

Effectiveness of Economic Value Added measure in the South African banking sector

April Baloyi

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ABSTRACT

Banks are fundamentally different from manufacturing companies in that bulk of the assets they use to generate revenue are financial assets (loans/ advances to companies and consumers, trading portfolio assets, investment securities, loans/ advances to other banks etc) which are not subject to the traditional manufacturing physical assets factors such as depreciation, shrinkage and damage. The main factor impacting the financial assets in banking is primarily credit impairments. Despite their unique asset base, banks have shareholders who expect returns and therefore similar to all other corporations, banks have to prove that shareholder value is created in order to keep shareholders on board. This study aims to ascertain if Economic Value Added (EVA) is a potential alternative reliable shareholder value creation measure and determine how it compares to the traditional accounting measures (ROA and ROE) in the South African banking sector context. Using the banks' financial reports data, the regression modelling empirical study results indicate that EVA is not a reliable shareholder value creation measure and it is not better at predicting shareholder value creation than the traditional accounting measures. The study concludes that EVA does not present a reliable alternative for measuring shareholder value creation in the South African banking sector. Banks' managers, shareholders and potential investors would probably have to continue relying on the traditional accounting, efficiency, liquidity and credit risk measures as indicators for potential shareholder value being created.

DECLARATION

I, April Baloyi, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

April Baloyi

Signed at Johannesburg on the 28 day of February 2016

DEDICATION

To my wife Wendy, my daughter Ntsako and my son Nkateko for all the cheering, the support and the sacrifice they endured through the duration of my MBA studies.

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CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

The purpose of this research is to assess the effectiveness of Economic Value Added (EVA) in measuring shareholder value creation in the South African banking sector. The report will provide the analysis of the relationship between EVA and Market Capital to Book Value and compare to the results of the relationship between traditional accounting profit measures and the Market Capital to Book Value.

1.2 Context of the study

South Africa is one of the African countries which until 2012 was the biggest economy in Africa before it was over taken by Nigeria in 2013 (BBCNews 2014). As at Q1 2015, the South African GDP was R965 billion (STATSSA, 2015) with an estimated population size of just over 54 million (STATSSA, 2014). South Africa is classified as an emerging market like Russia, India, China and Brazil which are economies that have an international and first world economies attention (Käkönen 2014). South Africa is a home for couple of internationally listed companies such as SAB Miller, SASOL, Bidvest etc and also host international companies that are listed in the Johannesburg Stock Exchange (JSE 2015).

South Africa has multiple economic sectors like most of the first world countries. One of the sectors that are internationally highly rated is the banking sector which was resilient during the 2007+ international financial market recessionary cycle (Lee et al., 2014). Maredza and Ikhude (2013) noted that the South African banking system has been resilient during the 2007+ international financial market down turn crisis mostly because of the profound South African banking regulations and the effective macroeconomic policies. There are 29 registered banks with Banking Association of South Africa (BASA, 2015). The South African banking market is dominated by the 4 main banks (Barclays Africa

Group, First Rand Bank, Standard bank and Nedbank) who make up over 85% of the South African registered banks' balance sheet (SARB, 2014). The top 7 in market capital as listed in the Johannesburg Stock Exchange (JSE, 2015) of the 29 banks are South African borne. A significant 6 out of this top 7 banks are in the top 100 of the Johannesburg Stock Exchange market capital companies (JSE, 2015). Maredza and Ikhida (2013) noted that the banks have a significant contribution to the economic growth as a result of the role they play in risk management and responsible financial incubation to consumers and businesses which stimulates growth. It can be anticipated that given the resilience and the growth prospects of the South African banking sector, it is probably one of the sectors that investors expect high returns from.

Since late 1800 economists have argued that the organisation is truly profitable if the accounting profit is higher than the cost associated with the capital invested. This is what for decades has been referred to as the residual income which has been in effect since the 1890s (Shil, 2009). The residual income theme has been used in an endeavour to estimate the economic profit generated by the firm. Sharma and Kumar (2010) define economic profit as the amount with which the accounting profit exceeds the minimum expected return from the capital invested by shareholders. When the firm makes economic profit, it is generating value for the shareholders.

According to Ncube (2009), South African banks have predominantly focused on driving cost efficiency and profit efficiency up. Whilst he acknowledged that there is no consensus among researchers on the measures of efficiency, Ncube (2009) has noted that cost to income ratio is predominantly used as a measure of cost efficiency whilst Return on Assets, Return on Equity, Capital Asset ratio and others have mostly been adopted as measures of profit efficiency. It remains unproven if it could be generalised that a high cost efficient and high profit efficient bank generates economic profit. On the literature review of their study, Maredza and Ikhida (2013) noted that the use of the traditional accounting measures such as Return on Equity, Return on Assets etc is not adequate in banking. Could this challenge be attributed to the fact that banking is different from other industries? Battese and Van Der Westhuizen (2013) have

explained the primary banking business model as buyers and sellers of money and the secondary model as a financial service provider. This description of a bank's business model already imply that the banks' asset base is primary the money as opposed to traditional assets such as heavy machinery, equipment, property etc all which have limited life span and are subject to factors such as depreciation, shrinkage and breakage. It is not known whether the bank's business model is the cause for traditional accounting measures to be said not to be adequate. Banks may need to explore how else to measure shareholder value creation and the good starting point maybe to explore the residual income theme.

According to Grant (2003) EVA was commercialised in 1982 by Stern Steward & Co. According to Sharma and Kumar (2010) Stern Stewards & Co, the USA based business consultants have registered a trademark of EVA in 1990 which is argued by many to be similar and a modified version of the old theme of residual income. Fernandez (2013) has quoted Stern Steward's media commercial claims that EVA is the ultimate measure of shareholder value creation. The significant increase in number of studies on EVA post 1990 can be attributed mostly to the Stern Steward EVA commercialisation claims. There has been studies and research on EVA in various contexts and using various techniques and methodologies. In all the studies of EVA, one thing that has been consistent is how it is calculated. EVA is the residual value attained by subtracting cost of capital from the net profit after tax (Sharma & Kumar, 2010).

In their literature review, Sharma and Kumar (2010) reviewed multiple studies of EVA and discovered mixed conclusions where some studies support whilst others reject that EVA is a superior shareholder value creation measure. The research studies on EVA are primarily aimed at determining if EVA predicts shareholder value creation better than the traditional accounting measures. In their literature review of 112 published papers on EVA, Sharma and Kumar (2010) indicated that bulk of the EVA studies have been done in the first world countries where there is large international corporates. There have been some studies in developing economies including Africa but relatively few.

Given the level of sophistication and international competitiveness of the South African banking sector, it is of interest to explore how EVA would perform as a measure of shareholder value creation in this sector.

As shareholders and investors expect value growth from the banks, leadership and management in banking have the responsibility to ensure value is generated (Uyemura, Kantor, & Pettit, 1996). Any measure or indicator that can help management and leadership to proactively drive increased shareholder value creation would probably be welcomed and embraced. This research therefore aims to explore if EVA could be one of the measures that South African banks should adopt to help in accelerating proactive shareholder value creation.

1.3 Problem statement

1.3.1 *Main problem*

In manufacturing industry bulk of the assets used to produce goods/ stock are physical assets such as machinery and property which have limited useful life cycle. Banks are fundamentally different in that bulk of their assets are financial assets (loans/ advances to companies and consumers, trading portfolio assets, investment securities, loans/ advances to other banks etc) which are not subject to the factors that impact traditional manufacturing assets such as depreciation, shrinkage, wear and tear. The main factors impacting the financial assets in banking are primarily credit impairments (the rate of which is not static nor fully predictable) which result from payments default and inflation which impact the South African Reserve Bank prime lending rate which in turn have direct implications to the consumer repayment behaviour. Similar to the assets, banking liabilities are liquid cash (in the form of customer deposits, trading portfolio, debt securities in issue) which is immediately transferrable into financial assets. Liabilities can therefore be seen predominantly as short term liabilities as they are mostly in movement on on-going basis. The banks liability structure is again fundamentally different from the manufacturing industry liability structure which has short term liabilities (including accounts payables,

bank overdrafts etc) and long term liabilities (including long term debt, long term provisions etc). Just like the manufacturing firms, banks have shareholders whose aim is to increase value over time. The construct of value generating assets in banking is fundamentally different from manufacturing although similar general accounting practices and tracking mechanisms are used across industries. Given this significant differences in asset and liability construct in banking, it is unknown if the traditional accounting measures such as Return on Assets and Return on Equity provide an optimum value creation view for shareholders or if an emerging Economic Value Added (EVA) measure would provide an alternative reliable shareholder value creation view.

1.3.2 Sub-problems

Sub Problem 1

It is unknown if EVA would turn out to be a reliable shareholder value creation measure in banking

Sub Problem 2

It is unknown if EVA could serve as an alternative to traditional accounting metrics in measuring shareholder value creation in banking

1.4 Research objective

To analyse and evaluate the effectiveness of EVA in measuring shareholder value creation in the South African banking sector relative to the traditional accounting performance measures

1.5 Significance of the study

The study will provide analysis to how EVA performs as a measure of shareholder value creation in the South African banking sector. Since the commercialisation of EVA by Stern Steward in the 1990s, there has been couple of studies and researches attempting to prove the claim made by Stern

Steward that EVA is a true measure of shareholder value creation (Sharma & Kumar, 2010). As Sharma and Kumar (2010) indicated, the bulk of the studies have been in developed economies and fewer studies in the developing economies. Among the developing economies, there has been some studies that explored EVA in the African contexts such as “Determinants of Bank Performance in Ghana, the Economic Value Added (EVA) Approach” by Owusu-Antwi, Mensah, Crabbe, and Antwi (2014). There has also been studies of EVA in banking internationally such as “The Application of Economic Value Added on Performance Evaluation of Listed Banks in China” by (Zheng, 2014).

There has however been a minimal study of EVA in the South African context and particularly in the banking sector. Especially given the unique business model, assets and liability constructs of banks, the gap exists in whether the traditional accounting measures are adequate in tracking shareholder value creation or whether EVA would become an alternative measure in tracking shareholder value creation in the South African banking market. This study aims not only to fill the gap in exploring EVA’s performance in the South African context but to zoom into the South African banking sector.

Given its resilience and high international regard, the South African banking sector can be expected to be more sustainable and most probably to generate value for shareholders. It will therefore be of interest to explore whether EVA is a reliable and a better measure of shareholder value creation in the South African banking sector than traditional accounting measures.

Whilst EVA has been the main variable that was assessed in various studies, it has not consistently been measured against the same variable since shareholder value has been represented by different variables in different studies. The study will therefore further add to the assessment of EVA against shareholder value as represented by Market Capital to Book Value ratio which will contribute to the pool of studies.

Leadership in banking, just like in any other corporation are concerned about generating value for the shareholders and stakeholders. It is therefore of primary interest to leadership and senior management to ensure proactive drive

of value creation. Performance indicators play a crucial role in enabling proactive measurement of whether value is being created, maintained or destroyed. If EVA could be proven to be one of the good measures, then leadership and senior management would probably adopt it. On the other hand, active investors continue to explore opportunities to invest in businesses that have high yield. It can be argued with high confidence that it is at the interest of investors to keep track of how much value a company is generating in order to inform investment decisions. The last set of stakeholders with embedded interest to company value generation is the company shareholders themselves. They will probably keep abreast of whether and how much value is being generated by the company. For the above stated reasons, all these stakeholders are most probably likely to take interest in the outcome and findings of this research which could lead them to implementing and tracking EVA as a shareholder value creation measure in banking and probably related financial sectors.

1.6 Delimitations of the study

The research will be conducted using the top 7 in market value South African banks namely; Barclays Group Africa, Rand Merchant Bank Group, Standard Bank Group, Nedbank Group, Capitec Bank, Investec Bank and African Bank Limited.

1.7 Definition of terms

- Economic Value Added (EVA) – refers to the residual value net of Net Operating Income After Tax (NOPAT) and the cost of the Invested Capital (IC). EVA is calculated through the formula: $EVA = NOPAT - WACC \times IC$ where
 - NOPAT = Net Operating Income After Tax
 - WACC = Weighted Average Cost of Capital is the weighted average of the cost of debt and the expected return from equity (Fernandez, 2010).
 - IC = Invested Capital is the total capital value (both borrowings and shareholder equity) employed in business to generate income
- Traditional accounting measures – refers to Return on Equity (ROE) and Return on Asset (ROA)
- Market Capital – Also referred to as Market Value, is the total value of issued shares with formula: $Market\ Value = Total\ Shares\ on\ Issue \times Share\ Price$
- Book Value – Also referred to as Equity, is the total owner's equity as reported on the Balance Sheet
- Shareholder Value – refers to the net worth of the shareholder which is the value carried in the increased share price, Book Value and Dividends combined. For the purpose of this study, shareholder value will be represented by Market Capital to Book Value with formula: $Market\ Capital\ to\ Book\ Value = Market\ Value / Book\ Value$

1.8 Assumptions

The following assumptions will be made in conducting the research:

- The monthly betas are averaged to form an annual beta which is employed in the calculation of WACC.
- In case where Market Value is not reported in the banks' annual report, it will be calculated using the closing share price as reported on the Banks' yearend report and the closing total ordinary shares on issue. It will be assumed that closing share price is a fair representation of the share price given the fluctuations of the share price on on-going basis

CHAPTER 2. Literature review

2.1 Introduction

The literature review will focus on key themes under study including banking, shareholder value and shareholder value creation measures. The literature will mainly highlight the previous research outcomes and findings. The critic and contrast of different past researches will be provided and the analysis will ultimately inform the research hypothesis that will be tested in this research.

2.2 Literature Review of the main Themes

2.2.1 *South African banking sector*

Ifeacho and Ngalawa (2014) have noted that Banks in South Africa play a significant economic role by contributing about 20% to GDP and by being the 3rd largest employer in the country. It has already been indicated that the South African banking system weathered the 2007/ 2008 international financial sector crisis swiftly due to the sound governance and regulation (Maredza & Ikhide, 2013). Looking at the fact that banking is core to the South African economy and that it is viewed as well governed, the value growth by shareholders can inevitably be expected.

Ncube (2009) has indicated that the increase in competition and regulatory requirements are among factors that drive the banking cost efficiency low which imply increasing operating costs for the banks. Kumbirai and Webb (2010) also added to this view by stating that increase in South African banking sector cost base is driven by the increase in technology, regulation and increase in competition. That said, unless revenues increase at a faster rate than the costs, it would mean that over time the banks may become less profitable. This is therefore a counter benefit as the sound governance was core to the resilience against the international financial crisis and preserved shareholder value at the time. Just like in any other firms, increase in profitability is very important as

retained earnings add to the owner's equity and on the other hand, dividends are more often paid when the company make good profits.

As observed in their annual reports (BAGL, 2014) and on the Reserve Bank report (SARB, 2014), banks' reporting mainly centre around cost efficiency, profitability, liquidity and risk management. Kumbirai and Webb (2010) have noted that bank regulators, in addition to shareholders closely measure and monitor the banks' performance with significant focus on liquidity, profitability and credit risk management. According to Ifeacho and Ngalawa (2014), the financial ratios such as Return on Assets, Return on Equity, Interest Margin and Liquidity Ratios are among the mostly used in Banking to track the performance. Similar views were observed in other studies such as (Flamini, Schumacher, & McDonald, 2009; Ifeacho & Ngalawa, 2014; Ncube, 2009) all whom concur with the financial ratios being the most used in assessing performance..

One will expect that a profitable, liquid bank with high cost efficiency and sound credit management generates value to the shareholders especially when the share price is growing and dividends are paid. Clearly the financial performance measures that banks use are good measures as evidenced by the growth in the South African banking sector and the resilience experienced during the 2007/2008 international financial down cycle. It is therefore of interest to establish how these traditional financial measures perform as shareholder value creation indicators over and above being very good performance measures.

2.2.2 Shareholder value

Stout (2013) defines a shareholder as anyone or entity that own shares in a public company. Owning shares is what is generally referred to as investing in a company and this is either done directly in the stock market or via the stock broker in the stock market. Stout (2013) has highlighted that shareholders have varying interests ranging from short term returns optimisation shareholders who may not be worried about the long term success of the company to long term returns optimisation with sometimes short term return compromise for the benefit of the long term. Based on this definition and the different shareholder

types, it can be anticipated that short term shareholders have predominant interest in short term growth of the share price whilst long term shareholders will be concerned with sustainable long term share price growth and dividends pay out.

Shareholder value can simply be defined as the net financial worth of the shareholder's investment (total value of shares). When net financial worth of the investment grows, then shareholder value is created and when it declines, shareholder value is destroyed. Stout (2013) has made a sound argument that it is not a legal obligation for companies to focus on shareholder value optimisation but rather a management option. Whilst his statement holds true and as Stout (2013) acknowledges, shareholder value creation is potentially one of the factors that a company that aims to attract public investment need to focus on in addition to profitability, efficiency, employee and community development. In alignment with Stout (2013), Chabrak (2014) has argued that the company should mainly worry about driving profitability in the right way, which include taking care of the employees, customers, communities and through organisational efficiency which when achieved often translate into shareholder value being created.

The above view links with how the banks primarily measure performance through profitability, liquidity, efficiency and sustainability. Despite the views that shareholder value should be driven as a result of other performance focus, in order to retain shareholders or attract future shareholders, the company has to prove that it has the ability to create shareholder value. Those who believe the primary focus of managers should be to create and optimise shareholder value like (Hall, 2012; Jensen, 2001) will argue that the focus should start with shareholder value and then other performance focus areas will then be achieved.

It is the ancient knowledge that the primary objective of a business firm is to make at least the accounting profit. Entrepreneurs who start commercial businesses can therefore be expected to be driven by the desire to make profits. Similar to the entrepreneurs, shareholders who invest their money into a business expect the returns. There are different investment options ranging

from very low risk low return like a bank deposit through to high risk with high yield investment such as the stock market. High risk high yield investors generally desire the returns that are higher than what can be earned from a government bond which is considered a relatively lower risk compared to stock markets with moderate rate of return (Arrow & Lind, 2014). In the case of stock market investment, which is where the top 7 South African banks under study play, investors generally expect the returns that are at least greater or equal to what they would get from the low risk investment options otherwise they would rather invest in government bonds.

Looking at the definition by Stout (2013) of a shareholder being a person or an entity that own shares in a company, one would deduce that shareholder value is then reflected by the Market Value which is the value of the total shares on issue. One will then expect shareholder value to be created when the Market Value grows which would mostly be driven by the growth in share price. Uyemura et al. (1996) argue that Market Value can be increase by either increase in share price (which is good for shareholders) or by increasing number of shares on issue (which dilutes shareholding and thus not good for Shareholders. Therefore Uyemura et al. (1996) have noted that shareholder value creation occur when market value added increase which is attained when the Market Value is increasingly greater than the Invested Capital. In their study of EVA, Baybordi, Nejad, and Kargar (2015) evaluated EVA against stock returns growth as a representation for shareholder value. Stock returns include both the growth in share price and dividends yield which both represent the value that shareholders get. One will note that stock returns also use the main driver of Market Value which is the share price together with the on-going dividend yield.

Most of researches reviewed during EVA studies tend to lean towards Market Value and Book Value growth for a view of shareholder value growth. This study will therefore use Market Capital to Book Value growth as an indicator for shareholder value creation.

2.2.3 Economic Value Added (EVA)

As already introduced, the trademark of EVA was registered in the 1990 by Stern Steward Consultancy. EVA has been positioned as the measure that gives a better measurement for shareholder value creation and a tool that management can use in order to proactively ensure they pull the levers that drive shareholders value up. EVA was introduced in an endeavour to help answer the million dollar question; how do we know value has been created for shareholders and most importantly how do we predict if values is going to be created or destroyed.

According to Grant (2003), EVA is better than traditional accounting measures as it looks at the firm's residual profitability net of the cost of capital. This stems from the old economist's economic profit notion that a company is not profitable unless the returns it generates from the invested capital exceeds the opportunity cost of the capital (Grant, 2003). EVA is seen to meet the definition of the economic profit as it is calculated by deducting the cost of the invested capital from the net operating profit. Grant (2003) noted that EVA can be calculated using the accounting or the finance formula as follows:

1. Accounting formula: **$EVA = NOPAT - \text{Cost of Capital}$**

where NOPAT is the Net Operating Profit After Tax and Cost of Capital = Capital Cost Charge Rate x Invested Capital

2. Finance formula: **$MVA = PV \text{ of expected future EVA}$**

where MVA is Market Value Added = Firm Value (debt + equity value) – Total Capital and PV refers to the Present Value

Grant (2003) concluded based on the finance calculation that a company with a series of future positive EVA will then have a positive MVA and thus will add value to the shareholders. Whilst Grant (2003) did not argue for EVA being a superior measure of shareholder value to other accounting metrics, his findings where that companies with positive EVA experience share prices growth over time and positive Market Value Added as a result and vice versa. Grant (2003) ultimately concluded that EVA is a good shareholder value creation indicator that both an investor and the corporate manager can use to their benefit. Grant

(2003) study was based on the statistical correlations relationships between EVA and MVA.

EVA supported as a better shareholder value creation measure

Uyemura et al. (1996) also noted that MVA is a measure that attempt to capture the value added to shareholders over time and it is denoted by a formula $MVA = \text{Market Capital} - \text{Invested Capital}$. The study conducted by Uyemura et al. (1996) on the largest 100 international banks was aimed at determining how the traditional accounting measures compared to EVA in correlation to MVA. EVA was found to have the highest correlation to MVA over the period of the study which led to the conclusion that EVA was a better measure of shareholder value creation for banks as well. Uyemura et al. (1996)'s study moved to test whether EVA could be used to measure shareholder value creation on business unit level or project level within the banking division and they also concluded that EVA was a better measure on that level than traditional accounting measures. The view was later supported by Grant (2003) when he concluded that EVA can be used by corporate managers at the business unit level to proactively manage shareholder value creation.

In their study of 62 Chilean companies, Sandoval (2011) tested both EVA and what they term REVA (Refined EVA) against traditional accounting measures using stock returns as an indicator of shareholder value creation. The difference between EVA and REVA is that the company's Market Value at the beginning of the period is used instead of the Invested Capital in the formula of EVA. Stock returns include both the dividends earned in the period plus the share price change determined using the CAPM (Capital Asset Pricing Model). Sandoval (2011)'s findings led to a conclusion that REVA and EVA outperforms traditional accounting measures in tracking stock returns with REVA beating EVA when controlled for the accounting measures. Sandoval (2011) further added that REVA would be a good performance measure to be adopted by the CEOs whilst EVA is better as a performance measure to be adopted by all other executives and management of the company in order to drive performance that lead to shareholder value creation.

Using over 6,000 companies that were used in the original studies of Stern Steward & Co during initial EVA commercialisation days, O'Byrne (1997)'s study conclusion was that EVA was able to explain Market Value more than the traditional accounting measures and therefore EVA is a better measure of shareholder value creation.

EVA supported as a shareholder value creation measure

In their study of 70 companies, Hasani and Fathi (2012)'s focus was to test if EVA could be used as an additional measure that tracks shareholder value creation using Market Value as the indicator for shareholder value. The outcome of the statistical regression models resulted in a conclusion that EVA is significantly correlated to Market Value and thus it could be used as an additional indicator of shareholder value creation (Hasani & Fathi, 2012). At least the outcome of EVA having a strong correlation to Market Value as the indicator for shareholder value creation is consistent with that of O'Byrne (1997). Hasani and Fathi (2012)'s focus was not about whether EVA is superior to traditional accounting measures but rather on whether it should be considered. In the process they discovered that EVA also had very high and significant correlation with the traditional profitability accounting measures such as EPS and ROE.

EVA not supported as a better shareholder value creation measure

There has also been couple of studies that have been done and concluded against EVA being a better measure that tracks shareholder value creation. Biddle, Bowen, and Wallace (1999) have done a statistical analysis to test whether EVA had a better correlation with stock return using a sample of over 6,000 companies over 10years and statistical analysis outcome showed that EVA had less regression power (Rsquare) compared to earnings and free cash flow. This led to a conclusion that EVA is not a superior measure of shareholder value creation since stock returns growth is the main shareholder value carrier. Despite the findings that EVA is not superior to traditional accounting measures, Biddle et al. (1999)'s study outcome could not disprove that EVA does help

managers to focus on the right levers that drive firm performance up and ultimately boost residual income.

In their study of EVA, using a sample of 61 companies Tortella and Brusco (2003) used a different approach which was to observe the performance of the companies post versus prior adoption of EVA as the measure. Tortella and Brusco (2003)'s findings were that in the short to medium term, about 3 to 4 years post adoption of EVA, the companies' performance measures of profitability (ROA), market returns (annual average monthly market return) and investment activity measures such as price to book ratio all did not show any significant change (neither negative or positive). Tortella and Brusco (2003)'s study also witnessed the significant short term improvement in cash flow and investment activities for companies that linked EVA to management compensation however the result does not seem to directly translate into the firm and shareholder value maximisation. It was therefore questionable if there is any benefit in linking EVA to management incentive if it does not translate into visible shareholder value. This could be leaning to the fact that management manipulate variables to attain high scores whilst the activities are essentially of no value to the company which ties to the saying that goes "you get what you reward".

In his study of EVA, Fraker (2006) only concluded that EVA could be used by bank managers to proactively drive the financial performance of the bank up. Whether the increasing financial performance would be driving shareholder value is not indicated. Again this does not give evidence that translate into shareholder value being created.

Rationale for mixed EVA studies outcomes

There has been an increased number of EVA studies since its commercialisation in the 1980s. To this date there remain mixed conclusions in favour and against EVA being a superior measure of shareholder value creation. Sharma and Kumar (2010) performed a comprehensive literature review on 112 studies that were done between 1994 and 2008 and they have capture all the outcomes of the studies over the period and the outcomes are

mixed in favour and against EVA. As it has been seen on the literature that this study reviewed so far and as supported by Sharma and Kumar (2010) in their massive EVA literature review, EVA studies were done in different times, different industries, different markets, using different statistical analysis models, different dependent variables that represent shareholder value and varying hypotheses were being tested.

The context and the methodology deployed most probably contribute significantly to the differing outcomes some of which support EVA to be superior to traditional accounting measures whilst other disagree. Although in their study they ultimately concluded in favour of EVA being a superior measure of shareholder value growth, O'Byrne (1997) made valuable arguments for the fundamental methodology difference that potentially lead to conclusions that do not favour EVA. Some of O'Byrne (1997)'s biggest criticisms to studies that do not support EVA are that such studies do not focus on change in shareholder value over time but rather actual shareholder value in totality and that they do not use expected EVA improvements as a variable. The non EVA supporting studies will probably argue their case against O' Byrne's view but ultimately the jury is still out on EVA.

2.3 Hypothesis

Irrespective of whether Market Value Added, Stock Returns or Market Value is used as a representation of shareholder value, bulk of research work has been concerned about testing whether EVA is an alternative or a better measure of shareholder value creation and whether EVA can be adopted by management to help with proactive performance management that lead to shareholder value being maximised. It remains unclear on whether EVA has the industry bias or whether it is the methodology bias that impact the outcome of the studies as it seems the context in which EVA is studied has a significant role to play. If the context is the key factor, then one should consider studying EVA in a clearly defined context and the outcome should be constraint to the context as opposed to supposedly some of the generalised EVA praising statements as

quoted by researchers. A similar argument can be made for the EVA non supporters.

As reviewed, it is clear that South African banking is one of the critical sectors to the economy, it is one of the well governed internationally and thus a sector from which stability and growth is expected. Shareholder value maximisation can be argued as per the reviewed studies not to be the sole or the main focus for the companies' executives, but inevitably one of the core focus areas given the competitiveness of the stock markets. It is therefore of paramount interest for the company leadership and managers to consciously drive shareholder value maximisation along other objectives and for this they need indicators that will inform them on whether they are in the right direction. South African banks primarily use the traditional accounting measures and risk measures as their key indicators and thus the following hypothesis will need to be tested:

2.3.1 Hypothesis 1

The ***null hypothesis***: EVA is not a reliable shareholder value creation measure in the South African banking sector

2.3.2 Hypothesis 2

The ***null hypothesis***: EVA is not a better alternative to traditional accounting metrics in measuring shareholder value creation in South African banking sector

2.4 Conclusion of Literature Review

The South African banking sector has been reviewed to be one of the biggest in terms of GDP and employment contribution and also the main facilitator of the overall economic activities. The sector is therefore crucial to the government, business and the individual people over and above shareholders. With the observed and proven good governance and the growth prospects, the South African banking sector has the investor market's interest. Whilst argued that corporate leaders should not focus solely on shareholder value maximisation but rather on other factors such as risk management, liquidity and profitability as

observed in banking, shareholders remain very crucial to prove value creation to they have a flexible option to move their investments elsewhere. It therefore leaves the South African banks with no choice but to also prioritise shareholder value maximisation among other things. In order to achieve shareholder value maximisation, good reliable indicators are required to inform and enable active and proactive performance management.

EVA has been studied before and has mixed outcomes where some studies concluded that it is a better measure than traditional accounting measures and other studies argue otherwise. A further trending discovery on EVA is whether its adoption as a management tool tied to managers' incentives help drive the right behaviour that lead to shareholder value maximisation. Again mixed results in favour and against EVA were observed. Whilst the outcome of the literature that has been reviewed leads to many hypothesis that can be made, for the purpose of this study the focus will only be on testing the following 2 primary hypothesis towards resolving the research problem:

2.4.1 Hypothesis 1:

EVA is not a reliable shareholder value creation measure in the South African banking sector

2.4.2 Hypothesis 2:

EVA is not a better alternative to traditional accounting metrics in measuring shareholder value creation in the South African banking sector

CHAPTER 3. Research methodology

The research methodology that will be employed for this study will involve the quantitative paradigm for which the statistical regression and correlations models will be deployed. The data that will be analysed will be collected directly from the annual reports of the banks and will be sourced from McFAS which sources data from iNet database (Muller, 2015) for maximum validity and

reliability of the data. In depth details including population size and reliability of the research methodology will be discussed in the sub sections below.

3.1 Research methodology / paradigm

The research paradigm that will be used in this study is quantitative. This will be the ideal paradigm as the conclusive result is required to test the hypotheses. The desired outcome is an indication of whether EVA can be seen as a reliable measure of shareholder value creation and furthermore, whether it is a better alternative measure than ROA and ROE. A statistically concluded outcome is rather more preferred for the outcome as opposed to a pattern like outcome that could be achieved from a qualitative paradigm. According to Creswell (2013), a quantitative paradigm is ideal for analysing data from experiments and surveys essential for drawing statistically analysed conclusions. A simplified differential description of research paradigms is that of Williams (2011) where he states that quantitative research uses the numeric data to perform statistical analysis for drawing conclusions whilst qualitative predominantly uses textual data to draw conclusions. Williams (2011) further elaborated that the quantitative research has three main categories; descriptive (which seeks to explain the situation as is and the correlation between variables), experimental (which seeks to employ scenarios to test) and causal comparative (which seeks to test the relationship between the dependent and the independent variable).

Given that the numeric annual financial data extracted from the banks will be used to test the hypothesis, it is clear that the more suitable research paradigm to be used in this research is quantitative (descriptive and causal comparative) as the relationship between EVA and shareholder value will have to be analysed and contrasted with the relationship of the traditional accounting measures and shareholder value.

3.2 Research Design

The data will be sourced from MacFAS (Muller, 2015) which has the integrated annual audited financial reports/ statements of the banks. The required numeric

data input data that includes as an example, Profit After Tax, Total Assets, Total Equity etc will be imported onto the Excel spread sheet in an orderly classified manner that shows the bank, the year of the data and then the respective data input. This data will therefore be imported into the Statistical Analytical Software (SAS) where statistical analysis and modelling of the data will take place. This approach is more appropriate for this study because of the following main advantages:

1. The information on the published annual financial report is audited and therefore accurately represent the bank's position
2. SAS is among the best statistical analysis tools used to analyses numeric data to perform hypothesis testing

The only potential disadvantage of this approach is if any data point is captured incorrectly at source. To mitigate this risk, a statistical data quality validation will be done to check for outliers in the data trends..

3.3 Population and sample

3.3.1 *Population*

The population for this research is all the commercial banks, local and international that are registered with the South African banking association.

3.3.2 *Sample and sampling method*

A sample of top 7 in Market Value banks (First Rand Bank, Barclays Africa Group, Standard bank, Nedbank, Investec, Capitec Bank and African Bank Limited) will be taken over a 10 year period from 2004 to 2013. This implies that there will be $10 \times 7 = 70$ observations (data points) for analysis. The rationale for this selection is that the South African banking sector is dominated by the top 4 banks (First Rand Bank, Barclays Africa Group, Standard bank and Nedbank) making up 85% of the banking sector assets. All the top 7 banks account for about 95% of the banking sector and they are all in the top 100 JSE companies (ShareNet, 2015) except African Bank Limited. Given the significant

95% market share by the top 7 banks, conducting the research on them provides a statistically significant sample that fairly represent the South African banks.

3.4 The research instrument

The data will be downloaded from MacFAS and validated against the annual financial reports info that will be sourced from each of the banks' official websites. Data sources summary is as shown in table 1 and 2 below:

Table 1: Data sources summary

Data	Source
Main banks historic (2003 to 2013) financial statements data	Inet-BFA data sourced through the MacFas software developed by Chris Muller (Muller, 2015)
Historic repo rate	The South African Reserve Bank (SARB, 2015a)
10 year government bond rate (risk free rate)	The South African Reserve Bank (SARB, 2015b)
Historic GDP per capita	The World Bank (WorldBank, 2015)
Historic inflation rate	Inflation.eu (inflation.eu, 2015)
JSE all share return	Standard bank (SBSA, 2015)

Table 2: Links to annual report data sources

Bank	Annual Reports Link
First Rand Bank	http://www.firstrand.co.za/InvestorCentre/Pages/annual-reports.aspx
Barclays Africa Group	http://www.absa.co.za/Absacoza/About-Absa/Absa-Bank/Reports-and-SENS
Standard Bank Group	http://reporting.standardbank.com/
Nedbank Group	http://www.nedbankgroup.co.za/financialArchives.asp
Capitec Bank	https://www.capitecbank.co.za/investor-relations/financial-results/2015
African Bank Limited	http://africanbank.investoreports.com/
Investec Bank	https://www.investec.co.za/about-investec/investor-relations/investor-centre.html

In case where the historic annual reports are not published on the website, archive will be asked directly from the company secretary or from the investment management firms.

3.5 Procedure for data collection

Main analysis data will be downloaded from MacFAS and the annual reports from the respective banks website. The raw analysis data will look as per the snapshot example shown in table 2.

Table 3: Snapshot of raw data

Year	Bank_Name	Headline_Earnings_Per_Share	Average_Price_Per_Share	Share_Price_at_Company_Financial_Year_End
2003	African Bank	140	616	727
2004	African Bank	162	1 018	1 283
2005	African Bank	203	1 753	2 077
2006	African Bank	223	2 634	2 359
2007	African Bank	268	2 950	3 161
2008	African Bank	212	2 797	2 618
2009	African Bank	225	2 615	2 932
2010	African Bank	235	3 161	3 397
2011	African Bank	291	3 577	3 401
2012	African Bank	343	3 565	3 286
2013	African Bank	45	2 386	1 610
2003	Barclays Africa	528	3 159	3 133
2004	Barclays Africa	689	3 803	4 570
2005	Barclays Africa	1 581	7 211	9 698
2006	Barclays Africa	1 182	10 812	11 781
2007	Barclays Africa	1 402	13 199	11 592
2008	Barclays Africa	1 466	9 900	10 768
2009	Barclays Africa	1 099	10 840	12 634
2010	Barclays Africa	1 123	13 282	13 382
2011	Barclays Africa	1 356	13 522	14 138
2012	Barclays Africa	1 227	14 663	15 658
2013	Barclays Africa	1 398	14 857	12 988
2003	Capitec	70	430	569
2004	Capitec	102	794	1 412

3.6 Data analysis and interpretation

The data will be imported into SAS where various statistical analysis procedures will be performed including trend analysis using the frequency and means procedures, relationship analysis using the correlations, ANOVA and regression procedures plus data quality will be tested using the normality and significance tests procedures (Schlotzhauer & Littell, 1997). The results from the correlation and regression procedures will be used as test results for the hypotheses of this study.

3.7 Limitations of the study

The main potential limitation for this study will be the calculation of WACC in case the historic beta information and the risk free interest rate both which are the inputs into WACC calculation are not available. This limitation may lead to a less accurate WACC calculation which will impact EVA calculations and potentially will impact the analysis outcome. In case of this challenge, investment firms will be approach to seek historic beta and or risk free market

interest rates or historically calculated WACC per bank. Alternatively data will be taken as far back as WACC can be accurately calculated with the available data which will shrink the sample size from 70. To further mitigate this, further banks over and above the top 7 in scope may have to be added to improve the sample size.

3.8 Validity and reliability

This study has very high validity when assessed against Heale and Twycross (2015)'s validity description which is the degree to which the concept is accurately tested and or measured in a study. The hypotheses made in this study will be accurately tested because:

1. The data in use is the factual audited company published/ reported data. There is no human bias or influence as it may be the case when questionnaires are used to collect data.
2. SAS is the statistical software that is used to analyse the data and it produces trusted and accurate results from which conclusions can be drawn

Basically the data in use is 100% static, the same study on the same data can be done repeatedly and the outcome will be exactly the same because the historic performance of the banks can never change, it is what it is. On this note, the study instrument and methodology is highly reliable as the historic performance information cannot be altered.

The outcome of this study can be generalised especially to all South African banks and to the great extend to all the banks internationally given that South African banks are seen and believed to be at par and sometimes better than international banks. This signifies that this study has external validity in addition to the internal validity and reliability.

CHAPTER 4. PRESENTATION OF RESULTS

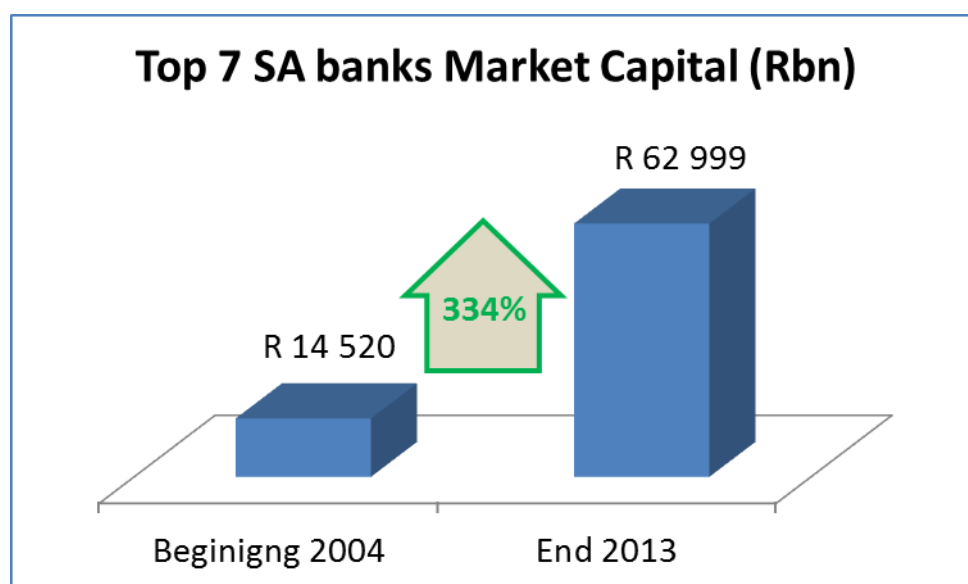
4.1 Introduction

The results will be presented starting by the basic demographics and summary statistics of the banks' performance over the period of the study and then deep diving into advanced statistical results to prove the hypothesis.

4.2 Basic Summary Statistics

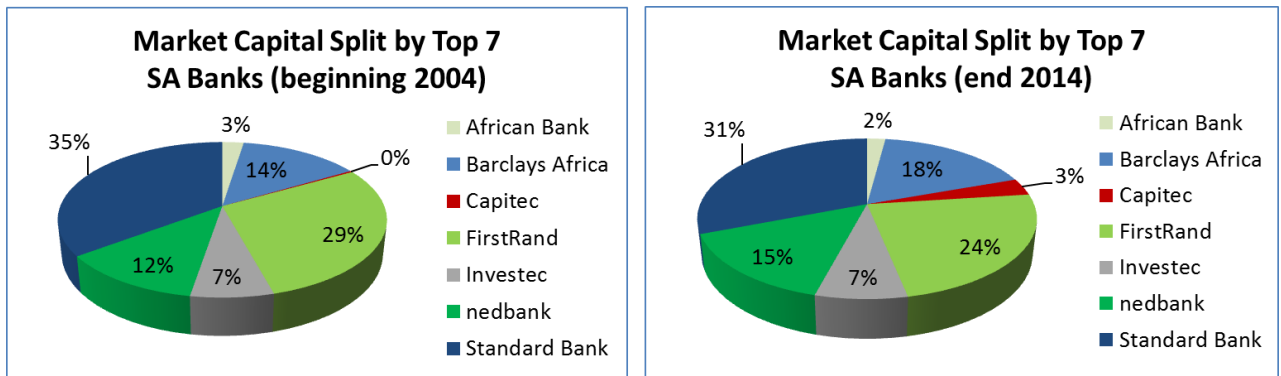
The study covers the financial years from 2004 to 2013 on the South African top 7 banks (as at 2013) in JSE market capital. As shown in figure1, the total market capital of these 7 banks was R14,520 billion at the beginning of 2004 and grew by 334% (an aggregate average annual increase of 28%) to R63,999 billion as at the end of 2013.

Figure 1: Top7 SA banks' total market capital



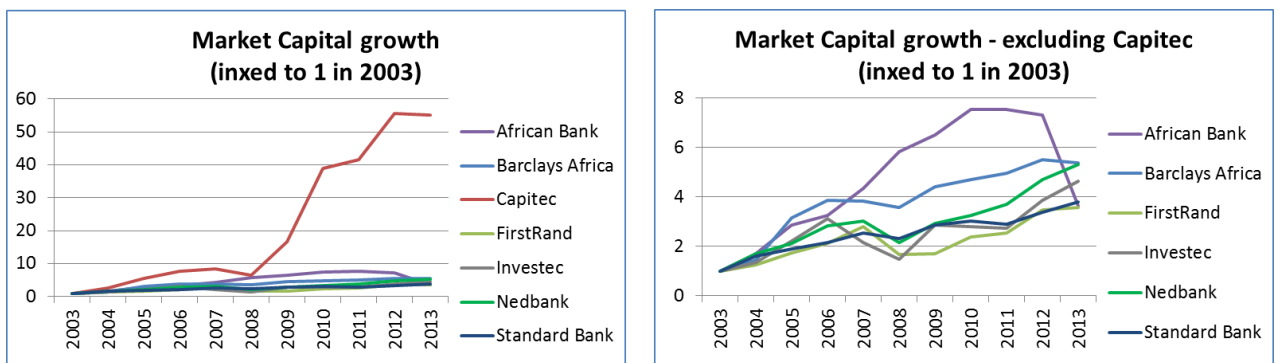
The biggest players were Standard Bank followed by First Rand Bank in 2003 and that picture was still the same in 2013 although the market share by smaller banks such as Capitec, Nedbank and Investec have increased significantly, figure2 refers:

Figure 2: Top7 SA banks' market capital split



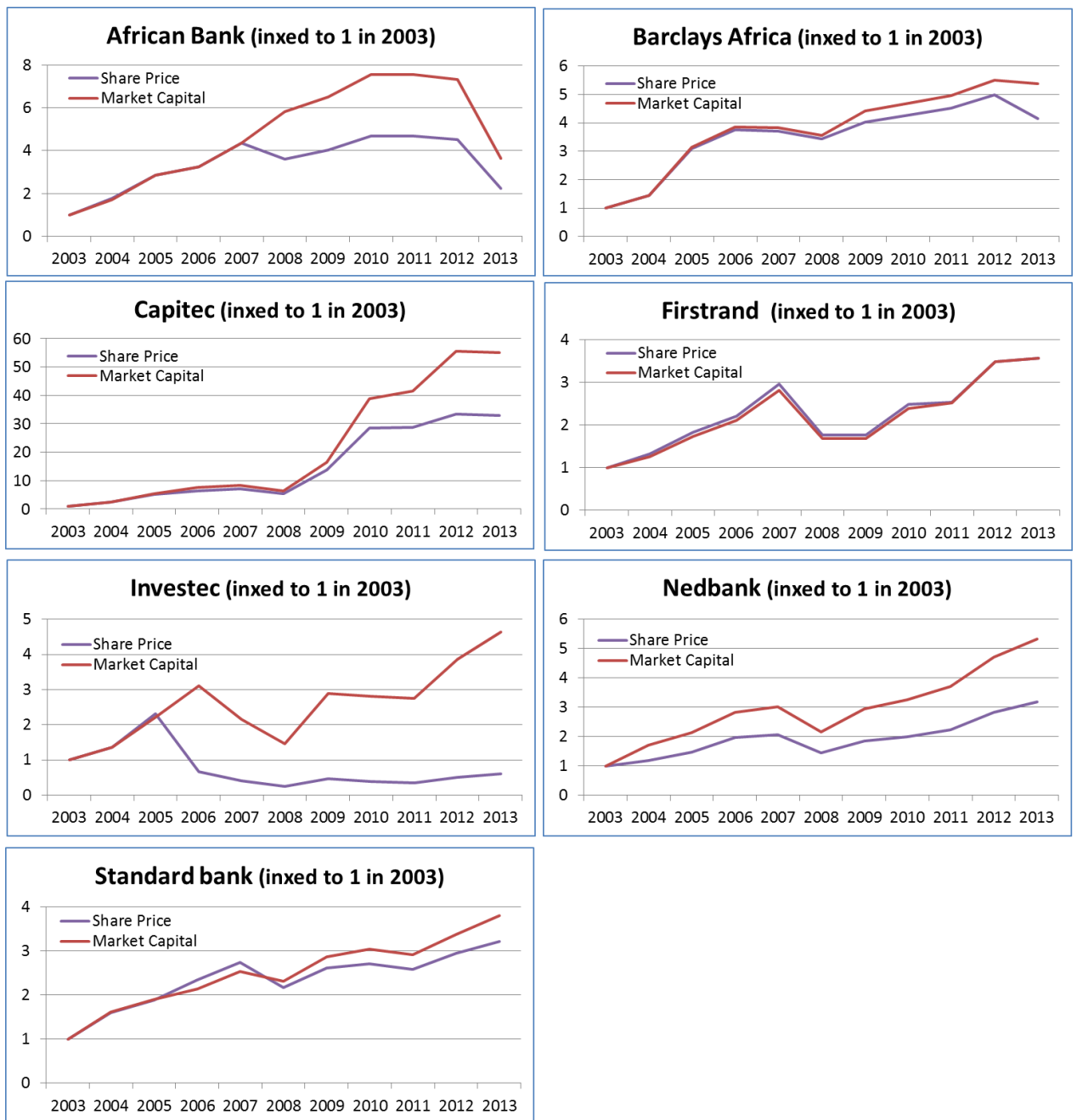
All the 7 banks increased market capital over time with the new players such as Capitec increasing by over 5 000% because they started from a very low base. The sharp market capital decline by African bank is also noticeable in 2013. Figure3 shows the relative growths of market capital by each bank:

Figure 3: Top7 SA banks' market capital growth index



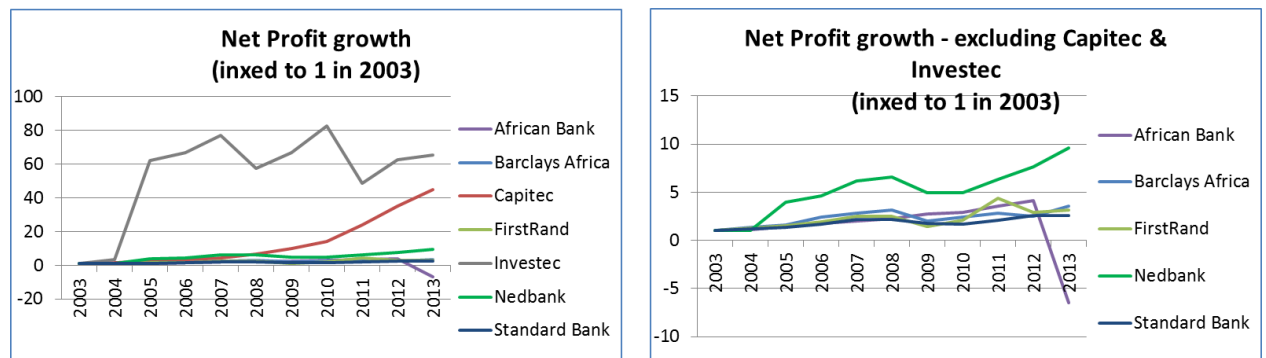
In exception of First Rand, all the banks' market capital growths were not predominantly influenced by the share price but also by the share issuing as well as shown in figure4 below:

Figure 4: Top7 SA banks' market capital vs share price growth index



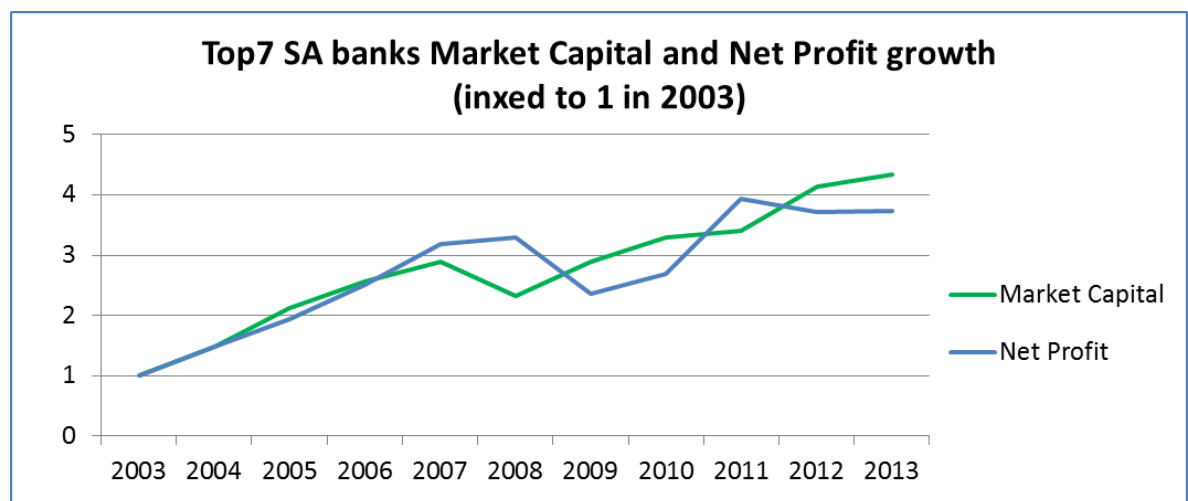
Despite the 2008 dip, all banks have shown a growth that mirrors the profitability growth over the period with the leading growth from Capitec, Investec and then Nedbank as shown in figure5.

Figure 5: Top7 SA banks' Net Profit growth index



Except for African Bank in 2013, the top7 SA banks have over the 10year period of study shown a significant growth in both net profits and market capitalisation. Indexed to end of 2003, both the total of the top7 banks' profits and market capital had about 400% (an aggregate average of 33% annual rate) growth by 2013 as shown on figure6. The growth was negative during 2008 and 2009 due mainly to global recession with recovery beyond 2010.

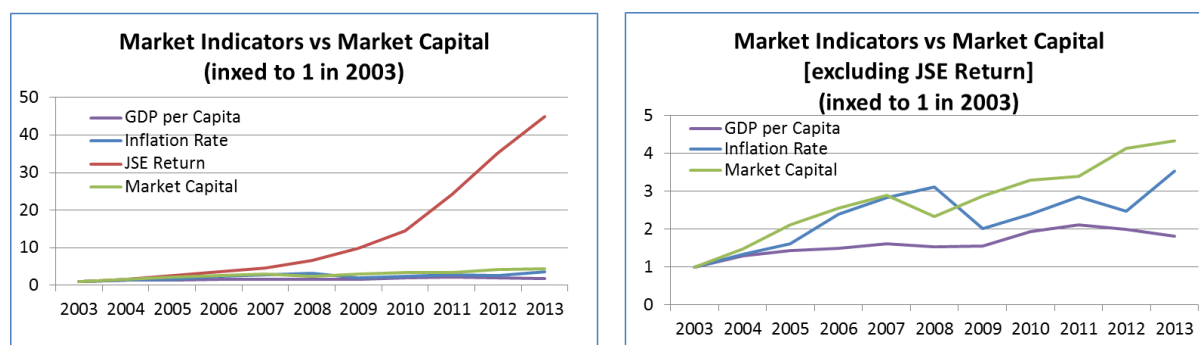
Figure 6: Top7 SA banks' Net Profit vs Market Capital growth index



Over the period 2004 to 2013, the top7 banks have had relative market capital and profitability performance that were well correlated as shown in figure6. The market capital can be said to have been influenced mainly by share price prior to 2007/ 2008 and then mainly by share issuance post 2008 as depicted by the graphs in figure4.

The top7 banks market capitalisation grew behind the Johannesburg Stock Exchange (JSE) overall return however it grew faster than the inflation rate and the gross domestic product (GDP) as shown in figure7 below:

Figure 7: Top7 SA banks' Market Capital against market indicators



Based on figure7, it can be deduced that the South African market conditions have been fairly stable with the JSE returns being more conducive than the overall economy for shareholder value creation.

4.3 Key Analysis Variables Descriptions

Statistical analysis done on the following sections will make extensive use and reference to the variables as described in table4 below:

Table 4: Analysis Variables

Variable	Description
Market Capital to Book Value	Calculated as (Total Market Capital / Total Book Value), where Total Market Capital is calculated as: (Total Ordinary Shares in issue x Share Price) at company financial year end. Total Book Value is the total owner's equity at the beginning of the company financial year
Share Price	Share Price as at the company's financial year end
Market Capital	Total Market Capital calculated as: (Total ordinary shares in issue x Share Price) at company financial year end
Dividends Yield	Calculated as: (Dividend per share / Share price) where Dividend per share is the value of the dividend declared for every share in issue

Change in Market to Book Value	Calculated as: (Market Capital to Book Value - prior year's Market Capital to Book Value)/ prior year's Market Capital to Book Value. This is the rate at which Market to Book Value change from one year to the next.
Change in Market Capital	Calculated as: (Market Capital - prior year's Market Capital)/ prior year's Market Capital. This is the rate at which Market Capital change from one year to the next.
Change in Share Price	Calculated as: (Share Price - prior year's Share Price)/ prior year's Share price. This is the rate at which Share Price change from one year to the next.
Shares in Issue Ordinary	Total ordinary shares in issue at the company financial year end
EVA (WACC c)	Economic Value Added calculated as: (Net Operating Profit After Tax - Cost of the Invested Capital) where Cost of Invested Capital is calculated as: (Weighted Average Cost of Capital x Invested Capital). Invested Capital is calculated as: (Total Owner's Equity + Long Term Debt) and Weighted Average Cost of Capital (WACC c) is calculated using the formula: WACC = $We/(We + Wd) \times Re + Wd/(We + Wd) \times Rd$ where, 'We' is the equity wheighting component which is estimated using Market Capital 'Wd' is the debt wheighting component which is estimated using the present value of long term debt 'Rd' is the debt rate calculated as: Debt Interest Rate x (1- Tax rate) where debt interest rate is calculated from Total Finance Charges / Total Long Term Debt 'Re' is the equity cost rate calculated as: $Rf - \beta \times (Rm - Rf)$ where Rf is the risk free market rate estimated using the government 10 year bond rate (10.5%), beta calculated by taking the average of the monthly betas in a year and the difference between market risk rate (Rm) and Rf is estimated to with the generally used 6%.
EVA (WACC w)	Economic Value Added calculated with the same formula as above with different input assumptions: 'We' is calculated as: Total Equity/ Total Assets 'Wd' is calculated as: Total Long Term Debt/ Total Assets 'Rd' is calculated with Debt Interest Rate calculated by adding a premium of 5% (derived as 1.5% premium attributed to the JIBAR rate which is added to the 3.5%, the total which makes up prime rate) to the Repo Rate. A Repo Rate is calculated as the annual aggregate average of Repo Rates 'Re' is calculated as in "EVA (WACC c)" above
EVA WACC (w JseD 5yr)	Economic Value Added calculated the same way as EVA (WACC w)'s assumption above with the only difference in 'Re' assumptions: 'Re' is calculated as: $Rf - \beta \times (Rm - Rf)$ where 'Rf' is the 5 year government bond and 'Rm' is the market risk rate which is estimated using the Johannesburg Stock Exchange (JSE) average annual return rate calculated over the 10years ending 2013. Beta remains the same as explained in EVA (WACC c) above.

EVA (WACC w JseD 10yr)	Economic Value Added calculated with the same input as EVA (w JseD 5yr) with the only difference being that 'Rf' is estimated with a 10 year government bond
ROE	ROE is the Return on Equity calculated as: Total Profit / Total Owner's Equity
ROA	ROA is the Return on Assets calculated as: Total Profit / Total Assets

4.4 Variables Correlations Analysis

Table4 below provides the correlation overview of how the key analysis variables relate to each other. The level of relatedness has implications on the ability of one variable to explain the other due to association which may emanate from being influenced by the same cause.

Table 5: Correlations of shareholder value creation indicators to EVA, ROE and ROA

Pearson Correlation Coefficients										
Prob > r under H0: Rho=0										
Number of Observations										
	Market Capital to Book Value	Share Price	Market Capital	Dividends Yield	EVA (WACC C)	EVA (WACC w)	EVA WACC (w JseD 5yr)	EVA (WACC w JseD 10yr)	ROE	ROA
Market Capital to Book Value	1	-0.13	-0.44	-0.27	0.28	0.24	0.25	0.27	0.15	0.31
	0.32	1	0.00	0.03	0.03	0.06	0.05	0.03	0.25	0.01
	64	64	64	64	64	64	64	64	64	64
Share Price	-0.13	1	0.14	-0.26	-0.12	-0.12	-0.11	-0.12	-0.10	-0.29
	0.32		0.24	0.03	0.34	0.33	0.38	0.32	0.43	0.01
	64	70	70	70	70	70	70	70	70	70
Market Capital	-0.44	0.14	1	0.08	-0.62	-0.51	-0.53	-0.57	-0.05	-0.44
	0.00	0.24		0.53	<.0001	<.0001	<.0001	<.0001	0.69	0.00
	64	70	70	70	70	70	70	70	70	70
Dividends Yield	-0.27	-0.26	0.08	1	0.01	0.03	0.02	0.01	0.49	0.50
	0.03	0.03	0.53		0.96	0.80	0.85	0.90	<.0001	<.0001
	64	70	70	70	70	70	70	70	70	70
EVA (WACC C)	0.28	-0.12	-0.62	0.01	1	0.98	0.99	0.99	0.20	0.25
	0.03	0.34	<.0001	0.96		<.0001	<.0001	<.0001	0.09	0.03
	64	70	70	70	70	70	70	70	70	70
EVA (WACC w)	0.24	-0.12	-0.51	0.03	0.98	1	1.00	1.00	0.23	0.23
	0.06	0.33	<.0001	0.80	<.0001		<.0001	<.0001	0.06	0.06
	64	70	70	70	70	70	70	70	70	70
EVA WACC (w JseD 5yr)	0.25	-0.11	-0.53	0.02	0.99	1.00	1	1.00	0.22	0.23
	0.05	0.38	<.0001	0.85	<.0001	<.0001		<.0001	0.07	0.05
	64	70	70	70	70	70	70	70	70	70
EVA (WACC w JseD 10yr)	0.27	-0.12	-0.57	0.01	0.99	1.00	1.00	1	0.22	0.25
	0.03	0.32	<.0001	0.90	<.0001	<.0001	<.0001		0.06	0.04
	64	70	70	70	70	70	70	70	70	70
ROE	0.15	-0.10	-0.05	0.49	0.20	0.23	0.22	0.22	1	0.67
	0.25	0.43	0.69	<.0001	0.09	0.06	0.07	0.06		<.0001
	64	70	70	70	70	70	70	70	70	70
ROA	0.31	-0.29	-0.44	0.50	0.25	0.23	0.23	0.25	0.67	1
	0.01	0.01	0.00	<.0001	0.03	0.06	0.05	0.04	<.0001	
	64	70	70	70	70	70	70	70	70	70

The main shareholder value indicator, Market Capital to Book Value has a correlation of 0.27 to EVA (WACC w JseD 10yr) (to be denoted as EVA) which is a low but reasonable correlation which is statistically significant at 5% significance level. The correlation to ROE is very low at 0.15 which has an insignificant p-value of 0.25. The correlation to ROA is 0.31 which is low with a significant p-value of 0.01 at 5% significance level. This association level implies that as EVA, ROE and ROA grow, Market Capital to Book Value grow and vice versa.

Market Capital to Book Value is negatively correlated; insignificantly to Share Price at -0.13, very significantly to Market Capital at -0.44 and significant to Dividend Yield at 5% level with the correlation coefficient of -0.27. This implies that Market Capital to Book Value decreases with the increasing Market Capital, Share Price, Dividend Yield and vice versa. Key to note is that the correlation of Market Capital to Book Value is insignificant to Share Price however significant to Market Capital. Market Capital is a product of Share Price and Shares in Issue, this implies that share issuing is the one that has significant influence to the significant correlation of Market Capital to Book Value and Market Capital.

As secondary shareholder value creation indicators in this study, Share Price, Market Capital and Dividend Yield have also been analysed on the correlations table4. Share Price has an insignificant negative correlation to EVA at -0.12 and ROE at -0.10. It is however significantly (at 5% significance level) negatively correlated to ROA at -0.29 implying that as Share Price increases, there will be a noticeable decrease in ROA and vice versa.

Market Capital has a large negative correlation to EVA at -0.53, moderate correlation to ROA at -0.44 and a statistically insignificant (at all statistical significance levels) correlation to ROE at -0.05. All this imply that a decreasing Market Capital will be associated with an increasing EVA, ROA, ROE and vice versa. Dividend Yield has a moderate to large correlation to ROE of 0.49 and to ROA of 0.50 respectively. This strong positive association can be attributed to the fact that as ROA and ROE increase, the company's ability (eligibility) to pay the dividends increases. Dividend Yield however has highly insignificant

correlation to EVA at 0.01 which imply no association between EVA and Dividend Yield.

Table4 has shown the association of the primary shareholder value creation indicator Market to Book Value and secondary indicators, Share Price, Market Capital and Dividend Yield to key measures EVA, ROE and ROA. Table5 below provides the association on the year on year change rates of the shareholder value creation indicators to the key measures.

Table 5: Correlations of changes in shareholder value creation indicators to EVA, ROE and ROA

Pearson Correlation Coefficients										
Prob > r under H0: Rho=0										
Number of Observations										
	Change in Market to Book Value	Change in Market Capital	Change in Share Price	Shares in Issue Ordinary	EVA (WACC c)	EVA (WACC w)	EVA WACC (w JseD 5yr)	EVA (WACC w JseD 10yr)	ROE	ROA
Change in Market to Book Value	1	0.91	0.87	-0.05	0.16	0.17	0.18	0.18	0.29	0.31
		<.0001	<.0001	0.67	0.21	0.17	0.17	0.16	0.02	0.01
	63	63	63	63	63	63	63	63	63	63
Change in Market Capital	0.91	1	0.92	-0.16	0.20	0.19	0.20	0.21	0.24	0.35
	<.0001		<.0001	0.18	0.10	0.12	0.10	0.08	0.04	0.00
	63	70	70	70	70	70	70	70	70	70
Change in Share Price	0.87	0.92	1	-0.10	0.17	0.17	0.18	0.18	0.26	0.35
	<.0001	<.0001		0.42	0.17	0.15	0.14	0.13	0.03	0.00
	63	70	70	70	70	70	70	70	70	70
Shares in Issue Ordinary	-0.05	-0.16	-0.10	1	-0.02	0.05	0.01	0.00	0.13	-0.20
	0.67	0.18	0.42		0.88	0.68	0.91	0.98	0.30	0.11
	63	70	70	70	70	70	70	70	70	70
EVA (WACC C)	0.16	0.20	0.17	-0.02	1	0.98	0.99	0.99	0.20	0.25
	0.21	0.10	0.17	0.88		<.0001	<.0001	<.0001	0.09	0.03
	63	70	70	70	70	70	70	70	70	70
EVA (WACC w)	0.17	0.19	0.17	0.05	0.98	1	1.00	1.00	0.23	0.23
	0.17	0.12	0.15	0.68	<.0001		<.0001	<.0001	0.06	0.06
	63	70	70	70	70	70	70	70	70	70
EVA WACC (w JseD 5yr)	0.18	0.20	0.18	0.01	0.99	1.00	1	1.00	0.22	0.23
	0.17	0.10	0.14	0.91	<.0001	<.0001		<.0001	0.07	0.05
	63	70	70	70	70	70	70	70	70	70
EVA (WACC w JseD 10yr)	0.18	0.21	0.18	0.00	0.99	1.00	1.00	1	0.22	0.25
	0.16	0.08	0.13	0.98	<.0001	<.0001	<.0001		0.06	0.04
	63	70	70	70	70	70	70	70	70	70
ROE	0.29	0.24	0.26	0.13	0.20	0.23	0.22	0.22	1	0.67
	0.02	0.04	0.03	0.30	0.09	0.06	0.07	0.06		<.0001
	63	70	70	70	70	70	70	70	70	70
ROA	0.31	0.35	0.35	-0.20	0.25	0.23	0.23	0.25	0.67	1
	0.01	0.00	0.00	0.11	0.03	0.06	0.05	0.04	<.0001	
	63	70	70	70	70	70	70	70	70	70

Change in Market Capital to Book Value has a moderate (significant at 5% significance level) correlation to ROA at 0.31, low but significant (at 5% significance level) correlation to ROE and a very low and insignificant

correlation to EVA at 0.18. This implies that Change in Market Capital to Book Value has no much association to EVA but have some association to ROE and ROA.

Unlike the actual indicators, Change in Market Capital and Change in Share Price have a positive correlation to EVA, ROE and ROA. The correlation and significance levels outcome for Change in Market Capital and Change in Share price are similar to Change in Market Capital to Book Value against EVA, ROE and ROA. ROA has a more significant association which is consistent for both the actual indicators and the change in indicators.

4.5 Results pertaining to Hypothesis 1: EVA is not a reliable shareholder value creation measure in the South African banking sector

Regression analysis was employed as the primary statistical analysis tool to test this hypothesis. The primary shareholder value creation indicator variable, Market Capital to Book Value, along with the secondary variables; Share Price, Market Capital and Dividend Yield were modelled as dependent variables against the independent variable EVA (WACC w JseD 10yr) which has been used as the most relevant representation of EVA. Table6 gives the overview of the regression models which include the simple liner regression model of EVA the independent variable and the multivariate regression of EVA adjusted for economic variables. The economic variables that have been included in the multivariate regression are Inflation Rate, Gross Domestic Product per person (GDP per capita) and the JSE Return Rate. Each of the economic variables was annualised by averaging the monthly figures to derive the annual figure for each year. Adjusting for the economic variables is essential since the performance of the banks is not immune to the economic performance. An example is the 2008 to 2009 global recession which saw the banking sector also going down. The same applies when the country's GDP is not growing, banking cannot sustainably grow above GDP growth as it is a function of the personal and business economic activities. Inflation is another critical factor as it impacts the

consumer expenditure for which the banking system is the facilitator and recorder for bulk of these economic activities.

Table 6: Regression Models of EVA (WACC w JseD 10yr)

		Independent Variables	
Dependent Variable		EVA (only)	EVA (and economic variables)
Market Capital to Book Value	model	Market Capital to Book Value = 312.77 + 0.0000000062(EVA)	Market Capital to Book Value = 205.79 + 0.0000000066(EVA) + 351.27(Inflation Rate) + 0.015(GDP Per Capita) -13.07(JSE Return)
	R-Square	0.0745	0.0862
Share Price	model	Share Price = 7,899.49 - 0.000000087(EVA)	Share Price = -3,330.68 - 0.000000092(EVA) + 4326.86(Inflation Rate) + 1.52(GDP Per Capita) + 6046.38(JSE Return)
	R-Square	0.0147	0.0873
Market Capital	model	Market Capital = 4,780,818,000,000 -325.69 (EVA)	Market Capital = -5,375,500,000,000 - 323.52(EVA) + 8,116,215,000,000(Inflation Rate) + 1,382,346,099(GDP Per Capita) + 4,539,697,000,000(JSE Return)
	R-Square	0.3231	0.4095
Divident Yield	model	Dividends Yield = 41.630 + 0.00000000046(EVA)	Dividends Yield = 78.44 - 0.000000000012(EVA) - 88.72(Inflation Rate) - 0.0046(GDP Per Capita) - 17.31(JSE Return)
	R-Square	0.0002	0.0411

Observed on Table6 above, a simple regression of Market Capital to Book Value against EVA gave a simple linear regression model ***Market Capital to Book Value = 312.77 + 0.0000000062(EVA)***. Looking at the very small model coefficient of 0.0000000062, it can be acknowledged that a R1bn increase in EVA will increase Market Capital to Book Value by 6,2 which is a relatively significant amount of EVA required. The rationale for arguing that it is a steep ask can be justified by the knowledge that the biggest bank, Standard bank had a net profit of R16.2bn and a calculated EVA of -R15.1bn in 2013. The bank with the highest EVA in 2013 was Capitec with EVA of -R312m

and net profit of R2.04bn. Looking at this highly negative EVA values and the factor of 6.2 for every R1bn worth of EVA, it can be acknowledged that the model will not produce significant results. The R-Square for the Market Capital to Book Value against EVA model is 0.075 which imply that the EVA model will only be able to explain about 7.5% of the Market Capital to Book Value. Statistically speaking, the higher the R-Square (closer to 1) the better the predictive power of the model and the lower (closer to 0) the R-Square the less predictive the model. Based on Mathematical Statistics 101 from University of Witwatersrand, essentially the model with R-Square value above 0.8 is said to be highly predictive, a value between 0.3 and 0.8 is said to be moderate predictive and a value less than 0.2 is said not to be reliably predictive. With the observed model R-Square of 0.075, the Market Capital to Book Value against EVA model is not significant. With that outcome, it cannot be concluded that EVA is an effective measure of shareholder value creation.

When adjusting for the economic variables, the model became

$$\text{Market Capital to Book Value} = 205.79 + 0.0000000066(\text{EVA}) + 351.27(\text{Inflation Rate}) + 0.015(\text{GDP Per Capita}) + 13.07(\text{JSE Return})$$

which essentially show a small but insignificant improvement on the EVA coefficient of **0.0000000004**. Market Capital to Book Value will change by a factor of 3.51 for every 1% change in inflation and by 1.3 for every 10% change in JSE Return versus 6.6 for every R1bn EVA change. It can be deduced that Market Capital to Book Value is more likely to be influenced by the inflation rate than EVA given the effort required to attain a billion rand EVA. The model with EVA and economic variables has an improved R-Square of 0.086 which is still statistically insignificant.

Whilst table 8 and 9 show the p-value of 0.026 and 0.029 for the linear EVA and EVA adjusted for economic variables respectively, which prove that despite the very small EVA model coefficients, at 5% significance level it cannot be proven that the coefficients are not equal to 0. This implies that there is some model power however the very small respective model R-Square suggests that the predictive power of both models is very poor. It can therefore not be disproved

that EVA is not an effective shareholder value creation measure when utilising Market Capital to Book Value as a shareholder value creation indicator.

Share Price was also modelled against EVA and the models had an R-Square of 0.015 and 0.087 for the simple linear regression against EVA and for EVA adjusted for economic variables respectively. This implies that the simple linear regression model is only able to explain 1.5% of Share Price whilst the economic variables adjusted model is able to explain only 8.7% of Share Price through EVA. Again the model adjusting for economic variables is better than the simple linear regression model, however both models have insignificant predictability as per the R-Square and as observed on the models coefficients p-values of 0.317 and 0.197 on Table10 and Table11 respectively.

Modelling Market Capital against EVA had a simple linear regression model R-Square of 0.32 and 0.41 for the simple linear regression against EVA and for EVA adjusted for economic variables respectively. This implies that the simple linear regression model is able to explain 32% of Market Capital whilst the economic variables adjusted model is able to explain only 41% of Market Capital through EVA. Both models have significant predictive power as per the R-Square and as observed on the models p-values less than 0.0001 as seen on Table12 and Table13 respectively. During the correlations analysis in table4, it was deduced that Market Capital is mostly influenced by share issuing which is not a shareholder value driver. This makes Market Capital a relatively poor, if it is a shareholder value predictor at all. The poor ability to be a shareholder value creation indicator is also tainted by the fact that it increases with the declining shareholder value measures. This could be attributable to the probable increase in share issuing that is required when there is less re-investable returns. With that, it cannot be concluded that EVA is an effective measure of shareholder value creation.

Finally, Dividend Yield was also modelled against EVA and the models had an R-Square of 0.0002 and 0.041 for the simple linear regression against EVA and for EVA adjusted for economic variables respectively. This implies that the simple linear regression model is only able to explain 0.02% of Dividends Yield whilst the economic variables adjusted model is able to explain 4.1% of the

Dividend Yield through EVA. Whilst adjusting for economic variables is better than the simple regression model, both models have insignificant predictability power which is also seen through the very high p-values of 0.90 and 0.57 on Table14 and Table15 respectively. It can therefore not be concluded that EVA is an effective measure of shareholder value creation when using Dividends Yield as a shareholder value creation indicator.

The same Market Capital to Book Value regression model (adjusted to economic variables) was run for the period 2004 to 2007 in an endeavour to adjust for the global financial sector crash with the impact that resulted in the South African Banking going down from 2008. This saw the predictive power (R-Square) of the EVA model improve by 60% from 0.075 to 0.12 which unfortunately is still statistically insignificant. Therefore the Null Hypothesis could still not be disproved.

4.6 Results pertaining to Hypothesis 2: EVA is not a better alternative to traditional accounting metrics in measuring shareholder value creation in the South African banking sector

To test this hypothesis, we are primarily going to assess if the predictive power of EVA is better than that of ROA and ROE. Table7 below shows a summary of the economic variables adjusted regression models of each of the shareholder value creation indicator and the respective model R-Square.

Table 7: Regression Models of EVA (WACC w JseD 10yr), ROA and ROE

		Independent Variables		
Dependent Variable		EVA	ROA	ROE
Market Capital to Book Value	model	Market Capital to Book Value = 205.79 + 0.0000000066(EVA) + 351.27(Inflation Rate) + 0.015(GDP Per Capita) -13.07(JSE Return)	Market Capital to Book Value = 57.11 + 2,047.04(ROA) + 119.23(Inflation Rate) + 0.027(GDP Per Capita) - 28.55(JSE Return)	Market Capital to Book Value = 88.89 + 323.28(ROE) + 1.51(Inflation Rate) + 0.023(GDP Per Capita) -10.72(JSE Return)
		R-Square 0.0862	0.1193	0.0342
Share Price	model	Share Price = -3,330.68 - 0.000000092(EVA) + 4,326.86(Inflation Rate) + 1.52(GDP Per Capita) + 6,046.38(JSE Return)	Share Price = -361.67 - 51,313(ROA) + 6,002.90(Inflation Rate) + 1.31(GDP Per Capita) + 6,276.48(JSE Return)	Share Price = -2,150.73 - 3,603.35(ROE) + 9,426.64(Inflation Rate) + 1.46(GDP Per Capita) + 5,951.74(JSE Return)
		R-Square 0.0873	0.1451	0.0753
Market Capital	model	Market Capital = -5,375,500,000,000 - 323.52(EVA) + 8,116,215,000,000(Inflation Rate) + 1,382,346,099(GDP Per Capita) + 4,539,697,000,000(JSE Return)	Market Capital = -1,535,160,000,000 - 59,762,000,000,000(ROA) + 22,772,990,000,000(Inflation Rate) + 1,123,702,459(GDP Per Capita) + 4,360,596,000,000(JSE Return)	Market Capital = -4,956,450,000,000 + 539,135,200,000(ROE) + 27,137,990,000,000(Inflation Rate) + 1,388,892,826(GDP Per Capita) + 3,857,605,000,000(JSE Return)
		R-Square 0.4095	0.2626	0.1078
Divident Yield	model	Dividends Yield = 78.44 - 0.000000000012(EVA) - 88.72(Inflation Rate) - 0.0046(GDP Per Capita) - 17.31(JSE Return)	Dividends Yield = 56.97 + 392.48(ROA) - 60.27(Inflation Rate) - 0.0029(GDP Per Capita) - 20.52(JSE Return)	Dividends Yield = 44.75 + 119.26(ROE) - 79.14(Inflation Rate) - 0.0024(GDP Per Capita) - 20.45(JSE Return)
		R-Square 0.0411	0.2714	0.2569

The primary shareholder value creation indicator, Market Capital to Book Value was modelled adjusting for economic variables against the traditional accounting measures ROA and ROE. As shown in table7, the model with ROA being the depended variable had an R-Square of 0.119 (with the model p-value of 0.11 as per table16) which is a poor predictive power however significantly higher than that of the EVA model (with a model p-value of 0.24 as per table10). The model for ROE had an R-Square of 0.03 (with the model p-value 0.72 as per table20) which has a poorer predictive power compared to the EVA model. Given that the predictive power of the ROA model is bigger than that of EVA, although EVA model is more predictive than the ROE model, the hypothesis cannot be disproved that EVA is not a superior shareholder value creation measure than the traditional accounting measures.

The secondary shareholder value creation measure, Share Price had similar model outcome where the ROA model is more predictive with R-Square of 0.15

(with a model p-value 0.35 of as per table17) and ROE model with an R-Square of 0.075 (with the model p-value of 0.27). At 5% significance level, the ROA model has some predictive ability although relatively small which is significantly better than the non-significant EVA model with R-Square of 0.087 and model p-value 0.2.

The second secondary shareholder value creation indicator, Market Capital model had a negative coefficient model with EVA having the highest predictability with R-Square of 0.41 (p-value significant at 1% as per table13) compared to ROA with R-Square of 0.26 (p-value significant at 1% as per table18) and ROE with R-Square of 0.11 (insignificant p-value at 1% as per table22). As already discussed under hypothesis1, Market Capital is a weak shareholder value indicator and also it implies that as the shareholder value measure grows, actual shareholder value will be destroyed. This implies that EVA would be the one that mostly show the shareholder value destruction. By virtue of Market Capital being a weak shareholder value creation indicator, the results of the regression model can therefore not be used to disprove the hypothesis.

The last secondary shareholder value creation indicator, Dividends Yield has a moderate ROA model R-Square of 0.27 (a significant model p-value at 1% significance level as per table19) and a moderate ROE (a significant model p-value at 1% significance level as per table23). Both ROA and ROE have relatively small but statistically significant predictive power than EVA that has very insignificant predictability with R-Square of 0.041 and very insignificant p-value of 0.60 (as per table 15) and therefore we cannot disprove the hypothesis.

The same Market Capital to Book Value regression models (for each of the shareholder value measures with the economic variables adjustment) were run for the period 2004 to 2007 in an endeavour to adjust for the global financial sector crash which also saw the South African Banking sector go down. Whilst the predictive power of each model improved, the ROA model still had more predictive power than EVA and the EVA model had more power than ROE.

	EVA	ROA	ROE
R-Square	0.12	0.291	0.098
p-value	0.486	0.055	0.594

This leads to the same conclusion which is lack of evidence to disprove the Null Hypothesis.

4.7 Summary of the results

Over the study period from 2004 to 2013, the top 7 South African banks had a combined market capital growth of 334% from R14.5bn to R63bn. The share prices grew consistently with Market Capital for all the banks until 2007 after which the share prices started growing at a slower rate than market capital. The profits have also grown at a consistent rate with the market capital growth rate over the period under study. It was observed that the top 7 banks had a relatively faster growth in combined market capital and profits respectively than GDP per capita and inflation rate. The total JSE Return rate has however grown exponentially and faster than the banks' market capital growth over the study period. The overall banks' market capital performance, the JSE performance and the economic growth, except for the 2007/ 2008 dip, have over the period under study shown significant growth. This implies that the opportunity for the banks to create shareholder value over the 10 year period of study was sizable.

A correlations analytical procedure was run on various analytical variables including the shareholder value creation indicators (Market Capital to Book Value, Market Capital, Share Price, Dividend Yield and their respective year on year change rates) and the shareholder value creation measures (EVA, ROA and ROE). The correlations result showed that Market Capital to Book Value has a correlation coefficient of 0.27 to EVA (significant at 5% significance level), correlation coefficient of 0.31 to ROA (also significant at 5% significance level), and an insignificant correlation of 0.15 to ROE. Market Capital and Share Price both had negative correlations to EVA, ROA and ROE. The correlation of Market Capital to Share Price was very insignificant which led to the conclusion that share issuing had a higher impact on Market Capital than Share Price during the period of the study. Dividends Yield had very significant (at 1%

significance level) correlation to both ROA and ROE however a very insignificant correlation to EVA. The year on year change rates of each of the shareholder value indicators had consistent correlations outcome to the indicators themselves. The correlations results all in all indicated small but significant association between Market Capital to Book Value and EVA and ROE respectively.

The primary shareholder value indicator, Market Capital to Book Value was modelled both through simple linear regression against EVA and through multivariate regression against EVA adjusted for economic variables. The simple linear and the multivariate model had statistically insignificant R-Square of 0.0745 and 0.0862 respectively. Given the poor predictive power of the models, it could not be concluded against the null hypothesis that EVA is not an effective shareholder value creation measure because the EVA multivariate model can only explain 8.6% of the Market Capital to Book Value.

Market Capital to Book Value was further modelled through multivariate regression against EVA, ROA and ROE with the adjustment to economic variables; inflation, GDP per capita and JSE Return. All three models had statistically insignificant R-Square values of 0.086 for EVA, 0.119 for ROA and 0.034 for ROE. When excluding the period 2008 to 2013 from the models, to adjust for the 2008 banking sector down turn, the predictive power of all the models improved significantly but the predictive power remained statistical insignificant. Despite the poor predictive power of the models, the ROA model had more power than the EVA model which makes it impossible to reject the null hypothesis that EVA is not a superior shareholder value creation measure than the traditional accounting measures.

When modelled, the secondary shareholder value creation indicators, Share Price and Market Capital showed consistent outcome to Market Capital to Book Value where ROA had superior predictive power over EVA whilst Dividend Yield' regression model showed ROA and ROE both having superior predictive power over EVA. From the secondary shareholder value indicators, the null hypothesis that EVA is not a superior shareholder value creation measure could not be disproved.

CHAPTER 5. DISCUSSION OF THE RESULTS

5.1 Introduction

The results of the statistical analysis have been covered extensively in the previous sections and the outcome has consistently failed to disprove the null hypothesis that EVA is neither a reliable measure of shareholder value creation nor a better measure of shareholder value than traditional accounting measures. The following two sections aim to discuss the results in relation to the previous studies. The past studies had mixed results were some supported EVA as good shareholder creation measure and a superior measure than traditional accounting measures whilst others had the opposite outcome.

The key difference between this study and previous studies centres around the fact that bulk of the studies that were reviewed in the literature were conducted in the developed countries with large samples and mostly across industries whereas this study was done in the South African banking sector with a relatively small sample of 7 top banks over a 10 year period. The further key difference is the main shareholder value creation indicator as this study considered Market Capital to Book Value as the main indicator as opposed to bulk previous studies that used stock returns, market value added, market capital, share price etc as the main shareholder value creation indicator variable.

The key similarity to many previous studies is that the testing of the hypothesis was based on the outcome of the regression analysis and other statistical significance tests. The further similarity is that this study seeks to test if EVA should be considered as a key alternative measure of shareholder value creation to traditional accounting measures such as ROA and ROE.

5.2 Discussion pertaining to Hypothesis 1: EVA is not a reliable shareholder value creation measure in the South African banking sector

The regression model between Market Capital to Book Value and EVA had a statistically insignificant R-Square value. This was the case for both the simple regression and the multivariate regression model adjusted for economic factors. It was primarily due to this fact that the null hypothesis was not rejected. It can therefore not be concluded that EVA is a good shareholder value creation measure. To make the test robust, the EVA regression analysis was also done with Share Price, Market Capital and Dividend Yield as the shareholder value creation indicators. The purpose of the additional test was to align to some of the previous studies such as that of Hasani and Fathi (2012) which tested EVA against Market Value and that of Biddle et al. (1999) which tested EVA against Stock Returns. The regression results from the three secondary shareholder value creation indicators came out consistent to the result of Market Capital to Book Value model against EVA. All models, Market Capital to Book Value, Market Capital, Share Price and Dividends Yield had results that failed to produce evidence to reject the null hypothesis.

Despite a relatively small sample of 7 banks over 10 years, the results of this study are similar to that of Biddle et al. (1999)'s study which used 6,000 companies over 10 years and also attained an insignificant R-Square and also could not conclude that EVA is a good shareholder value measure. It is however noted that some of the past studies had opposite outcome to this study such as Sandoval (2011)'s study that tested EVA and Refined EVA (REVA) against stock returns and concluded that both EVA and REVA were very good shareholder value creation measures.

It could be argued that perhaps the context of the study such as the industry in which the analysed companies operate, time of the study (given different economic cycles), methodology and other factors probably play a role in what the outcome is. This sentiment has been seen in Sharma and Kumar (2010)'s comprehensive literature review of 112 studies of EVA. The modelling of Market

Capital, Share Price and Dividends Yield in addition to Market Capital to Book Value was to strengthen the power of this study by looking at multiple shareholder value creation indicators. Had only Market Capital to Book Value been looked at, it could perhaps be argued that perhaps it is itself not a good shareholder value indicator, an argument which may not be made given the broad cover of this study.

It is therefore concluded that based on the regression analysis results found in this study and given that more dependent variables were tested than most previous studies, adjustment and non-adjustment for economic factors was considered and also adjustment of the 2008+'s impact on banking sector was also tested, the null hypothesis cannot be rejected. The study therefore concludes that EVA is not a reliable shareholder value creation measure for the banking sector in South Africa.

5.3 Discussion pertaining to Hypothesis 2: EVA is not a better alternative to traditional accounting metrics in measuring shareholder value creation in the South African banking sector

Multivariate regression models were further done for Market Capital to Book Value against ROA and ROE with the adjustment for economic variables respectively. The regression predictive power (R-Square) of the ROA model was superior to that of the EVA model however the EVA model had higher predictive power than the ROE model. Based on this outcome, the null hypothesis stating that EVA is not a superior shareholder value creation measure to traditional accounting measures could not be rejected. This outcome was consistent to that found by the likes of Biddle et al. (1999)'s study that found that the EVA model had less predictive power than the earnings model.

In this study, Market Capital, Share Price and Dividends Yield were also modelled against ROA and ROE and had consistent results to the results of Market Capital to Book Value where ROA model predictive power is superior to that of EVA model. On the literature review section, O'Byrne (1997)'s criticism of the studies that do not support EVA as a good (and/ or superior to traditional accounting measures) measure centred mostly around the fact that change in shareholder value was mostly not considered but rather the actual shareholder value. In this study, the change in all the four shareholder value indicators, Market Capital to Book Value, Market Capital, Share Price and Dividends Yield were analysed on the correlations matrix. The correlations were relatively smaller but consistent with the correlations of the actual measures themselves. Inferred, the change variables would have produced consistent results to the actual measures themselves.

With the broad analysis of multiple shareholder value creation indicators against EVA, ROA and ROE which had the consistent outcome, there is no evidence to reject the null hypothesis. This study therefore concludes that EVA is not a superior shareholder value creation measure than traditional accounting measures.

5.4 Conclusion

The results of the broadly modelled primary shareholder value creation measure, Market Capital to Book Value and the secondary variables; Market Capital, Share Price and Dividends Yield against EVA have shown consistent outcome. All models' R-Squares had poor predictive power that is statistically classified as insignificant. This led to the failure to reject the first null hypothesis:

Null hypothesis 1: EVA is not a reliable shareholder value creation measure in the South African banking sector

This outcome is consistent with many other previous studies that came to the same conclusion however all have varying contexts. In this study, different shareholder value creation measures and adjustments for economic factors and

cycles were done in order to minimise the gaps of the previous studies however the results consistently failed to reject the null hypothesis in all scenarios.

Despite EVA on its own not being proven to be a reliable shareholder value creation measure, this study proceeded to test EVA against traditional accounting measures. The robust regression models were done against ROA and ROE and the outcome showed the ROA model consistently having strong predictive power than the EVA models although the EVA models had stronger predictive power than the ROE models except for the Dividends Yield indicator. It is for this reason that it has been concluded that the second null hypothesis can also not be rejected:

Null hypothesis 2: EVA is not a better alternative to traditional accounting metrics in measuring shareholder value creation in the South African banking sector

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

The context of this study centred around the uniqueness of the South African banking sector given its international robustness and the banks unique assets base that are different from many other industries mostly where EVA has been said to be a good shareholder value creation measure. The empirical analysis has been extensively conducted to test the hypotheses that were made towards unpacking the research problem. The results have been discussed and the conclusion is hereunder noted.

6.2 Conclusions of the study

Because of the dominance (combined they hold over 90% of the South African banking asset base), the top 7 in market capital South African banks were studied over a period of 10 years from 1994 to 2003. The fact that banks have the financial asset base that is not similar to manufacturing sector puts them in a unique situation as they are not mostly subject to bulk of the traditional financial factors such as assets depreciation. Banks however have their unique asset challenges such as credit impairments and that is why traditionally banks have a very high focus on liquidity and credit risk management over and above profitability and sustainability. Despite their unique set up and the critical role they play in the economy, a great number of banks operating in South Africa are listed in the JSE and therefore have shareholders who expect returns. It has been highlighted that the South African banking system is highly regarded internationally especially after showing resilience during the 2007 and 2008 international financial sector downturn and global recession. It is for this reason that the shareholder value creation can be highly expected from the South African banks and therefore being able to measure such is critical especially in proactive optimisation of shareholder value.

This study emanated as a result of the inquest for potential alternative measures that can help with the proactive measuring and aid shareholder value optimisation. Prior to this study, it was unknown whether EVA is a reliable measure and whether it is potentially a better alternative to traditional accounting measures. The empirical study utilising statistical regression analysis produced the results that proved that:

1. EVA is not a reliable shareholder value creation measure and;
2. EVA is not a superior shareholder value creation measure than traditional accounting measure

It was anticipated that the 2008 and beyond economic down turn could impact the results and therefore modelling was also done for the period prior to 2008. The outcome was consistent to what was concluded upon over the full period with the main difference being that the models' predictive power relatively improved when adjusted for 2008 economic down turn.

6.3 Recommendations

It was earlier highlighted that key stakeholders that may benefit from the outcome of this study include the banking managers and executive, banking shareholders and investors. It is recommended that all these stakeholders continue to monitor the traditional banking performance measures such as liquidity, credit management, efficiency and profitability measure because when optimised they will result in the inherent long term value for shareholders. Although EVA was not proven a reliable shareholder value creation measure, should it be considered as an additional measure of interest then the month on month, quarter on quarter and year on year movements should be monitored. When there is an increasing trend of EVA over time, it could be a signal of potential shareholder value being created and then other measures can also be reviewed to ascertain if value is indeed created.

6.4 Suggestions for further research

This study was done in the banking sector of South Africa and concluded against EVA which is opposite to the study done in Ghana banking sector by Owusu-Antwi et al. (2014) which concluded in favour of EVA. Although South Africa is much advanced, Ghana's financial market is not extremely different to warrant opposing outcomes for the EVA studies. A further research is recommended to unpack if the outcome of EVA is fundamentally influenced by the sector in which the study is done, the market complexity or if it is a pure methodological difference.

APPENDIX A

APPENDIX B

Consistency matrix

Research problem stated here					
Sub-problem	Literature Review	Hypotheses	Source of data	Type of data	Analysis
It is unknown if EVA would turn out to be a reliable shareholder value creation measure in banking	O'Byrne (1997) Sharma and Kumar (2010) Tortella and Brusco (2003) Biddle et al. (1999)	EVA is not a reliable shareholder value creation measure in South African banking sector	Audited annual financial reports of the banks	Continuous and categorical data	Proc: Freq, Means Anova, Regression, Correlations
It is unknown if EVA could serve as an alternative to traditional accounting metrics in measuring shareholder value creation in banking	Hasani and Fathi (2012) Sandoval (2011) Grant (2003) Uyemura et al. (1996)	EVA is not a better alternative to traditional accounting metrics in measuring shareholder value creation in South African banking sector	Audited annual financial reports of the banks	Continuous and categorical data	Proc: Freq, Means Anova, Regression, Correlations

APPENDIX C

Table 8: Market Capital to Book Value = EVA (WACC w JseD 10yr)

Regression Model Formula: Market Capital to Book Value dependent on EVA

Market_Capital_to_Book_Value = **312.77** + **0.0000000062** x EVA_WACC_w_JseD_10yr

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital_to_Book_Value

Number of Observations Read	70
Number of Observations Used	64
Number of Observations with Missing Values	6

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	184253	184253	4.99	0.0291
Error	62	2289767	36932		
Corrected Total	63	2474020			

Root MSE	192.1763	R-Square	0.0745
Dependent Mean	285.54688	Adj R-Sq	0.0595
Coeff Var	67.30114		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	312.77109	26.93727	11.61	<.0001	0	0	258.92425	366.61793
EVA_WACC_w_JseD_10yr	1	6.16E-09	2.76E-09	2.23	0.0291	0.2729	1	6.47E-10	1.17E-08

Collinearity Diagnostics					
Number	Eigenvalue	Condition Index	Proportion of Variation		
			Intercept	EVA_WACC_w_JseD_10yr	
1	1.45248	1	0.27376	0.27376	
2	0.54752	1.62874	0.72624	0.72624	

Table 9: Market Capital to Book Value = EVA (WACC w JseD 10yr) and Other Variables

Regression Model Formula: Market Capital to Book Value dependent on EVA and economic variables

Market_Capital_to_Book_Value = **205.79**+ **0.0000000066** x EVA_WACC_w_JseD_10yr + **351.27** x Inflation_Rate + **0.015** x GDP_Per_Capita -**13.07** x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital_to_Book_Value

Number of Observations Read	70
Number of Observations Used	64
Number of Observations with Missing Values	6

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	213157	53289	1.39	0.2483
Error	59	2260863	38320		
Corrected Total	63	2474020			

Root MSE	195.75421	R-Square	0.0862
Dependent Mean	285.54688	Adj R-Sq	0.0242
Coeff Var	68.55414		

Parameter Estimates								
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits
Intercept	1	205.79752	176.9237	1.16	0.2494	0	0	-148.22601 559.82105
EVA_WACC_w_JseD_10yr	1	6.56E-09	2.88E-09	2.28	0.0265	0.2906	1.05327	7.91E-10 1.23E-08
Inflation_Rate	1	351.2675	1160.955	0.3	0.7633	0.05084	1.82278	-1971.7981 2674.3331
GDP_Per_Capita	1	0.01464	0.02569	0.57	0.5709	0.07478	1.11167	-0.03676 0.06604
VAR91	1	-13.07636	167.1095	-0.08	0.9379	-0.01271	1.70203	-347.46179 321.30906

Collinearity Diagnostics								
Number	Eigenvalue	Condition Index	Proportion of Variation					
			Intercept	EVA_WACC_w_JseD_10yr	Inflation_Rate	GDP_Per_Capita	VAR91	
1	3.57511	1	0.00144	0.01992	0.00856	0.0016	0.01163	
2	0.82265	2.08467	0.000394	0.58073	0.00599	0.0002653	0.10327	
3	0.52194	2.61718	0.000513	0.39423	0.07675	0.00122	0.21105	
4	0.06958	7.1679	0.04594	0.00447	0.90758	0.07041	0.59481	
5	0.01071	18.26809	0.95172	0.00064025	0.00111	0.9265	0.07924	

Table 10: Share Price = EVA (WACC w JseD 10yr)

Regression Model Formula: Share Price at company year end on EVA and economic variables

Share_Price_at_Company_Financial = **7899.49 - 0.000000087** x EVA_WACC_w_JseD_10yr

The REG Procedure

Model: MODEL1

Dependent Variable: Share_Price_at_Company_Financial

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	37170495	37170495	1.02	0.317
Error	68	2487038521	36574096		
Corrected Total	69	2524209017			

Root MSE	6047.6521	R-Square	0.0147
Dependent Mean	8252.92857	Adj R-Sq	0.0002
Coeff Var	73.27886		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	7899.49975	803.36468	9.83	<.0001	0	0	6296.4105	9502.589
EVA_WACC_w_JseD_10yr	1	-8.67E-08	8.60E-08	-1.01	0.317	-0.12135	1	-2.58E-07	8.49E-08

Collinearity Diagnostics				
Number	Eigenvalue	Condition Index	Proportion of Variation	
			Intercept	EVA_WACC_w_JseD_10yr
1	1.43639	1	0.2818	0.2818
2	0.56361	1.59642	0.7182	0.7182

Table 11: Share Price = EVA (WACC w JseD 10yr) and Other Variables

Regression Model Formula: Share Price at company year end on EVA and economic variables

Share_Price_at_Company_Financial = -3330.68- 0.000000092x EVA_WACC_w_JseD_10yr + 4326.86 x Inflation_Rate + 1.52 x GDP_Per_Capita + 6046.38 x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Share_Price_at_Company_Financial

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	220358094	55089523	1.55	0.1971
Error	65	2303850923	35443860		
Corrected Total	69	2524209017			

Root MSE	5953.47465	R-Square	0.0873
Dependent Mean	8252.92857	Adj R-Sq	0.0311
Coeff Var	72.13772		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	-3330.6766	5191.973	-0.64	0.5235	0	0	-13700	7038.4102
EVA_WACC_w_JseD_10yr	1	-9.18E-08	8.70E-08	-1.06	0.2951	-0.12853	1.05613	-2.66E-07	8.19E-08
Inflation_Rate	1	4326.85601	33269	0.13	0.8969	0.02058	1.78367	-62115	70769
GDP_Per_Capita	1	1.52486	0.76724	1.99	0.0511	0.25191	1.14414	-0.00743	3.05715
VAR91	1	6046.37669	4876.766	1.24	0.2195	0.18886	1.65241	-3693.1984	15786

Collinearity Diagnostics								
Number	Eigenvalue	Proportion of Variation						
		Condition Index	Intercept	EVA_WACC_w_JseD_10yr	Inflation_Rate	GDP_Per_Capita	VAR91	
1	3.58203	1	0.00141	0.01893	0.00899	0.00154	0.0117	
2	0.83436	2.07199	0.000402	0.62399	0.00506	0.00025388	0.08493	
3	0.50154	2.67247	0.000375	0.35482	0.09198	0.00108	0.22328	
4	0.07167	7.06947	0.04634	0.00196	0.8939	0.06508	0.59894	
5	0.0104	18.55929	0.95148	0.00030054	7.1E-05	0.93205	0.08114	

Table 12: Market Capital = EVA (WACC w JseD 10yr)

Regression Model Formula: Market Capital on EVA and economic variables

Market_Capital = 4,780,818,000,000 - 325.69 x EVA_WACC_w_JseD_10yr

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	5.24551E+26	5.246E+26	32.46	<.0001
Error	68	1.09876E+27	1.616E+25		
Corrected Total	69	1.62332E+27			

Root MSE	4.01974E+12	R-Square	0.3231
Dependent Mean	6.10851E+12	Adj R-Sq	0.3132
Coeff Var	65.80558		

Parameter Estimates								
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits
Intercept	1	4.78082E+12	5.34E+11	8.95	<.0001	0	0	3.7153E+12 5.846E+12
EVA_WACC_w_JseD_10yr	1	-3.26E+02	5.72E+01	-5.7	<.0001	-0.56845	1	-4.40E+02 -2.12E+02

Collinearity Diagnostics				
Number	Eigenvalue	Condition Index	Proportion of Variation	
			Intercept	EVA_WACC_w_JseD_10yr
1	1.43639	1	0.2818	0.2818
2	0.56361	1.59642	0.7182	0.7182

Table 13: Market Capital = EVA (WACC w JseD 10yr) and Other Variables

Regression Model Formula: Market Capital on EVA and economic variables

Market_Capital = -5,375,500,000,000 - 323.52 x EVA_WACC_w_JseD_10yr + 8,116,215,000,000 x Inflation_Rate + 1,382,346,099 x GDP_Per_Capita + 4,539,697,000,000 x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	6.648E+26	1.66E+26	11.27	<.0001
Error	65	9.5851E+26	1.47E+25		
Corrected Total	69	1.6233E+27			

Root MSE	3.8401E+12	R-Square	0.4095
Dependent Mean	6.1085E+12	Adj R-Sq	0.3732
Coeff Var	62.8648		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	-5.376E+12	3.35E+12	-1.61	0.1133	0	0	-1.206E+13	1.313E+12
EVA_WACC_w_JseD_10yr	1	-3.24E+02	5.61E+01	-5.76	<.0001	-0.56465	1.05613	-4.36E+02	-2.11E+02
Inflation_Rate	1	8.1162E+12	2.15E+13	0.38	0.7065	0.04814	1.78367	-3.474E+13	5.097E+13
GDP_Per_Capita	1	1382346099	4.95E+08	2.79	0.0068	0.28477	1.14414	393990789	2.371E+09
VAR91	1	4.5397E+12	3.15E+12	1.44	0.1538	0.17682	1.65241	-1.743E+12	1.082E+13

Collinearity Diagnostics								
Number	Eigenvalue	Condition	Proportion of Variation					
		Index	Intercept	EVA_WACC_	Inflation	GDP_Per_Capita	VAR91	
1	3.58203	1	0.00141	0.01893	0.00899	0.00154	0.0117	
2	0.83436	2.07199	0.000402	0.62399	0.00506	0.00025388	0.08493	
3	0.50154	2.67247	0.000375	0.35482	0.09198	0.00108	0.22328	
4	0.07167	7.06947	0.04634	0.00196	0.8939	0.06508	0.59894	
5	0.0104	18.55929	0.95148	0.00030054	7.1E-05	0.93205	0.08114	

Table 14: Dividends Yield = EVA (WACC w JseD 10yr)

Regression Model Formula: Market Capital on EVA and economic variables

Dividends_Yield_Ave = **41.30** + **0.000000000046** x EVA_WACC_w_JseD_10yr

The REG Procedure

Model: MODEL1

Dependent Variable: Dividends_Yield_Ave

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	10.2433	10.2433	0.01	0.9036
Error	68	47119	692.92415		
Corrected Total	69	47129			

Root MSE	26.32345	R-Square	0.0002
Dependent Mean	41.11429	Adj R-Sq	-0.0145
Coeff Var	64.02508		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	41.29982	3.49678	11.81	<.0001	0	0	34.3221	48.27754
EVA_WACC_w_JseD_10yr	1	4.55E-11	3.74E-10	0.12	0.9036	0.01474	1	-7.01E-10	7.92E-10

Collinearity Diagnostics				
Number	Eigenvalue	Condition Index	Proportion of Variation	
			Intercept	EVA_WACC_w_JseD_10yr
1	1.43639	1	0.2818	0.2818
2	0.56361	1.59642	0.7182	0.7182

Table 15: Dividends Yield = EVA (WACC w JseD 10yr) and Other Variables

The REG Procedure

Model: MODEL1

Dependent Variable: Dividends_Yield_Ave

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1936.84293	484.2107	0.7	0.5972
Error	65	45192	695.2653		
Corrected Total	69	47129			

Root MSE	26.36788	R-Square	0.0411
Dependent Mean	41.11429	Adj R-Sq	-0.0179
Coeff Var	64.13314		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	78.43845	22.9952	3.41	0.0011	0	0	32.51386	124.36304
EVA_WACC_w_JseD_10yr	1	-1.23E-12	3.85E-10	0	0.9975	-0.00039916	1.05613	-7.71E-10	7.68E-10
Inflation_Rate	1	-88.7225	147.3459	-0.6	0.5492	-0.09767	1.78367	-382.99257	205.54757
GDP_Per_Capita	1	-0.00461	0.0034	-1.36	0.1794	-0.17634	1.14414	-0.0114	0.00217
VAR91	1	-17.3091	21.59915	-0.8	0.4258	-0.12512	1.65241	-60.44558	25.82739

Collinearity Diagnostics							
Number	Eigenvalue	Condition		Proportion of Variation			
		Index	Intercept	EVA_WACC_w_JseD_10yr	Inflation_Rate	GDP_Per_Capita	VAR91
1	3.58203	1	0.00141	0.01893	0.00899	0.00154	0.0117
2	0.83436	2.07199	0.000402	0.62399	0.00506	0.00025388	0.08493
3	0.50154	2.67247	0.000375	0.35482	0.09198	0.00108	0.22328
4	0.07167	7.06947	0.04634	0.00196	0.8939	0.06508	0.59894
5	0.0104	18.55929	0.95148	0.00030054	7.1E-05	0.93205	0.08114

Table 16: Market Capital to Book Value = ROA and Other Variables

Regression Model Formula: Market Capital to Book Value dependent on ROA and economic variables

Market_Capital_to_Book_Value = **57.11** + **2047.04** x ROA + **119.23** x Inflation_Rate + **0.027** x GDP_Per_Capita - **28.55** x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital_to_Book_Value

Number of Observations Read	70
Number of Observations Used	64
Number of Observations with Missing Values	6

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	295062	73766	2	0.1066
Error	59	2178958	36931		
Corrected Total	63	2474020			

Root MSE	192.17566	R-Square	0.1193
Dependent Mean	285.54688	Adj R-Sq	0.0596
Coeff Var	67.30092		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	57.112	180.3577	0.32	0.7526	0	0	-303.783	418.0069
ROA	1	2.05E+03	7.43E+02	2.75	0.0078	0.3469	1.06227	5.60E+02	3.53E+03
Inflation_Rate	1	119.22749	1126.571	0.11	0.9161	0.01726	1.78093	-2135.04	2373.491
GDP_Per_Capita	1	0.02679	0.02555	1.05	0.2987	0.13685	1.14124	-0.02434	0.07791
VAR91	1	-28.54901	164.2135	-0.17	0.8626	-0.02774	1.70533	-357.139	300.0414

Collinearity Diagnostics							
Number	Eigenvalue	Condition Index	Proportion of Variation				
			Intercept	ROA	Inflation_Rate	GDP_Per_Capita	VAR91
1	3.76999	1	0.0012	0.02136	0.00729	0.00139	0.01155
2	0.66973	2.37258	0.000452	0.21884	0.07286	0.00123	0.14106
3	0.48103	2.79953	0.000462	0.69449	0.00569	0.00059216	0.20873
4	0.06911	7.38606	0.04302	0.01173	0.911	0.07438	0.56821
5	0.01016	19.26539	0.95486	0.05357	0.00316	0.92241	0.07045

Table 17: Share Price = ROA and Other Variables

Regression Model Formula: Share Price at company year end on ROA and economic variables

Share_Price_at_Company_Financial = **-361.67** - **51,313** x ROA + **6002.90** x Inflation_Rate + **1.31** x GDP_Per_Capita + **6276.48** x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Share_Price_at_Company_Financial

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	366362638	91590659	2.76	0.035
Error	65	2.158E+09	33197637		
Corrected Total	69	2.524E+09			

Root MSE	5761.73903	R-Square	0.1451
Dependent Mean	8252.92857	Adj R-Sq	0.0925
Coeff Var	69.81448		

Parameter Estimates								
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits
Intercept	1	-361.6725	5161.022	-0.07	0.9443	0	0	-10669 9945.6
ROA	1	-5.13E+04	2.17E+04	-2.36	0.0211	-0.27616	1.03786	-9.47E+04 -7.96E+03
Inflation_Rate	1	6002.9013	31855	0.19	0.8511	0.02856	1.74592	-57615 69621
GDP_Per_Capita	1	1.30488	0.74829	1.74	0.0859	0.21557	1.16194	-0.18955 2.79931
VAR91	1	6276.4819	4719.845	1.33	0.1882	0.19604	1.6525	-3149.7 15703

Collinearity Diagnostics								
Number	Eigenvalue	Condition		Proportion of Variation				
		Index	Intercept	ROA	Inflation_Rate	GDP_Per_Capita	VAR91	
1	3.78009	1	0.0012	0.02167	0.00768	0.00135	0.01147	
2	0.64206	2.42641	0.000481	0.30526	0.0789	0.0013	0.11341	
3	0.49677	2.75849	0.000419	0.62586	0.0123	0.00035837	0.22259	
4	0.07104	7.29464	0.04464	0.01168	0.90108	0.06871	0.57736	
5	0.01004	19.40346	0.95325	0.03553	4.43E-05	0.92828	0.07517	

Table 18: Market Capital = ROA and Other Variables

Regression Model Formula: Market Capital on ROA and economic variables

Market_Capital = -1,535,160,000,000 - 59,762,000,000,000 x ROA + 22,772,990,000,000 x Inflation_Rate + 1,123,702,459 x GDP_Per_Capita + 4,360,596,000,000 x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	4.263E+26	1.07E+26	5.79	0.0005
Error	65	1.197E+27	1.84E+25		
Corrected Total	69	1.623E+27			

Root MSE	4.29127E+12	R-Square	0.2626
Dependent Mean	6.10851E+12	Adj R-Sq	0.2173
Coeff Var	70.25069		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	-1.54E+12	3.84E+12	-0.4	0.6909	0	0	-9.2E+12	6.14E+12
ROA	1	-5.98E+13	1.62E+13	-3.7	0.0005	-0.40107	1.03786	-9.21E+13	-2.75E+13
Inflation_Rate	1	2.277E+13	2.37E+13	0.96	0.3407	0.13509	1.74592	-2.5E+13	7.02E+13
GDP_Per_Capita	1	1.124E+09	5.57E+08	2.02	0.0479	0.23149	1.16194	10667143	2.24E+09
VAR91	1	4.361E+12	3.52E+12	1.24	0.2193	0.16984	1.6525	-2.7E+12	1.14E+13

Collinearity Diagnostics							
Number	Eigenvalue	Condition		Proportion of Variation			
		Index	Intercept	ROA	Inflation	GDP_Per_Capita	VAR91
1	3.78009	1	0.0012	0.02167	0.00768	0.00135	0.01147
2	0.64206	2.42641	0.000481	0.30526	0.0789	0.0013	0.11341
3	0.49677	2.75849	0.000419	0.62586	0.0123	0.00035837	0.22259
4	0.07104	7.29464	0.04464	0.01168	0.90108	0.06871	0.57736
5	0.01004	19.40346	0.95325	0.03553	4.43E-05	0.92828	0.07517

Table 19: Dividends Yield = ROA and Other Variables

Regression Model Formula: Market Capital on ROA and economic variables

Dividends_Yield_Ave = **56.97** + **392.48** x ROA - 60.27 x Inflation_Rate - **0.0029** x GDP_Per_Capita - **20.52** x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Dividends_Yield_Ave

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	12789	3197.188	6.05	0.0003
Error	65	34340	528.3128		
Corrected Total	69	47129			

Root MSE	22.98506	R-Square	0.2714
Dependent Mean	41.11429	Adj R-Sq	0.2265
Coeff Var	55.90528		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	56.97157	20.58864	2.77	0.0074	0	0	15.85321	98.08993
ROA	1	3.92E+02	8.66E+01	4.53	<.0001	0.48885	1.03786	2.20E+02	5.65E+02
Inflation_Rate	1	-60.26551	127.0762	-0.47	0.6369	-0.06635	1.74592	-314.054	193.5232
GDP_Per_Capita	1	-0.00294	0.00299	-0.98	0.3287	-0.11231	1.16194	-0.0089	0.00302
VAR91	1	-20.52172	18.82867	-1.09	0.2798	-0.14834	1.6525	-58.1252	17.08174

Collinearity Diagnostics							
Number	Eigenvalue	Condition Index	Proportion of Variation				
			Intercept	ROA	Inflation_Rate	GDP_Per_Capita	VAR91
1	3.78009	1	0.0012	0.02167	0.00768	0.00135	0.01147
2	0.64206	2.42641	0.000481	0.30526	0.0789	0.0013	0.11341
3	0.49677	2.75849	0.000419	0.62586	0.0123	0.00035837	0.22259
4	0.07104	7.29464	0.04464	0.01168	0.90108	0.06871	0.57736
5	0.01004	19.40346	0.95325	0.03553	4.43E-05	0.92828	0.07517

Table 20: Market Capital to Book Value = ROE and Other Variables

Regression Model Formula: Market Capital to Book Value dependent on ROE and economic variables

Market_Capital_to_Book_Value = **88.89** + **323.28** x ROE + **1.51** x Inflation_Rate + **0.023** x GDP_Per_Capita + **-10.72** x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital_to_Book_Value

Number of Observations Read	70
Number of Observations Used	64
Number of Observations with Missing Values	6

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	84724	21181	0.52	0.7191
Error	59	2389296	40497		
Corrected Total	63	2474020			

Root MSE	201.23754	R-Square	0.0342
Dependent Mean	285.54688	Adj R-Sq	-0.0312
Coeff Var	70.47443		

Parameter Estimates								
Variable	DF	Parameter	Standard	t Value	Pr > t	Standardized	Variance	95% Confidence Limits
		Estimate	Error			Estimate	Inflation	
Intercept	1	88.8947	197.97435	0.45	0.6551	0	0	-307.25107 485.04046
ROE	1	3.23E+02	2.46E+02	1.31	0.1939	0.17355	1.06558	-1.69E+02 8.16E+02
Inflation_Rate	1	1.50817	1178.95793	0	0.999	0.00021828	1.77871	-2357.5812 2360.59753
GDP_Per_Capita	1	0.02251	0.02695	0.84	0.4069	0.11499	1.15788	-0.03141 0.07643
VAR91	1	-10.72213	171.78898	-0.06	0.9504	-0.01042	1.702	-354.47109 333.02683

Collinearity Diagnostics							
Number	Eigenvalue	Condition	Proportion of Variation				
			Index	Intercept	ROE	Inflation_Rate	GDP_Per_Capita VAR91
1	4.05457	1	0.00095893	0.01302	0.00645	0.0012	0.00983
2	0.61543	2.56676	0.0000867	0.00338	0.07978	0.00048553	0.28513
3	0.25329	4.00092	0.00119	0.82704	0.03143	0.00369	0.10972
4	0.06712	7.77238	0.04048	0.04671	0.87829	0.08555	0.52352
5	0.00959	20.55841	0.95728	0.10985	0.00405	0.90908	0.07181

Table 21: Share Price = ROE and Other Variables

Regression Model Formula: Share Price at company year end on ROE and economic variables

Share_Price_at_Company_Financial = -2150.73 - 3603.35 x ROE + 9426.64 x Inflation_Rate + 1.46 x GDP_Per_Capita + 5951.74 x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Share_Price_at_Company_Financial

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	190161014	47540253	1.32	0.2705
Error	65	2334048003	35908431		
Corrected Total	69	2524209017			

Root MSE	5992.36438	R-Square	0.0753
Dependent Mean	8252.92857	Adj R-Sq	0.0184
Coeff Var	72.60895		

Parameter Estimates									
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Standardized Estimate	Variance Inflation	95% Confidence Limits	
Intercept	1	-2150.7287	5593.89885	-0.38	0.7019	0	0	-13323	9021.05877
ROE	1	-3.60E+03	7.09E+03	-0.51	0.6128	-0.06205	1.04647	-1.78E+04	1.05E+04
Inflation_Rate	1	9426.64315	33094	0.28	0.7767	0.04484	1.74219	-56667	75520
GDP_Per_Capita	1	1.45575	0.78377	1.86	0.0678	0.24049	1.17853	-0.10956	3.02105
VAR91	1	5951.74543	4908.84419	1.21	0.2297	0.1859	1.65256	-3851.8934	15755

Collinearity Diagnostics							
Number	Eigenvalue	Condition		Proportion of Variation			
		Index	Intercept	ROE	Inflation_Rate	GDP_Per_Capita	VAR91
1	4.08288	1	0.00095924	0.01309	0.00671	0.00115	0.00975
2	0.58912	2.63258	0.00006814	0.00368	0.09277	0.00049696	0.27845
3	0.24894	4.04985	0.00138	0.8582	0.03059	0.00361	0.10826
4	0.06951	7.66426	0.04271	0.03992	0.86989	0.0772	0.53277
5	0.00955	20.67152	0.95488	0.08511	0.00004107	0.91754	0.07077

Table 22: Market Capital = ROE and Other Variables

Regression Model Formula: Market Capital on ROE and economic variables

Market_Capital = -4,956,450,000,000 + 539,135,200,000 x ROE + 27,137,990,000,000 x Inflation_Rate + 1,388,892,826 x GDP_Per_Capita + 3,857,605,000,000 x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Market_Capital

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1.7495E+26	4.3737E+25	1.96	0.1106
Error	65	1.4484E+27	2.2283E+25		
Corrected Total	69	1.6233E+27			

Root MSE	4.7204E+12	R-Square	0.1078
Dependent Mean	6.1085E+12	Adj R-Sq	0.0529
Coeff Var	77.27652		

Parameter Estimates								
Variable	DF	Parameter	Standard	t Value	Pr > t	Standardized	Variance	95% Confidence Limits
		Estimate	Error			Estimate	Inflation	
Intercept	1	-4.956E+12	4.4066E+12	-1.12	0.2648	0	0	-1.376E+13 3.844E+12
ROE	1	5.39E+11	5.58E+12	0.1	0.9234	0.01158	1.04647	-1.06E+13 1.17E+13
Inflation_Rate	1	2.7138E+13	2.607E+13	1.04	0.3017	0.16098	1.74219	-2.493E+13 7.9203E+13
GDP_Per_Capita	1	1388892826	617412550	2.25	0.0279	0.28612	1.17853	155834818 2621950835
VAR91	1	3.8576E+12	3.8669E+12	1	0.3222	0.15025	1.65256	-3.865E+12 1.158E+13

Collinearity Diagnostics							
Number	Eigenvalue	Condition		Proportion of Variation			
		Index	Intercept	ROE	Inflation_Rate	GDP_Per_Capita	VAR91
1	4.08288	1	0.00095924	0.01309	0.00671	0.00115	0.00975
2	0.58912	2.63258	0.00006814	0.00368	0.09277	0.00049696	0.27845
3	0.24894	4.04985	0.00138	0.8582	0.03059	0.00361	0.10826
4	0.06951	7.66426	0.04271	0.03992	0.86989	0.0772	0.53277
5	0.00955	20.67152	0.95488	0.08511	0.00004107	0.91754	0.07077

Table 23: Dividends Yield = ROE and Other Variables

Regression Model Formula: Market Capital on ROE and economic variables

Dividends_Yield_Ave = **44.75** + 119.26 x ROE - **79.14** x Inflation_Rate - **0.0024** x GDP_Per_Capita - **20.45** x JSE_Return

The REG Procedure

Model: MODEL1

Dependent Variable: Dividends_Yield_Ave

Number of Observations Read	70
Number of Observations Used	70

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	12109	3027.28624	5.62	0.0006
Error	65	35020	538.76832		
Corrected Total	69	47129			

Root MSE	23.21138	R-Square	0.2569
Dependent Mean	41.11429	Adj R-Sq	0.2112
Coeff Var	56.45576		

Parameter Estimates									
Variable	DF	Parameter	Standard	t Value	Pr > t	Standardized	Variance	95% Confidence Limits	
		Estimate	Error			Estimate	Inflation		
Intercept	1	44.75449	21.66793	2.07	0.0429	0	0	1.48064	88.02833
ROE	1	1.19E+02	2.74E+01	4.35	<.0001	0.47526	1.04647	6.44E+01	1.74E+02
Inflation_Rate	1	-79.14336	128.1902	-0.62	0.5391	-0.08713	1.74219	-335.15687	176.87015
GDP_Per_Capita	1	-0.00236	0.00304	-0.78	0.44	-0.09018	1.17853	-0.00842	0.0037
VAR91	1	-20.45409	19.01438	-1.08	0.286	-0.14785	1.65256	-58.42842	17.52024

Collinearity Diagnostics							
Number	Eigenvalue	Condition	Proportion of Variation				
			Index	Intercept	ROE	Inflation_Rate	GDP_Per_Capita
1	4.08288	1	0.00095924	0.01309	0.00671	0.00115	0.00975
2	0.58912	2.63258	0.00006814	0.00368	0.09277	0.00049696	0.27845
3	0.24894	4.04985	0.00138	0.8582	0.03059	0.00361	0.10826
4	0.06951	7.66426	0.04271	0.03992	0.86989	0.0772	0.53277
5	0.00955	20.67152	0.95488	0.08511	0.00004107	0.91754	0.07077

REFERENCES

- Arrow, K. J., & Lind, R. C. (2014). Uncertainty and the evaluation of public investment decisions. *Journal of Natural Resources Policy Research*, 6(1), 29-44.
- BAGL. (2014). Annual Consolidated and Separate Financial Statements 31 December 2014.
- BASA. (2015). The Banking Association South Africa Member Banks. Retrieved 8 March, 2015, from <http://www.banking.org.za/about-us/member-banks>
- Battese, G. E., & Van Der Westhuizen, G. (2013). TECHNICAL EFFICIENCY OF SOUTH AFRICAN BANKS IN GENERATING INTEREST AND NONINTEREST INCOME: A STOCHASTIC FRONTIER ANALYSIS. *Studia Universitatis Babes Bolyai-Oeconomica*(3), 20-42.
- Baybordi, A., Nejad, K. G., & Kargar, E. F. (2015). Evaluating the Relationship between Economic Value-Added and Stock Return in Companies Listed at Tehran Stock Exchange. *Management and Administrative Sciences Review*, 4(1), 215-221.
- Biddle, G. C., Bowen, R. M., & Wallace, J. S. (1999). Evidence on EVA. *Journal of applied corporate finance*, 12(2), 69-79.
- Chabrak, N. (2014). The shareholder value mythology and the market "communion". *Law and Financial Markets Review*, 8(1), 27-38.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Fernandez, P. (2010). WACC: Definition, Misconceptions, and Errors. *Business Valuation Review*, 29(4), 138-144.
- Fernandez, P. (2013). EVA and cash value added do NOT measure shareholder value creation. Available at SSRN 270799.
- Flamini, V., Schumacher, M. L., & McDonald, M. C. A. (2009). *The determinants of commercial bank profitability in Sub-Saharan Africa*: International Monetary Fund.
- Fraker, G. T. (2006). Using Economic Value Added (EVA) to Measure and Improve Bank Performance. *Arizona Chapter*, 13(3), 1-6.
- Grant, J. L. (2003). *Foundations of economic value added* (Vol. 99): John Wiley & Sons.

- Hall, J. H. (2012). Drivers creating shareholder value in South African manufacturing firms.
- Hasani, S. M., & Fathi, Z. (2012). Relationship the Economic Value Added (EVA) with Stock Market Value (MV) and Profitability Ratios. *Interdisciplinary Journal of Contemporary Research in Business*, 4(3), 406.
- Heale, R., & Twycross, A. (2015). Validity and reliability in quantitative studies. *Evidence Based Nursing*, ebnurs-2015-102129.
- Ifeacho, C., & Ngalawa, H. (2014). Performance Of The South African Banking Sector Since 1994. *Journal of Applied Business Research (JABR)*, 30(4), 1183-1196.
- inflation.eu. (2015). Historic inflation South Africa - CPI inflation. Retrieved 10 November 2015, 2015, from <http://www.inflation.eu/inflation-rates/south-africa/historic-inflation/cpi-inflation-south-africa.aspx>
- Jensen, M. C. (2001). Value maximization, stakeholder theory, and the corporate objective function. *Journal of applied corporate finance*, 14(3), 8-21.
- JSE. (2015). Johannesburg Stock Exchange Listed Companies. Retrieved 8 March, 2015, from <https://www.jse.co.za/current-companies/companies-and-financial-instruments>
- Kumbirai, M., & Webb, R. (2010). A financial ratio analysis of commercial bank performance in South Africa. *African Review of Economics and Finance*, 2(1), 30-53.
- Lee, A., Pelagidis, T., Fourie, L., Marques, F., Ocampo, J. A., Antonini, M., . . . Britto, N. (2014). The Big Question: How much confidence do you have in your nation's banking system? *World Policy Journal*, 31(2), 3-7.
- Maredza, A., & Ikhida, S. (2013). The Impact of the Global Financial Crisis on Efficiency and Productivity of the Banking System in South Africa. *Economic Research Southern Africa, ERSA Working Paper Series*(328).
- Muller, C. (2015). *MacFas data*.
- Ncube, M. (2009). Efficiency of the banking sector in South Africa. *University of the Witwatersrand*.
- O'Byrne, S. F. (1997). EVA and shareholder return. *Financial Practice and Education*, 7(1), 50-54.
- Owusu-Antwi, G., Mensah, L., Crabbe, M., & Antwi, J. (2014). Determinants of Bank Performance in Ghana, the Economic Value Added (EVA) Approach. *International Journal of Economics and Finance*, 7(1), p203.

- Sandoval, E. (2011). Financial performance measures and shareholder value creation: An empirical study for Chilean companies. *Journal of Applied Business Research (JABR)*, 17(3).
- SARB. (2014). Bank Supervision Department Annual Report 2014: South African Reserve Bank.
- SBSA. (2015). The Case For Investing in JSE. Retrieved 12 November 2015, 2015, from http://www.standardbank.co.za/site/2013/dm2013/148004_2.html
- Schlotzhauer, S. D., & Littell, R. C. (1997). *SAS system for elementary statistical analysis*: SAS institute Cary, North Carolina.
- ShareNet. (2015). ShareNet. Retrieved 23 June 2015, 2015, from <http://www.sharenet.co.za/index.phtml?content=/free/topco.phtml>
- Sharma, A. K., & Kumar, S. (2010). Economic value added (EVA)-literature review and relevant issues. *International Journal of Economics and Finance*, 2(2), p200.
- Shil, N. C. (2009). Performance measures: An application of economic value added. *International Journal of Business and Management*, 4(3), p169.
- SARB. (2015a). Repo Rate Historic Data. Retrieved 10 November 2015, 2015, from <https://www.resbank.co.za/Research/Rates/Pages/SelectedHistoricalExchangeAndInterestRates.aspx>
- SARB. (2015b). South African Reserve Bank bond market rates. Retrieved 12 November 2015, 2015, from <https://www.resbank.co.za/Research/Rates/Pages/CurrentMarketRates.aspx>
- STATSSA. (2014). Mid year population estimate 2014. P0302. Retrieved 9 June 2015, 2015, from <http://www.statssa.gov.za/publications/P0302/P03022014.pdf>
- STATSSA. (2015). Gross Domestic Product, 1st quarter 2015. Retrieved 9 June 2015, 2015, from http://www.statssa.gov.za/publications/P0441/GDP_First_Quarter_2015_Presentation.pdf
- Stout, L. A. (2013). The shareholder value myth. *European Financial Review*, April-May.
- Tortella, B. D., & Brusco, S. (2003). The Economic Value Added (EVA): an analysis of market reaction. *Advances in Accounting*, 20, 265-290.
- Uyemura, D. G., Kantor, C. C., & Pettit, J. M. (1996). EVA® for banks: Value creation, risk management, and profitability measurement. *Journal of applied corporate finance*, 9(2), 94-109.

- Williams, C. (2011). Research methods. *Journal of Business & Economics Research (JBER)*, 5(3).
- WorldBank. (2015). Per Capita GDP. Retrieved 10 November 2015, 2015, from <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD/countries?page=2&display=default>
- Zheng, X. (2014). The Application Of Economic Value Added On Performance Evaluation Of Listed Banks In China. *Journal of Academic Research in Economics*, 6(1 (March)), 103-118.