	18,74
18	0	Avi Ltd	Consumer services	19	20	0,40	8417,00	3,94	6,14	16,29
19	PIK	Pick N Pay Stores Ltd	Consumer services	14	20	3,38	58263,00	1,35	2,38	42,04

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
19	0	Pick N Pay Stores Ltd	Consumer services	15	20	0,52	5750,00	1,75	3,08	32,44
19	0	Pick N Pay Stores Ltd	Consumer services	16	20	0,62	7163,00	1,77	3,13	31,97
19	0	Pick N Pay Stores Ltd	Consumer services	17	20	0,55	5901,00	2,42	4,48	22,32
19	0	Pick N Pay Stores Ltd	Consumer services	18	20	0,51	7478,00	2,02	3,70	27,00
19	0	Pick N Pay Stores Ltd	Consumer services	19	20	0,43	6900,00	2,68	5,02	19,90
20	TKG	Telkom Sa Soc Ltd	Telecom	14	20	0,33	4263,00	3,04	19,97	5,01
20	0	Telkom Sa Soc Ltd	Telecom	15	20	0,45	5930,00	3,08	10,24	9,76
20	0	Telkom Sa Soc Ltd	Telecom	16	20	0,57	6624,00	3,50	4,98	20,07
20	0	Telkom Sa Soc Ltd	Telecom	17	20	0,71	6665,00	5,16	10,82	9,24
20	0	Telkom Sa Soc Ltd	Telecom	18	20	0,58	5368,00	5,29	11,12	8,99
20	0	Telkom Sa Soc Ltd	Telecom	19	20	0,54	9523,00	3,04	7,59	13,10
21	CAT	Caxton Ctp Publish Print	Consumer services	14	20	0,22	1450,00	3,67	6,67	14,74
21	0	Caxton Ctp Publish Print	Consumer services	15	20	0,04	1648,00	3,35	6,60	15,50
21	0	Caxton Ctp Publish Print	Consumer services	16	20	0,15	1305,00	4,56	8,92	11,21
21	0	Caxton Ctp Publish Print	Consumer services	17	20	0,01	1275,00	4,39	9,07	11,03
21	0	Caxton Ctp Publish Print	Consumer services	18	20	0,25	920,00	5,22	11,85	8,44
21	0	Caxton Ctp Publish Print	Consumer services	19	20	3,34	720,00	6,67	14,11	7,09
22	RBX	Raubex Group Ltd	Industrials	14	20	0,53	2255,00	2,45	8,30	12,05
22	0	Raubex Group Ltd	Industrials	15	20	0,29	1860,00	3,24	11,24	8,90

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
22	0	Raubex Group Ltd	Industrials	16	20	0,34	1868,00	3,55	12,55	7,97
22	0	Raubex Group Ltd	Industrials	17	20	0,36	2417,00	3,07	8,35	11,98
22	0	Raubex Group Ltd	Industrials	18	20	0,37	2018,00	3,09	11,33	8,83
22	0	Raubex Group Ltd	Industrials	19	20	0,40	1940,00	1,40	2,94	34,03
23	LEW	Lewis Group Ltd	Consumer services	14	20	0,48	6521,00	6,74	14,13	7,08
23	0	Lewis Group Ltd	Consumer services	15	20	0,55	6328,00	6,94	13,95	7,17
23	0	Lewis Group Ltd	Consumer services	16	20	0,59	4507,00	9,75	13,79	7,25
23	0	Lewis Group Ltd	Consumer services	17	20	0,27	2961,00	5,57	13,51	7,40
23	0	Lewis Group Ltd	Consumer services	18	20	0,24	2724,00	5,87	11,11	9,00
23	0	Lewis Group Ltd	Consumer services	19	20	0,32	3264,00	5,74	11,53	8,68
24	SDO	Stadio Holdings Limited	Consumer goods	14	20	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	15	20	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	16	20	0,00	0,00	0,00	0,00	0,00
24	0	Stadio Holdings Limited	Consumer goods	17	20	0,00	461,00	0,02	10,40	75,26
24	0	Stadio Holdings Limited	Consumer goods	18	20	0,83	369,00	0,05	2,11	47,31
24	0	Stadio Holdings Limited	Consumer goods	19	20	0,80	80,00	1,01	10,63	9,41
25	NT1	Net 1 Ueps Tech Inc	Industrials	14	20	-0,25	14200,00	2,58	13,02	7,68
25	0	Net 1 Ueps Tech Inc	Industrials	15	20	0,30	22500,00	2,60	10,66	9,38
25	0	Net 1 Ueps Tech Inc	Industrials	16	20	0,53	15500,00	3,40	15,39	6,50
25	0	Net 1 Ueps Tech Inc	Industrials	17	20	0,06	14450,00	2,70	11,13	8,98
25	0	Net 1 Ueps Tech Inc	Industrials	18	20	0,35	7223,00	2,74	12,16	8,22
25	0	Net 1 Ueps Tech Inc	Industrials	19	20	0,06	4000,00	1,12	-110,33	-0,91
26	AVV	Alviva Holdings Ltd	Technology	14	20	0,41	1177,00	2,79	14,50	7,07

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
26	0	Alviva Holdings Ltd	Technology	15	20	0,50	1390,00	1,15	13,16	7,60
26	0	Alviva Holdings Ltd	Technology	16	20	0,31	1590,00	1,07	12,44	8,04
26	0	Alviva Holdings Ltd	Technology	17	20	0,00	2080,00	0,96	11,73	8,53
26	0	Alviva Holdings Ltd	Technology	18	20	0,53	1815,00	1,19	15,05	6,64
26	0	Alviva Holdings Ltd	Technology	19	20	0,43	1421,00	1,69	20,91	4,78
27	KAL	Kaap Agri Limited	Consumer services	14	20	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	15	20	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	16	20	0,00	0,00	0,00	0,00	0,00
27	0	Kaap Agri Limited	Consumer services	17	20	0,00	4949,00	1,35	6,98	14,32
27	0	Kaap Agri Limited	Consumer services	18	20	-0,13	3450,00	2,71	10,21	9,89
27	0	Kaap Agri Limited	Consumer services	19	20	0,05	2875,00	3,44	13,84	7,23
28	OAO	Oando Plc	Oil and gas	14	20	-0,12	125,00	3,15	4,36	22,96
28	0	Oando Plc	Oil and gas	15	20	-0,07	88,00	6,14	10,59	9,45
28	0	Oando Plc	Oil and gas	16	20	0,04	50,00	4,54	-2876,61	-0,03
28	0	Oando Plc	Oil and gas	17	20	0,12	22,00	3,45	6,64	15,07
28	0	Oando Plc	Oil and gas	18	20	0,42	30,00	2,75	1020,11	0,10
28	0	Oando Plc	Oil and gas	19	20	0,16	20,00	3,23	35,88	2,79
29	COM	Comair Limited	Consumer services	14	20	0,01	410,00	3,73	14,10	7,09
29	0	Comair Limited	Consumer services	15	20	0,12	320,00	3,98	14,97	6,68
29	0	Comair Limited	Consumer services	16	20	0,02	415,00	3,28	8,80	11,37

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
29	0	Comair Limited	Consumer services	17	20	0,02	575,00	2,92	11,65	8,58
29	0	Comair Limited	Consumer services	18	20	0,17	500,00	3,52	13,90	7,19
29	0	Comair Limited	Consumer services	19	20	0,18	295,00	6,24	66,85	1,50
30	SUR	Spur Corporation Ltd	Consumer services	14	20	0,29	3100,00	3,32	5,09	19,63
30	0	Spur Corporation Ltd	Consumer services	15	20	0,33	3300,00	3,40	4,63	21,60
30	0	Spur Corporation Ltd	Consumer services	16	20	0,41	3120,00	3,81	5,48	18,26
30	0	Spur Corporation Ltd	Consumer services	17	20	0,39	2642,00	4,00	5,29	18,91
30	0	Spur Corporation Ltd	Consumer services	18	20	0,25	2320,00	4,24	6,93	14,43
30	0	Spur Corporation Ltd	Consumer services	19	20	0,42	2650,00	4,11	6,55	15,26
31	ENX	Enx Group Limited	Industrials	14	20	0,18	2200,22	3,34	3,05	32,79
31	0	Enx Group Limited	Industrials	15	20	0,34	2640,00	3,75	3,17	31,58
31	0	Enx Group Limited	Industrials	16	20	0,12	1778,00	3,88	-18,19	-5,50
31	0	Enx Group Limited	Industrials	17	20	0,14	1390,00	4,19	-19,86	-5,03
31	0	Enx Group Limited	Industrials	18	20	0,09	1260,00	4,10	12,54	7,97
31	0	Enx Group Limited	Industrials	19	20	0,10	1050,00	3,90	13,43	7,45
32	ADR	Adcorp Holdings Limited	Industrials	14	20	0,19	3356,00	3,55	5,62	17,79
32	0	Adcorp Holdings Limited	Industrials	15	20	0,23	3460,00	3,64	8,63	11,59
32	0	Adcorp Holdings Limited	Industrials	16	20	0,15	1990,00	5,77	15,06	6,64
32	0	Adcorp Holdings Limited	Industrials	17	20	0,13	1350,00	1,26	-2,07	-48,39
32	0	Adcorp Holdings Limited	Industrials	18	20	0,07	1757,00	2,12	-8,11	-12,33
32	0	Adcorp Holdings Limited	Industrials	19	20	0,08	2419,00	3,18	10,13	9,87

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
33	CMH	Combined Motor Holdings Ltd	Consumer services	14	20	0,06	1275,00	5,20	12,29	8,14
33	0	Combined Motor Holdings Ltd	Consumer services	15	20	0,09	1750,00	4,74	11,12	8,99
33	0	Combined Motor Holdings Ltd	Consumer services	16	20	0,06	1740,00	6,42	14,22	7,03
33	0	Combined Motor Holdings Ltd	Consumer services	17	20	0,02	2200,00	5,76	12,92	7,74
33	0	Combined Motor Holdings Ltd	Consumer services	18	20	0,08	3295,00	4,27	4,27	9,90
33	0	Combined Motor Holdings Ltd	Consumer services	19	20	0,21	2374,00	5,93	12,86	7,78
34	CGR	Calgro M3 Holdings Ltd	Industrials	14	20	-0,05	821,00	1,70	10,13	9,87
34	0	Calgro M3 Holdings Ltd	Industrials	15	20	-0,05	1676,00	2,49	6,54	15,28
34	0	Calgro M3 Holdings Ltd	Industrials	16	20	0,20	2218,00	2,29	6,27	15,96
34	0	Calgro M3 Holdings Ltd	Industrials	17	20	0,20	1700,00	4,20	7,83	12,77
34	0	Calgro M3 Holdings Ltd	Industrials	18	20	0,10	1350,00	5,08	6,68	14,98
34	0	Calgro M3 Holdings Ltd	Industrials	19	20	0,14	614,00	3,35	-3,10	-32,30
35	MDI	Master Drilling Group Ltd	Basic	14	20	0,13	1195,00	3,69	8,30	12,05
35	0	Master Drilling Group Ltd	Basic	15	20	0,01	1490,00	3,88	8,82	11,33
35	0	Master Drilling Group Ltd	Basic	16	20	0,31	1370,00	4,19	12,84	7,78
35	0	Master Drilling Group Ltd	Basic	17	20	0,29	1750,00	1,37	12,00	8,33
35	0	Master Drilling Group Ltd	Basic	18	20	0,11	1255,00	1,66	12,30	8,13
35	0	Master Drilling Group Ltd	Basic	19	20	0,01	1170,00	2,20	12,12	8,25
36	GSH	Grindrod Shipping Holdings	Industrials	14	20	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	15	20	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	16	20	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	17	20	0,00	0,00	0,00	0,00	0,00
36	0	Grindrod Shipping Holdings	Industrials	18	20	0,00	7200,00	1,70	-18,77	-5,33

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
36	0	Grindrod Shipping Holdings	Industrials	19	20	0,53	4000,00	2,55	40,90	2,49
37	CIL	Cons Infrastructure Group	Industrials	14	20	0,06	2442,00	2,76	5,64	17,72
37	0	Cons Infrastructure Group	Industrials	15	20	0,18	2555,00	4,20	7,35	13,60
37	0	Cons Infrastructure Group	Industrials	16	20	-0,02	2850,00	4,57	7,74	12,91
37	0	Cons Infrastructure Group	Industrials	17	20	0,47	2201,00	3,32	11,40	8,77
37	0	Cons Infrastructure Group	Industrials	18	20	0,37	375,00	3,70	-20,77	-4,81
37	0	Cons Infrastructure Group	Industrials	19	20	0,27	261,00	3,62	-276,32	-0,36
38	NVS	Novus Holdings Limited	Industrials	14	20	0,00	0,00	0,00	0,00	0,00
38	0	Novus Holdings Limited	Industrials	15	20	0,00	1470,00	3,70	8,68	11,52
38	0	Novus Holdings Limited	Industrials	16	20	0,32	1150,00	5,17	12,13	8,24
38	0	Novus Holdings Limited	Industrials	17	20	-0.10	650,00	6,89	17,05	5,87
38	0	Novus Holdings Limited	Industrials	18	20	-0,07	450,00	9,24	22,56	4,37
38	0	Novus Holdings Limited	Industrials	19	20	0,17	303,00	7,92	19,93	5,02
39	HUG	Huge Group Ltd	Telecom	14	20	0,12	150,00	1,05	9,28	-19,78
39	0	Huge Group Ltd	Telecom	15	20	-0,03	325,00	1,05	3,93	25,43
39	0	Huge Group Ltd	Telecom	16	20	0,33	510,00	0,67	3,63	27,55
39	0	Huge Group Ltd	Telecom	17	20	-0,07	730,00	1,10	3,60	27,76
39	0	Huge Group Ltd	Telecom	18	20	0,18	899,00	0,67	5,15	19,40
39	0	Huge Group Ltd	Telecom	19	20	0,25	600,00	0,58	9,30	10,75
40	ARH	Arb Holdings Limited	Industrials	14	20	0,01	700,00	2,44	7,18	13,92
40	0	Arb Holdings Limited	Industrials	15	20	0,10	585,00	2,92	8,55	11,70
40	0	Arb Holdings Limited	Industrials	16	20	0,32	600,00	3,27	9,96	10,04
40	0	Arb Holdings Limited	Industrials	17	20	0,54	590,00	3,39	10,49	9,52
40	0	Arb Holdings Limited	Industrials	18	20	0,12	630,00	3,17	11,38	8,79
40	0	Arb Holdings Limited	Industrials	19	20	0,18	430,00	4,65	13,53	7,39
41	PMV	Primeserv Group Ltd	Industrials	14	20	-0,21	36,00	1,24	18,08	5,53
41	0	Primeserv Group Ltd	Industrials	15	20	0,23	50,00	1,70	25,46	3,93
41	0	Primeserv Group Ltd	Industrials	16	20	-0,42	46,00	2,49	30,13	3,22

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
41	0	Primeserv Group Ltd	Industrials	17	20	-0,30	70,00	2,29	25,39	3,94
41	0	Primeserv Group Ltd	Industrials	18	20	-0,40	59,00	4,20	36,78	2,72
41	0	Primeserv Group Ltd	Industrials	19	20	-0,46	63,00	5,08	41,37	2,42
42	ACE	Accentuate Limited	Industrials	14	20	0,67	50,00	0,02	8,92	11,21
42	0	Accentuate Limited	Industrials	15	20	-0,13	63,00	0,02	6,30	15,87
42	0	Accentuate Limited	Industrials	16	20	0,25	85,00	0,02	7,44	13,45
42	0	Accentuate Limited	Industrials	17	20	0,63	72,00	0,02	1,03	9,30
42	0	Accentuate Limited	Industrials	18	20	0,30	16,00	0,02	-103,56	-0,97
42	0	Accentuate Limited	Industrials	19	20	0,47	39,00	0,02	-44,77	-2,23
43	RTO	Rex Trueform Group Ltd	Consumer services	14	20	0,02	1255,00	0,27	-3,27	-30,61
43	0	Rex Trueform Group Ltd	Consumer services	15	20	0,09	1201,00	0,27	8,49	11,77
43	0	Rex Trueform Group Ltd	Consumer services	16	20	0,02	1425,00	0,27	3,80	26,34
43	0	Rex Trueform Group Ltd	Consumer services	17	20	-0,02	2300,00	0,27	0,76	132,18
43	0	Rex Trueform Group Ltd	Consumer services	18	20	-0,04	2250,00	0,27	2,76	26,17
43	0	Rex Trueform Group Ltd	Consumer services	19	20	0,09	1865,00	0,27	3,92	25,51
44	PEM	Pembury Lifestyle Grp Lt	Consumer services	14	20	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	15	20	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	16	20	0,00	0,00	0,00	0,00	0,00
44	0	Pembury Lifestyle Grp Lt	Consumer services	17	20	0,00	32,00	0,41	-16,80	-5,95

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
44	0	Pembury Lifestyle Grp Lt	Consumer services	18	20	0,16	32,00	0,32	-28,25	-3,54
44	0	Pembury Lifestyle Grp Lt	Consumer services	19	20	-0,13	6,00	0,24	-77,50	-1,29
45	0	Basil Read Holdings Ltd	Industrials	14	20	0,30	920,00	1,70	9,58	10,44
45	BSR	Basil Read Holdings Ltd	Industrials	15	20	0,29	293,00	1,62	-123,58	-0,81
45	0	Basil Read Holdings Ltd	Industrials	16	20	0,66	375,00	1,58	-32,07	3,12
45	0	Basil Read Holdings Ltd	Industrials	17	20	-0,52	210,00	1,90	-10,38	-9,64
45	0	Basil Read Holdings Ltd	Industrials	18	20	-0,40	20,00	2,10	-2153,38	-0,05
45	0	Basil Read Holdings Ltd	Industrials	19	20	0,06	4,00	1,75	-1076,69	-0,01
46	BIK	Brikor Ltd	Industrials	14	20	0,00	9,00	1,12	42,22	2,37
46	0	Brikor Ltd	Industrials	15	20	0,00	9,00	1,05	42,22	2,37
46	0	Brikor Ltd	Industrials	16	20	0,00	9,00	1,13	32,22	3,10
46	0	Brikor Ltd	Industrials	17	20	-0,17	9,00	1,73	51,11	1,96
46	0	Brikor Ltd	Industrials	18	20	-0,05	9,00	1,82	13,33	7,50
46	0	Brikor Ltd	Industrials	19	20	0,00	9,00	2,00	7,78	12,86
47	CAC	Cafca Limited	Consumer services	14	20	0,11	175,00	2,89	37,09	3,62
47	0	Cafca Limited	Consumer services	15	20	0,15	150,00	2,73	43,23	2,31
47	0	Cafca Limited	Consumer services	16	20	0,06	150,00	1,09	12,30	8,13
47	0	Cafca Limited	Consumer services	17	20	-0,03	150,00	1,57	19,07	5,24
47	0	Cafca Limited	Consumer services	18	20	0,36	170,00	0,93	88,50	1,13
47	0	Cafca Limited	Consumer services	19	20	0,09	100,00	0,24	5,74	17,41

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
48	TLM	Telemaster Holdings Ltd	Telecom	14	20	-3,31	145,00	2,64	4,37	22,91
48	0	Telemaster Holdings Ltd	Telecom	15	20	1,05	123,00	2,76	5,32	18,81
48	0	Telemaster Holdings Ltd	Telecom	16	20	0,00	63,00	3,37	7,65	13,07
48	0	Telemaster Holdings Ltd	Telecom	17	20	0,08	50,00	4,05	11,70	8,55
48	0	Telemaster Holdings Ltd	Telecom	18	20	0,20	65,00	6,77	11,32	8,83
48	0	Telemaster Holdings Ltd	Telecom	19	20	1,20	70,00	4,57	3,54	28,23
49	NCS	Nictus Ltd	Consumer services	14	20	0,43	85,00	3,35	10,18	9,82
49	0	Nictus Ltd	Consumer services	15	20	0,30	138,00	3,08	7,80	12,83
49	0	Nictus Ltd	Consumer services	16	20	0,06	120,00	2,13	2,58	38,71
49	0	Nictus Ltd	Consumer services	17	20	-0,23	36,00	4,58	17,28	5,79
49	0	Nictus Ltd	Consumer services	18	20	1,18	80,00	4,00	9,95	10,05
49	0	Nictus Ltd	Consumer services	19	20	0,87	75,00	5,87	5,03	19,89
50	SVB	Silverbridge Holdings	Tegnology	14	20	-0,74	120,00	0,98	14,17	14,17
50	0	Silverbridge Holdings	Tegnology	15	20	-0,42	210,00	1,36	2,02	11,48
50	0	Silverbridge Holdings	Tegnology	16	20	0,37	300,00	1,70	9,68	6,68
50	0	Silverbridge Holdings	Tegnology	17	20	0,40	290,00	1,93	14,31	6,99
50	0	Silverbridge Holdings	Tegnology	18	20	0,54	115,00	3,13	17,68	5,60
50	0	Silverbridge Holdings	Tegnology	19	20	0,13	70,00	0,00	-36,87	-2,71
51	ILE	Imbalie Beauty Limited	Consumer goods	14	20	1,30	15,00	0,83	4,53	22,06
51	0	Imbalie Beauty Limited	Consumer goods	15	20	0,62	15,00	0,53	-4,53	-22,06
51	0	Imbalie Beauty Limited	Consumer goods	16	20	0,61	12,00	0,14	0,00	-41,38
51	0	Imbalie Beauty Limited	Consumer goods	17	20	-0,42	5,00	0,27	-50,00	-2,00
51	0	Imbalie Beauty Limited	Consumer goods	18	20	0,14	2,00	0,20	-149,00	-149,00

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
51	0	Imbalie Beauty Limited	Consumer goods	19	20	0,28	3,00	0,20	-8,00	-12,50
52	MRI	Mine restoration investments ltd	Industrials	14	20	0,00	7,00	0,95	-36,29	-1,78
52	0	Mine restoration investments ltd	Industrials	15	20	0,01	7,00	0,43	-32,00	-3,13
52	0	Mine restoration investments ltd	Industrials	16	20	0,61	2,00	0,53	-4,00	-25,00
52	0	Mine restoration investments ltd	Industrials	17	20	0,00	3,00	0,14	0,14	0,14
52	0	Mine restoration investments ltd	Industrials	18	20	5,22	3,00	0,27	-14,32	-6,98
52	0	Mine restoration investments ltd	Industrials	19	20	-7,28	3,00	0,20	-16,33	-6,12
53	AOO	African & Over Enterprise Ltd	Consumer services	14	20	20,00	1200,00	2,85	-3,49	-28,64
53	0	African & Over Enterprise Ltd	Consumer services	15	20	0,07	1200,00	2,45	0,57	176,47
53	0	African & Over Enterprise Ltd	Consumer services	16	20	0,13	1100,00	2,70	10,13	9,87
53	0	African & Over Enterprise Ltd	Consumer services	17	20	0,16	1500,00	0,96	-0,54	-185,19
53	0	African & Over Enterprise Ltd	Consumer services	18	20	0,20	1821,00	0,72	1,08	92,44
53	0	African & Over Enterprise Ltd	Consumer services	19	20	0,47	2720,00	0,58	3,82	26,15
54	GRF	Group Five Ltd	Consumer services	14	20	delisted	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	15	20	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	16	20	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	17	20	0,00	0,00	0,00	0,00	0,00
54	0	Group Five Ltd	Consumer services	18	20	0,00	0,00	0,00	0,00	0,00

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
54	0	Group Five Ltd	Consumer services	19	20	0,00	0,00	0,00	0,00	0,00
55	AHL	Ah-Vest Limited	Consumer services	14	20	0.06	23,00	0,00	-13,36	-7,49
55	0	Ah-Vest Limited	Consumer services	15	20	-0,20	33,00	0,00	5,58	17,93
55	0	Ah-Vest Limited	Consumer services	16	20	-0,34	31,00	0,00	5,13	19,50
55	0	Ah-Vest Limited	Consumer services	17	20	-0,37	20,00	0,00	9,35	10,70
55	0	Ah-Vest Limited	Consumer services	18	20	-0,45	45,00	0,00	24,64	4,06
55	0	Ah-Vest Limited	Consumer services	19	20	-0,28	37,00	0,00	4,62	21,64
56	ESR	Esor Limited	Consumer services	14	20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	15	20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	16	20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	17	20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	18	20	0,00	0,00	0,00	0,00	0,00
56	0	Esor Limited	Consumer services	19	20	0,00	0,00	0,00	0,00	0,00
57	CATP	Caxton Ctp Publish	Consumer services	14	20	0,04	19000,00	2,20	8,60	5,52
57	0	Caxton Ctp Publish	Consumer services	15	20	0,03	19000,00	2,37	14,02	5,29

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
57	0	Caxton Ctp Publish	Consumer services	16	20	0,00	19000,00	2,55	15,04	5,12
57	0	Caxton Ctp Publish	Consumer services	17	20	0,00	19000,00	2,40	17,03	4,84
57	0	Caxton Ctp Publish	Consumer services	18	20	0,00	19000,00	2,06	23,80	4,75
57	0	Caxton Ctp Publishers	Consumer services	19	20	0,00	15250,00	2,57	24,50	4,20
58	WEA	Wg Wearne Ltd	Consumer services	14	20	0,05	14,00	2,13	-43,36	-2,31
58	0	Wg Wearne Ltd	Consumer services	15	20	0,10	14,00	2,29	-20,21	-4,95
58	0	Wg Wearne Ltd	Consumer services	16	20	0,87	8,00	2,50	-86,88	-1,15
58	0	Wg Wearne Ltd	Consumer services	17	20	0,09	4,00	2,04	-208,25	-0,48
58	0	Wg Wearne Ltd	Consumer services	18	20	0,03	6,00	1,78	-240,67	-0,42
58	0	Wg Wearne Ltd	Consumer services	19	20	0,00	3,00	1,53	-481,33	-0,21
59	TCS	Total Client Services Ltd	Consumer services	14	20	0,00	1,00	2,56	-389,00	-0,26
59	0	Total Client Services Ltd	Consumer services	15	20	0,00	1,00	2,40	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	16	20	0,00	1,00	2,20	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	17	20	0,00	1,00	2,30	-476,00	-0,21
59	0	Total Client Services Ltd	Consumer services	18	20	0,00	1,00	2,02	-288,00	-0,35

No	JSE code	Company name	Jse industry	Year	Time point	Beta	SP	DY	EY	PE
59	0	Total Client Services Ltd	Consumer services	19	20	0,00	1,00	1,89	-288,00	-0,35
60	AOVP	African & Overseas Enterprises Ltd P	Consumer services	14	20	-0,22	1250,00	4,49	8,90	92,70
60	0	African & Over Enterprise Ltd	Consumer services	15	20	0,04	1250,00	4,80	11,84	92,59
60	0	African & Over Enterprise Ltd	Consumer services	16	20	0,20	1250,00	4,90	12,54	92,47
60	0	African & Over Enterprise Ltd	Consumer services	17	20	0,20	1400,00	2,25	13,56	92,35
60	0	African & Over Enterprise Ltd	Consumer services	18	20	0,20	1052,00	0,91	21,52	92,27
60	0	African & Over Enterprise Ltd	Consumer services	19	20	0,20	1000,00	0,96	29,20	92,18

ANNEXURES C- ETHICAL APPROVAL

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: 018 299-1111/2222
Web: http://www.nwu.ac.za

Economic and Management Sciences Research
Ethics Committee (EMS-REC)
Tel: 018 299-1427
Email: Bennie.Linde@nwu.ac.za

Dr T Swanepoel and Dr J J Swart

Per e-mail

Dear Drs Swanepoel and Swart,

FEEDBACK – ETHICS APPLICATION 15032019 – A Smit (12066060) (NWU-0115-19A4) – MCom in Accountancy – Dr T Swanepoel and Dr J J Swart

Your ethics application**,** *Analysing market ratio fluctuations before and after publication of financial statements,* that served on the EMS-REC meeting of 15 March 2019 refers.

Outcome:

Approved as a minimal risk study with number NWU-0115-19A4 given for three years of ethical clearance. Please provide a confirmation that permission was granted to use the INETBFA database as addendum to the application, before this database is used.

Kind regards,

Prof B Linde
Chairperson: Economic and Management Sciences Research Ethics Committee (EMS-REC)