

VALUE-BASED MANAGEMENT: PUBLIC WATER UTILITIES, A FINANCIAL CONSIDERATION

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ABSTRACT

Water is the source of life on earth and sustaining a constant supply of safe drinking water is the responsibility of every human being. Although people can all do their part for water conservation by minimising and mitigating pollution, the supply of clean drinking water in South Africa is made possible by the Water Boards.

Water Boards are public enterprises and are therefore non-profit organisations that function as normal business enterprises. Although some grants are issued under the Division of Revenue Act (Act 2 of 2006), for the most part the Water Boards are expected to be financially sustainable through generating sufficient revenue to cover all its costs. The Water Boards that fail to do so become dependent on government funding and in some instances have to borrow to finance its operations. Water Boards are therefore expected to manage its operations and finances optimally to become more independent and rely less on debt to cover its expenses. This means that less government support will be needed to ensure that the Water Boards remains viable. The funds directed towards the Water Boards can thus be used for more social value adding activities instead of being used to ensure the survival of the Water Boards. To become financially sustainable both the operations as well as the finances must be managed effectively. In this study only the financial management of the Water Boards are considered. The question is thus whether or not South African Water Boards manage its finances effectively to ensure financial sustainability so as to add value to its services delivered and to increase the living standard of the communities in which it operates.

Financial performance measurement tools are used to measure the financial management of any company. There are numerous performance measurement tools to choose from and the choice lies with the company depending on the objectives of the company and what it is that needs to be measured. Although financial performance measurement tools are generally used by private entities, public entities are also able to use it since effective financial management is common to both.

The financial performance measurement tools fall into two categories, namely traditional and modern performance measures. The traditional performance measures are the ratios that have been used over the last few decades and the modern performance measures are value-based management (VBM) tools that are more recently developed. VBM takes the cost of debt and equity into consideration in calculating the value created through operations. Where the traditional performance measures are based on historical data, VBM can be used to calculate the future value of a company. The tools under the VBM framework that are discussed in this research are Shareholder Value Added (SVA), Cash-Flow Return on Investment (CFROI) and Economic Value Added (EVA). EVA and traditional financial analysis are used in this research to analyse the performance of the Water Boards and therefore a more in-depth literature study is conducted on EVA so as to clarify how it was calculated for the Water Boards.

To answer the research question, both the EVA and the ratios were calculated for 15 of the South African Water Boards over a 5 year period from 2004 to 2008. This was done by making use of the Income Statements and Balance Sheets of the Water Boards. The ratios used under the traditional performance measurement framework are: operating profit margin, net profit margin, total asset turn-over ratio, current ratio, debt to assets ratio, equity multiplier, return on assets, return on equity and EVA.

The results of all the performance measures were plotted on bar graphs to observe trend and establish connections between the variables. An industry average calculated from all the publicly traded industrials on the Johannesburg Securities Exchange was used to benchmark the Water Boards with respect to the financial performance measurement tools. Finally, correlation matrices were used on all the performance measures of the Water Boards to determine whether or not there were relationships between the performance measures. From the empirical study it appears that the Water Boards tend to possess assets that are not optimally utilised. The higher prices of assets inevitably lead to a higher cost in acquiring the assets, which

in turn decreases the EVA. All assets must therefore be fully utilised so that more revenue is generated in using the assets than the cost of acquisition of these assets. Both the EVA and the chosen traditional performance measures are used to determine whether the assets of the Water Boards are fully utilised and the finances are effectively managed.

TABLE OF CONTENTS

PRELIMINARIES	Page
Acknowledgements	ii
Abstract	iii
List of figures	ix
List of tables	x
Abbreviations	xi
CHAPTER 1: INTRODUCTION TO THE STUDY	
1.1 BACKGROUND TO THE RESEARCH	1
1.2 PROBLEM STATEMENT	5
1.3 RESEARCH OBJECTIVES	6
1.3.1 MAIN OBJECTIVE	6
1.3.2 SUB-OBJECTIVES	6
1.4 RESEARCH METHODOLOGY	6
1.5 LIMITATIONS OF THE STUDY	7
1.6 RESEARCH ASSUMPTIONS	7
1.7 OUTLINE OF THE REPORT	7
CHAPTER 2: LITERATURE REVIEW	
2.1 INTRODUCTION	8
2.2 The South African Water Boards	8
2.3 Structure follows strategy	9
2.4 The sustainability of the Water Boards	10
2.5 The human factor	11
2.6 South African policies and procedures	12
2.7 The public or private debate	13
2.8 The economics of water services	15
2.9 Performance measurement	17
2.9.1 The importance of performance measurement	18

2.9.2	The roles of performance measurement	19
2.9.3	Reasons for measuring performance	20
2.9.4	Criteria for performance measurement	21
2.10	Traditional financial measures of performance	22
2.10.1	The resistance to changing from traditional to modern measurement tools	22
2.10.2	The Du Pont formula	23
2.10.3	Financial ratios	25
2.10.3.1	Net Profit Margin (NPM)	28
2.10.3.2	Operating Profit Margin	28
2.10.3.3	Total Asset Turnover ratio (TATO)	28
2.10.3.4	Current Ratio (CR)	29
2.10.3.5	Debt to Assets ratio (D/A)	29
2.10.3.6	Equity Multiplier (EM)	29
2.10.3.7	Return on Assets (ROA)	29
2.10.3.8	Return on Equity (ROE)	29
2.11	Value-based management	30
2.11.1	The role of VBM as performance measurement tool	33
2.11.2	The value drivers of VBM	34
2.11.3	The performance measurement tools under the VBM framework	36
2.11.3.1	Shareholder Value Added (SVA)	36
2.11.3.2	Cash Flow Return on Investment (CFROI)	37
2.11.3.3	Economic Value Added (EVA)	38
2.12	The components of EVA	44
2.12.1	NOPAT	44
2.12.1.1	Return on invested Capital (ROIC)	45
2.12.1.2	Free cash flow (FCF)	45
2.12.2	Total net operating capital (TOC)	46
2.12.3	Weighted average cost of capital (WACC)	47
2.13	Estimating the cost of debt	48
2.14	Estimating the cost of equity	49
2.14.1	Estimating the cost of equity with CAPM	50
2.14.2	The Discounted Cash Flow (DCF) approach	52
2.14.3	The Bond-Yield-Plus-Risk-Premium approach	52

2.14.4 Comparison of the CAPM, DCF, and BY+P methods	53
2.15 Finances of public enterprises	53
2.16 Financial performance measures of public enterprises	54
2.17 Financial management in South African Water Boards	58
2.18 Summary	60

CHAPTER 3: EMPIRICAL RESEARCH METHODOLOGY

3.1 INTRODUCTION	62
3.2 Research process	62
3.3 Data collection	62
3.4 Calculation of the EVA	63
3.5 Benchmarking	64
3.6 Data analysis	66
3.7 Summary	67

CHAPTER 4: DATA FINDINGS AND ANALYSIS

4.1 INTRODUCTION	68
4.2 The Industry Average	68
4.3 The Water Boards	72
4.4 Benchmarking	92
4.5 Comparisons between the Water Boards with the highest and lowest EVA.	110
4.6 Relationships amongst variables	113
4.7 Summary	119

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION	123
5.2 Conclusions	123
5.3 Recommendations for future research	124

LIST OF FIGURES

	Page
Figure 2.1: The Dupont model	24
Figure 2.2: The sustainable cycle of value creation	32
Figure 4.1: Industry average OPM and NPM	69
Figure 4.2: Industry average TATO and CR	70
Figure 4.3: Industry average D/A and EM	70
Figure 4.4: Industry average ROA and ROE	71
Figure 4.5: Industry average EVA	72
Figure 4.6: Water Boards OPM and NPM 2004	73
Figure 4.7: Water Boards TATO and CR 2004	73
Figure 4.8: Water Boards D/A and EM 2004	74
Figure 4.9: Water Boards ROA and ROE 2004	75
Figure 4.10: Water Boards EVA 2004	76
Figure 4.11: Water Boards OPM and NPM 2005	77
Figure 4.12: Water Boards TATO and CR 2005	78
Figure 4.13: Water Boards D/A and EM 2005	78
Figure 4.14: Water Boards ROA and ROE 2005	79
Figure 4.15: Water Boards EVA 2005	80
Figure 4.16: Water Boards OPM and NPM 2006	81
Figure 4.17: Water Boards TATO and CR 2006	82
Figure 4.18: Water Boards D/A and EM 2006	83
Figure 4.19: Water Boards ROA and ROE 2006	83
Figure 4.20: Water Boards EVA 2006	84
Figure 4.21: Water Boards OPM and NPM 2007	85
Figure 4.22: Water Boards TATO and CR 2007	86
Figure 4.23: Water Boards D/A and EM 2007	86
Figure 4.24: Water Boards ROA and ROE 2007	87
Figure 4.25: Water Boards EVA 2007	88
Figure 4.26: Water Boards OPM and NPM 2008	89
Figure 4.27: Water Boards TATO and CR 2008	90
Figure 4.28: Water Boards D/A and EM 2008	90

Figure 4.29: Water Boards ROA and ROE 2008	91
Figure 4.30: Water Boards EVA 2008	92
Figure 4.31: Benchmarking of OPM	93
Figure 4.32: Benchmarking of NPM	95
Figure 4.33: Benchmarking of TATO	97
Figure 4.34: Benchmarking of CR	99
Figure 4.35: Benchmarking of D/A ratio	101
Figure 4.36: Benchmarking of EM	103
Figure 4.37: Benchmarking of ROA	105
Figure 4.38: Benchmarking of ROE	107
Figure 4.39: Benchmarking of EVA	109

LIST OF TABLES

	Pages
Table 3.1: Industry average ratios	66
Table 4.1: EVA/TOC of the Water Boards	111
Table 4.2: Comparison between highest and the lowest EVA	112
Table 4.3: Correlation matrix 2004	114
Table 4.4: Correlation matrix 2005	115
Table 4.5: Correlation matrix 2006	116
Table 4.6: Correlation matrix 2007	117
Table 4.7: Correlation matrix 2008	118

ABBREVIATIONS

CFROI	=	Cash Flow Return on Investment
CR	=	Current ratio
CV	=	Corporate Value
D/A	=	Debt to Assets ratio
DCF	=	Discounted Free Cash Flows Valuation Method
EM	=	Equity Multiplier
EVA	=	Economic Value Added
FCF	=	Free Cash Flow
MVA	=	Market Value Added
MIG	=	Municipal Infrastructure Grant
NOPAT	=	Net Operating Profit after Taxes
NPM	=	Net Profit Margin
OPM	=	Operating Profit Margin
OP	=	Operating Profitability
PFMA	=	Public Finance Management Act
ROA	=	Return On Assets
ROE	=	Return On Equity
ROI	=	Return On Investment
ROIC	=	Return On Invested Capital
RI	=	Residual Income
SVA	=	Shareholder Value Added
TATO	=	Total Assets Turnover
TV	=	Terminal Value of future cash flows
VBM	=	Value-Based Management
WACC	=	Weighted Average Cost of Capital

APPENDICES

- Appendix 1: Spreadsheet for the calculation of EVA
- Appendix 2: Benchmarked financial performance measures
- Appendix 3: List of publicly traded entities in the Industry Average

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Background to the research

Public enterprises are established with capital supplied by the government and many are subsidised by the Government. The Water Boards of South Africa are defined as public enterprises in the Public Finance Management Act (Act 1 of 1999) (PFMA) and although it is also subsidised by the Government, it is expected to become self-sufficient by managing its operations and expenses to generate sufficient income to cover all expenses. In order to do this, it is important for the enterprises to have sound financial management and reporting infrastructure in place. According to van Wyk (2007: 65) three milestones in the transformation of public sector financial reporting are: the promulgation of the PFMA in conjunction with the establishment of the Accounting Standards Board in 2002 and the drafting of the Asset Management Framework in 2004. This has laid the foundation for value-added and transparent financial reporting for the public sector in South Africa.

According to the Public Finance Management Act, 1999 (Act no. 1 of 1999), the accounting authority of a state-owned enterprise must forward a five-year business plan to the relevant government department. In the plan the yearly breakdown of the expenses that are expected to be incurred in each financial year is put forth. Accompanying the yearly business plans are descriptions of how and how much income will be generated to cover costs. Based on the business plans the budgets are strategically compiled for the different departments of the public entity to reach its goals. Monthly reports on revenue and expenditure must be sent to National Treasury who investigates any indication of over-expenditure or under-expenditure by the institution. The annual surplus made by the public entity has to be paid over to National Treasury. The surplus is then used to fund more projects that are considered priority. This surplus therefore does not belong to the public entity, but to the

government. If the public entity would like to use the surplus, it must apply for the surplus or a portion thereof with motivation to the relevant government department. The decision lies with the relevant government department whether or not the surplus will be given to the public entity. This means that even if the public entity makes a loss in a financial year, it may not be able to use the surplus it made in previous years to support current activities if the government department does not see it fit to do so.

Water Boards are established in terms of the Water Services Act, (Act 108 of 1997) as organs of state. These are categorised as National Government Business Enterprises, in terms of Schedule 3B of the PFMA and are therefore subject to the regulations of the relevant legislation. The primary activity of Water Boards is to provide water services to other water services institutions within their respective areas. The Minister of the Department of Water Affairs and Forestry in terms of the Water Services Act and the PFMA regulates the water boards, which submit to the Minister, on an annual basis, shareholders compacts (business plans) in terms of the five-year planning period and policy statements a month before the beginning of the new financial year.

Revenue is generated by Water Boards from the payments received from the relevant municipalities for the provision of bulk water services. The Division of Revenue Act, (Act 2 of 2006) provides for the equitable division of revenue that is raised nationally, which is called the equitable share. This equitable share is spread among the three spheres of government, namely national, provincial and local government. The Water Board, which is the water services provider, then receives a portion of the equitable share from the relevant municipality it serves, which is the water services authority. This share is used by the Water Board to recover costs associated with bulk water purification and reticulation. Water Boards are therefore not motivated to make surpluses to ensure sustainability since any surplus is subject to the Division of Revenue Act and therefore not under the control of the Water Boards.

If a public entity has a shortage of funds to fund its operations and capital projects, it may take up a loan from the Development Bank South Africa to enable it to cover its costs. This means an extra cost to the public entity in the form of repayment of the loan with the accompanying interest to be paid on the loan. In order to successfully repay the loan, the public entity must ensure that it generates a surplus the following year and the years thereafter or else it will have to make more loans as it makes more losses. Water Boards are classified as essential services because people's lives depend on the proper functioning thereof. If the essential services make more losses and is unable to finance its operations and therefore also its loans, it may become a burden to the state. This means that the government will continue funding the Water Boards to ensure its survival because the government cannot afford to lose the services of the Water Boards.

According to van Wyk (2004: 415) the financial management in the public sector is currently limited to basic appropriation control, driven by a cash budget that facilitates the management of cash inputs. Cash budgets are monitored and variance explanations are given for any under-spending and over-spending of any section of a budget. According to Arnold and Davies (2000: 174), budgeting, at business level, can inhibit value-maximising activity and also encourage wasteful behaviour in two ways. On the one hand unforeseen opportunities can be missed if the budget has been exhausted before the opportunity presents itself. On the other hand is the propensity of organisational units to spend all the money in their budgets, whether or not they are wise expenditures, because not doing so could lead to budget cuts in the following financial year. There seems to be no financial restraint exercised over the budgets of public enterprises since overspending in most instances serves to motivate a larger budget for the following financial year even if the over-expenditure does not add value to the enterprise.

According to Felkins, (2006) the Public Choice Theory recognises that politicians and government employees are motivated by self-interest just like any other person. Therefore managers of the bureaucratic firms seek to maximise budgets so as to obtain greater power, larger salaries and other

perquisites. The author further goes on to state “budget maximisation results in higher government spending overall, inefficient allocation among government agencies, and inefficient production within them.” This means that individuals in positions of power will have a tendency of placing their own interest first at the cost of the public they serve. Therefore appropriate financial controls should be put in place to ensure value creation to the benefit of all stakeholders.

According to Fourie (2001: 121) the strategic planning process, which is central to the responsibility of all senior managers in terms of the PFMA, is an essential tool for enabling accounting officers and managers to achieve government's objectives, to address financial management and service delivery problems, and to ensure that services are delivered in the most economical, effective and efficient manner. Van Wyk (2004: 411) substantiates and states that effectiveness, efficiency and economy form the basis of financial management and performance management. Effective financial management is intimately connected to the ability of government to meet the expectations of stakeholders regarding the achievement of government objectives. It is clear that effectiveness; efficiency and economy should be the focal point of any Water Board that attempts to put measures in place for sound financial management. The PFMA does therefore provide a good framework within which state-owned enterprises can work to promote the most economical, effective and efficient financial management possible. However, as it stands it serves more as guidelines rather than controls.

Another national problem that hampers the expenditure management of Water Boards is the accessibility of the public to water and the ability of the public to pay for the services received. It is still an ongoing exercise to make potable water and sanitation more accessible for a large proportion of the South African citizenry inhabiting the rural areas. The ability of the citizenry to pay for services has always been a problem and in the light of a high unemployment rate, this situation may deteriorate with time. The inability of people to pay for the services received, directly affects the capability of the government in making these services more accessible to the public. It is

therefore very important for the government to strike a balance as to where and to what extent services can be delivered to a consumer that is incapable of paying for the services delivered. The income generated by the Water Boards is from the municipalities that it serves. The municipalities in turn generate its revenues from the public that it serves. Therefore if the public is unable to pay the municipalities for the services received the municipalities could become unable to pay the Water Boards for its services. Therefore the shortfalls in revenue of the Water Boards could be largely due to the inability of the public to pay the municipalities for services received.

All the above-mentioned facts point to the effective and efficient management of expenses by the public entity to ensure the sustainability of the entity. The expenditure, especially the capital expenditure of the public entity, therefore should be carefully managed to ensure that the most feasible route is taken when purchasing goods and services. Unlike a private entity that is motivated by the bottom line to manage its income and expenditure, a public entity has no motivation since the surpluses made are paid to National Treasury and if it makes too many losses it becomes the burden of the State. The PFMA lays down clear rules about the fruitless and wasteful expenditure of public funds and therefore serves to monitor public expenditure in conjunction with the commensurate punitive measures if the rules are not adhered to. However, the same PFMA also grants the Accounting Authority of a public entity complete discretionary powers to manage its expenditures as it sees fit as long as there can be reasonable proof given that the expenditure indeed was not wasteful or fruitless. This contradiction in the PFMA is a weakness of the Act and gives impetus to the ineffective financial management of public entities.

1.2 Problem Statement

The current financial control mechanisms of public water utilities based on the PFMA therefore do not really promote financial responsibility and the PFMA does not motivate the creation of mechanisms for effective financial management. This can lead to major losses by the public water utilities and

ultimately impacts on the national budget of South Africa. To address this problem, the following question must thus be asked: “Does effective financial management prevail in South African public water utilities?”

1.3 Research objectives

1.3.1 Main objective

To investigate as to whether or not the South African Water Boards manage its finances effectively.

1.3.2 Sub-objectives

- 1.3.2.1 To develop an understanding of the theory of financial management in South African Water Board.
- 1.3.2.2 To determine whether financial management in South African Water Boards comply with the principles of Value-Based Management (VBM).
- 1.3.2.3 To do a comparative study between key financial indicators in the private sector and the South African Water Boards.

1.4 Research methodology

Causal research will be undertaken in this study to identify the cause-and-effect relationships that exist between the variables in the financial statements of the Water Boards. This type of research is well suited to observe the relationship between the chosen variables and how it impacts the financial performance of the Water Boards and in so doing also ascertain whether there is effective financial management of the Water Boards. Descriptive statistics with tables and graphs will be used to analyse the data from the 15 Water Boards.

1.5 Limitations of the study

- The study will be limited to only fifteen of the seventeen Water Boards in South Africa.
- Five consecutive years worth of data from the financial statements of the Water Boards will be used and some of the data for years 2004 and 2008 is not available for some of the Water Boards.

1.6 Research assumptions

This research will be based on the following assumption:

- All the Water Boards receive funding from government sources.
- The socio-economic and political environment of the regions in which the Water Boards operate remains stable.

1.7 Outline of the report

The remainder of the report comprises of the following:

- Chapter two presents the literature review relevant to the objectives of the research.
- Chapter three presents the research methodology employed.
- Chapter four reflects the analysis of the data and the findings through the analysis.
- Chapter five gives a conclusion to the study with respect to the objectives of the study as well as some recommendations for further research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Water and sanitation are crucial for the social progress and economic development of any country. South Africa has erratic rainfall patterns and a large portion of the population is still without adequate water and sanitation. The government has therefore made it a priority to address these backlogs by making use of a number of initiatives including the Municipal Infrastructure Grant (MIG), which is used to accelerate infrastructure investment in underdeveloped urban and rural areas. The Department of Water and Environmental Affairs (DWEA) classifies the water sector into two main areas: water resources and water services. This dissertation will research the water services sector since the expenditure trends of Water Boards and the factors that influence this is the primary focus of this investigation. There are a few large players that dominate the water services sector. DWEA plays multiple roles ranging from policy development and regulation to supply and retail of raw water. Twenty-two water boards have bulk and limited retail functions, while the municipalities perform a retail function, as do private water providers. Water boards are the intermediaries between the raw water supply and the reticulation functions. Water Boards provide bulk water to a number of municipalities over a defined geographic area, but some Water Boards also provide a limited retail and reticulation function. The viability of Water Boards appears to be mainly dependent upon the regions in which the municipalities that are served by the Water Boards are situated. The socio-economic bracket of the consumer in a specific region therefore impacts indirectly on the cost recovery of the Water Boards through the municipalities.

2.2 The South African Water Boards

The following seventeen Water Boards currently exist in South Africa:

Albany Coast Water; Amatola Water Board; Bloem Water; Botshelo Water; Bushbuck Ridge Water Board; Ikangala Water; Kalahari East Water Board; Lepelle Northern Water; Magalies Water; Mhlatuze Water; Midvaal Water Company; Namakwa Water Board; Overberg Water; Pelladri Water Board; Rand Water; Sedibeng Water; Umgeni Water.

2.3 Structure follows strategy

DWEA is currently in the process of transferring all water services schemes to local government as part of its reposition strategy so that it can take on a more supporting and regulatory role. The MIG and the equitable share from the division of revenue will remain the main sources of funding for improving access to basic water supply and sanitation. The district and metropolitan municipalities, as the Water Services Authorities (WSA`s), are primarily responsible for the retail of water. With the transfer of the water services schemes from DWEA to the WSA`s there has been a resultant increase in the budgeted expenditure of the WSA`s.

The water and sanitation sector in South Africa is organised in three tiers:

- The municipalities which are responsible to serve their communities by controlling and monitoring the distribution and consumption of water.
- The Water Boards which are responsible for bulk treatment of water that is designated for the municipalities.
- The national government, represented by the Department of Water Affairs and Forestry which is the authoritative institution and therefore exercises control over both the Water Boards and the municipalities.

The other role players are banks, private operators, the Water Institute of South Africa, the Water Research Commission and various non-government organisations.

According to the Municipal Structures Act (Act 117 of 1998) and the Water Services Act (Act 108 of 1997), the responsibility for the provision of water and sanitation services, limited to potable water supply systems and domestic

waste-water and sewage disposal systems, lies with the municipalities, which in practice means the country's 52 district municipalities. The national government can also assign responsibility for service provision to local municipalities, of which there are 231.

2.4 The sustainability of South African Water Boards

The Development Bank of South Africa (DBSA) is an important player in the water and sanitation sector, both as financier and as advisor and project promoter. Like any other business enterprise, Water Boards incur costs and when the costs exceed revenue the enterprise suffers a deficit. When the Water Boards suffers continual deficits it may become unable to fund its capital expenditures, which is at the core of its sustainability. It is in these situations when the DBSA supports the sustainability of the Water Boards through loans with the necessary arrangements for the repayment of the loans to the bank. The DBSA therefore fulfils a critical function in the sustainability of the essential services and therefore the health and welfare of the South African citizens.

Government-owned Water Boards play a key role in the South African water sector. These institutions operate dams, bulk water supply infrastructure, some retail infrastructure and some wastewater systems and report to the Department of Water Affairs and Forestry. The Water Boards of South Africa therefore appear to fulfil a necessary and critical role in the functioning and progress of South Africa. The health and welfare of the citizens of South Africa depend on the supply of clean drinking water and sanitation. Therefore the economy of South Africa is to a large extent dependent on the optimum functioning of South African Water Boards.

The PFMA sets out the policies and procedures to be followed by the Water Boards to ensure the sustainability of its operations. The onus lies with the management of the Water Boards to follow these policies and procedures to avoid wasteful and fruitless expenditure. The sustainability of Water Boards therefore depends on the effective financial management of each Water

Board and the ability of the consumer to pay the services in the area of supply.

2.5 The Human factor

Madi (1993: 7) states that South Africa has a history of resorting to affirmative action on the grounds of political expediency, albeit it for Afrikaner or black advancement. There has never been an economic or business approach to affirmative action; instead affirmative action tends to be used to bribe the politically powerful or those that are expected to be. In addition to this Madi (1993: 17) states that some organisations are guilty of “window dressing” in that the black recruit is not expected to contribute towards the bottom line, but rather to achieve the right colours. This means that many black employees that are appointed under these circumstances may not be suitably qualified for the positions that they fill. Rather one only needs to be black to get the job. This practice has some dire consequences for both the organisation employing the less qualified individual and the stakeholders of the organisation. The organisation has unproductive human capital, which is unnecessary costs and also the service delivered to stakeholders are not up to standard due to incompetence and dwindling finances.

According to Tyran (1986: 153) a well-balanced financial structure is a must for the successful operation of any organisation. The available funds must be allocated judiciously to avoid inefficient use of capital that can result from too much investment in the enterprise. The allocation of these funds depends on the relevant people who make up the executive of the enterprise. Therefore the financial structure of the enterprise is determined by the people in charge of it. It is therefore imperative that those who are in charge be well equipped and knowledgeable about the enterprise to be able to make decisions with respect to the financial structure of the enterprise.

When it comes to the management of public entities it is important to consider the human factor behind the success of the enterprises. The people entrusted with the well-being of the masses are all human beings who are fallible. The

Public Choice Theory (Felkins, 2006) argues that an official at any level, either in the public or private sector is motivated partly and sometimes solely by self-interest. This means that although public officials that are appointed into positions of power to look after the interest of the public, they can at times forsake the public for own gain. It is therefore imperative to have transparency in all aspects of the work done for the public to ensure that the individuals' interests are not served to the detriment of the citizens served. Another important factor to consider when it comes to public choice theory is the concept of "rent seeking", which is the act of obtaining special treatment by the government at the expense of the rest of the public at large. This alludes to the cases where public officials expect and ensure that personal benefits are received at exorbitant costs with no regard for the citizens that are dependant on the very same officials for well-being.

The South African government emphasises "accelerated delivery". This means that people who are not serviced or are under-serviced should become priority to create a balance between the haves and the have-nots. Ultimately this could also mean the eradication of poverty and the substantial reduction of income inequality. To achieve this vision requires a strong, developmental and honest public sector. This simply means that no matter how many and costly initiatives the government can put into practice, it is all bound to fail if the people responsible for driving and controlling these processes are not individuals with integrity and passion.

2.6 South African policies and procedures

The right of access to water is enshrined in the Constitution of South Africa. By this token the South African government introduced a policy of free basic services, including water, electricity and solid waste collection. As part of the policy, every household receives six thousand litres of water per month. The cost of these free services are financed either through subsidies from national government, from the equitable share automatic transfers or through cross-subsidisation tariffs from other users or local taxes. This places the financial burden of free basic services squarely on the government.

De Visser and Mbazira (2006: 51) argues that if liberalisation policies in South Africa merely achieve statistical advances in the extension of water infrastructure, organisational efficiency and water conservation whilst confronting the most vulnerable sections of the society with rigorous cost recovery methods such as disconnection of water delivery, the courts are likely not to shy away from deciding that these policies are “unreasonable” for want of compliance with section 27(1)(c) of the Constitution. Legislation therefore dictates that those who are unable to pay for basic municipal services should nevertheless receive these services.

Based on the afore-mentioned South African policies and procedures with regard to the delivery of essential services, the challenge to the financial sustainability of South African Water Boards is therefore twofold. Firstly, the delivery of free basic services directly impacts the revenue of the Water Boards since the Water Boards forgoes the income for these services delivered. Secondly, this is exacerbated by the right of every citizen to receive essential services even if there is an inability to pay for the services. Since most South Africans live below the breadline, the majority of South Africans are unable to pay for most of the services that is received, which is an indication to what extent the revenue is affected.

2.7 The public or private debate

The National Water Act (Act 36 of 1998) considers its water resources as a public good, a resource for all, under state control and licensed, whereas in the past water in rivers, groundwater or captured was considered a private good, owned by the landowner (The Water Page, 2002). The landowner therefore exercised control over a water resource that essentially belonged to all inhabitants of the land. These practices lead to the enrichment of the landowner and a disenfranchised public. Placing water resources under state control ensures that all the inhabitants of the country benefits from the water resources of the country. “Privatisation of water delivery is a human rights issue in two distinct ways. Firstly, it implies an institutional change that will

tend to impinge on existing access to water, and hence affect human rights implementation. Secondly, access to safe water is an entitlement, which, although obviously linked to human dignity, is still far from being realised for everyone” (de Visser and Mbazira, 2006: 1). The privatisation of water services in South Africa will therefore once again seek to place the control of the delivery of water services of the country in the hands of individuals, which could lead to the exploitation of the majority of citizens. This situation could be even direr if one considers the fact that access to safe water is still not realised for most South African citizens.

According to de Visser and Mbazira (2006: 43) the extension of water infrastructure to areas that were deprived of water and sanitation during the apartheid era is one of the governments' top priorities. In President Thabo Mbeki's state of the nation address in 2004 he committed his government to ensure access to clean running water in all households within five years. The White Paper on Municipal Service Partnerships states that the conservative estimate is the average annual backlog of R10.6 billion. To address the backlog through public sector resources alone, many communities will receive adequate services only in the year 2065. It is therefore clear that the government is firmly intent on involving the private sector in the extension of delivery of potable water to speed up the delivery of services. The different ways the privatisation of water delivery has taken place in South Africa include outsourcing the operation, management and maintenance of water systems as well as laying new pipes and making new connections. The privatisation of water delivery and related services is used to save on the costs that would otherwise be incurred if the Water Boards had to perform these functions for itself. Also it is used to increase productivity by adding to the workforce and to increase the quality of services in that experienced and competent companies are used for outsourcing.

When public enterprises under-perform, the quality of service to customers declines. The performance of South African Water Boards is directly affected by the ever-increasing demand for clean water by a consumer who is incapable of paying for services. Without adequate finances, the Water

Boards are unable to perform optimally and therefore the quality of the services decline. This gives rise to a vicious circle in which the consumer who is unable to pay for services causes the paying consumer to refuse to pay due to the dwindling quality of services. Water privatisation can therefore be used by Water Boards to address these potential problems by ensuring financial sustainability through cutting costs and therefore maintain or even increase the quality of services delivered to customers.

2.8 The economics of water services

It is a known fact that the legacy of apartheid has left the majority of South Africans, which are the poor citizens of the country at a disadvantage when it comes to access to basic services. There is also a feeling amongst the previously marginalised, that the government needs provide free services to address the inequities of the past. The problem that arises with the free delivery of services is that it tends to breed a culture of non-payment for services and a lack of stakeholder participation. Community partnership programmes are imperative for the sustainability of each choice in the role out of municipal basic services. Municipalities therefore need to ensure that capacities, resources and the tools and equipment are available to encourage stakeholder participation and create an awareness of the cost of services.

According to Cipindu and Wantenaar (WRC report no. 948/1/00) the various fittings and installation configurations of water meters affect the accuracy of the measurement of water meters. Municipalities are not aware of the impact that meter accessories, fittings and pipe configurations have on the accuracy and performance of water meters. An understanding of this phenomenon by the municipalities can contribute towards reducing problems such as incorrect billing, water loss, audit imbalances and increases in unaccounted-for water, thus rendering the water management systems by water authorities ineffective. The municipalities with the assistance of the Water Boards thus have the duty and responsibility to implement proactive measures to minimise water loss and ensure accuracy in billing consumers. This could both save

costs for the Water Boards as well as increase customer satisfaction with services.

“We live in a world where individuals perform increasingly specialised functions, so that people are becoming less self-sufficient and more reliant upon each other and societal structures to provide for their daily needs. Goods and services are purchased rather than self-generated.” (du Plessis, 2003: 112). Water can be both a social and economic good and countries differ with respect to the degree to which water is treated as either social or economic good. In the South African context water is first and foremost treated as a social good in that its people and the environment have a legally protected right to. On the other hand, however, water is also considered an economic good, the use of which has a major impact on wealth creation and the well-being of people. Furumele (2004: 19) states that national, provincial, district and local authorities, since 1994, have focused on the delivery of water services to previously disadvantaged people, predominantly in the rural and peri-urban areas. Both the Water Services Act (Act 108 of 1997) and the National Water Act (Act 36 of 1998) that was promulgated in line with the National Water Resources Strategy focus on the fundamental principles of equity in access to water services and sustainability in the provision of water. In trying to rectify the legacy of the past with a short-sighted development approach, very little attention at times is given to the economics of water services development to ensure efficient development of water services.

From the research there are five factors that play a role in the economics of water services development.

- The South African Water Boards and its clients (mainly municipalities) currently have to serve a much wider consumer base than what was expected under the apartheid regime.
- The Water Boards are also still experiencing a learning curve with respect to the new policies that are being implemented.
- Technological advancements and skills development is needed to ensure that Water Boards address the demands placed on it.

- Stakeholder participation would assist Water Boards in expediting a quality service to all stakeholders.
- The high unemployment rate in South Africa makes it difficult for most South Africans to pay for services received.

The challenges faced by South African Water Boards with respect to the economics of water services development are also well recognised. The government should therefore focus on the economics of water services development and educate stakeholders on the economics of water services instead of throwing money at individual problems as it arises.

Based on the research on how South African Water Boards operate and to what rules and regulations it is subjected to, it becomes apparent that to evaluate whether or not initiatives are effective in aiding Water Boards in its financial management, it must use performance measures to monitor progress. Therefore to assess whether Water Boards manage its finances affectively there should be clear objectives and appropriate financial performance measures implemented to ascertain whether the objectives are met or not.

2.9 Performance measurement

Arnold and Davies (2000: 109) argue that the measurement of performance is central to any consideration of performance evaluation and this resolves into two areas for consideration – why and what to measure. According to Zairi (1994: 6) performance measurement challenges the way things are done. In other words current results are used to indicate what and how inputs should be changed to obtain the desired outputs. Also for measurement to be effective in changing behaviour it should be seen as non-threatening and geared towards improvement and positive action. Martin and Petty (2000: 35) states that performance measurement is an essential part of the management control processes in that it validates whether the results anticipated from planned action are realized. Because what gets measured gets attention, the

kind of performance an organisation chooses to measure motivates action that improve the measure. Traditionally, bottom-line measures such as profit, revenue and cost have been used to evaluate managers' performance. But in the face of competitive reality, new strategies with new action plans and new performance systems are needed. Before looking at the different types of performance measures, performance measurement will be discussed in more detail.

2.9.1 The importance of performance measurement

Arnold and Davies (2000: 108) states that the survival of a business depends ultimately upon its ability to evaluate performance and select strategies, which will enable it to achieve good future performance by whatever criteria, are considered pertinent. The ability to realistically evaluate performance of the business and the ability to select suitable dimensions along which to carry out that evaluation are therefore critically important not just to the managers of the business, nor just to the owners of the business, but to the whole stakeholder community of that business. Neely (2002: 8) defined performance measurement as a process of quantifying the effectiveness and efficiency of past action through the information-processing activities. Effectiveness is the extent to which the requirements are met, while the efficiency refers to a measure of how the organisation's resources are utilised economically when providing a given level of satisfaction. Performance measurement requires an understanding of the organisation's goals, objectives, strategies and operations and if it is able to satisfy the stakeholders of the organisation (De Waal, 2002: 1). Baxter and MacLeod (2008: 55) argue that the success of any operation depends on how effective the processes associated with these operations are carried out. The effectiveness of the operation depends on an understanding of the processes and an ability to measure it. By understanding the organization's purposes, performance measurement tools can be developed or selected and used to inform management about organisation performance. Performance measurement, therefore, should focus on developing, improving, and assuring the relevance and reliability of financial and non-financial measures that will contribute to the success of an

organisation. In practice, getting the right answers means having the right performance measurement framework, and managers cannot begin to manage performance unless it is accurately measured (Pettit, 2000:59). Managers need to have the right performance measurement tools to assess whether the strategies are implemented effectively and objectives are met (Sinclair & Zairi, 2000: 149). However, this does not mean that an organization should have many measurement tools. In fact, many organisations may have too many measurement tools leading to a lack of focus and ineffective measurement (Pettit, 2000: 66; Neely, 2002: 53). An organization should therefore strive to keep the measurement tools it uses to a minimum to avoid confusion that leads to ineffective measurement. Management should also decide on the most appropriate measurement tool or combination of measurement tools based on the organisation's objectives and strategies. Boyle, R. (1989: 36) states that organisational objectives should be defined in such a way that their achievement is capable of being monitored and focus on a small number of key objectives rather than a large number of objectives.

2.9.2 The roles of performance measurement

Performance measurement plays a number of roles in an organisation and is key to the success and survival of an organisation. Neely (2002: 295-297) identified the three roles of performance measurement as complying, checking and challenging.

- **Complying with non-negotiable parameters:** The non-negotiable parameters are the performance thresholds which are necessary for the survival of an organisation. The non-negotiable parameters include cash flow and recognition from all stakeholders. An organisation needs to make sure that it never fails to meet these non-negotiable parameters. Failure to meet these thresholds could hurt the future of the organisation.

- **Checking health:** An organisation uses performance measures to assess its strengths and weaknesses. The performance measures are therefore necessary to assess how well an organization is doing or if it is failing to meet its objectives.
- **Challenging strategies and assumptions:** Today's organisations should regularly check whether its strategies are still valid in a rapidly changing environment. However, before this can be done, the organization should first clarify the objectives to achieve and communicate the strategy with all staff involved.

2.9.3 Reasons for measuring performance

Neely (2002) has categorized four major reasons to explain why managers need to measure performance. These four categories are: checking position, communicating position, confirming priorities and compelling progress.

- **Checking position:** Without knowing where the organisation is, it is difficult to see where the organisation is heading. Performance measurement thus assists the organization in establishing its current position relative to competitors and whether or not progress was made based on historical data.
- **Communicating position:** An organization communicates position to both internal and external interested parties. Internal communication is necessary to motivate employees to strive towards meeting the set objectives of the organization. External communication on the other hand is necessary to promote the image of the organization to customers and potential investors.
- **Confirming priorities:** Performance measurement enables managers to identify what has to be done to meet its goals. The performance information serves as a guide for the managers as to what steps to

prioritize, what steps to take and what steps not to take in order to meet the organizational goals.

- **Compelling progress:** Performance measurement is used to align the values all of the employees with that of the organization. In so doing, a motivation climate is established to ensure that every employee strives towards improving the performance of the organization. Performance measurement is also used to check whether current strategies are still effective in meeting objectives in an evolving economic climate. Organisation to adapt to changes in the competitive environment.

2.9.4 Criteria for performance measurement

According to Reimann (1987: 158) a performance indicator must at least meet the following criteria:

- The measure must be **valid** in that it should be fit for the purpose that it is used for.
- The measure must be **controllable** with respect to the ability of the managers using it to influence the results to be measured.
- The managers using the measure must **understand** exactly where the numbers are coming from and how they were derived.
- The measure must be **verifiable** so that managers can easily keep track of their progress.
- The measure must be **generalizeable** in order to avoid confusion that can accrue from separate performance measures for different managers and at different levels in the organization.

There are many types of performance measurement tools that can be used by a company that would like to manage its performance in an attempt to meet objectives. These performance measurement tools can be either financial, non-financial or both. The choice lies with the company as to what measures to use based on the circumstances and the objectives that must be achieved. For this research there will be a focus on the financial performance measures

that are used by organisations to monitor and assess progress. The financial performance measures is split into two distinct, but not totally separated types of performance measures, namely traditional and modern financial performance measures also known as Value-Based Management (VBM). Otley, D in Neely, A (2002: 3) argue that there are three different major functions for financial performance measures. These are: (1) financial measures of performance as tools of financial management, (2) financial performance as a major objective of an organisation, and (3) financial measures of performance as mechanisms for motivation and control within the organisation. It is important for the users of financial performance measures to understand the difference between these functions. Although these functions overlap to some extent, major confusion can be caused by applying measures developed for one function to a different one.

2.10 Traditional financial measures of performance

There are several methods used in the private sector to evaluate the success or failure of corporate performance. Yet the most commonly used methods are the traditional financial measurements tools that have been around for several decades. Traditional performance metrics such as earnings per share (EPS), book value (BV), return on equity (ROE), return on assets (ROA) and return on invested capital (ROIC) do not correctly capture the three fundamentals of value creation: the amount, timing, and risk of future cash flow of the company (Martin & Petty, 2000: 36). If the aim of any manager is to maximize shareholder value then the performance measurement system must capture all three of these fundamental determinants of value.

2.10.1 The resistance to changing from traditional to modern measurement tools

The modern financial performance measures, such as EVA, have not been so widely accepted yet and many companies still prefer the traditional measures. Traditional performance measurement tools did not disappear but have not kept up with the pace of change (Pettit, 2000: 63). There could be a number

of reasons for this depending on the organisation, but the following two reasons will be mentioned here.

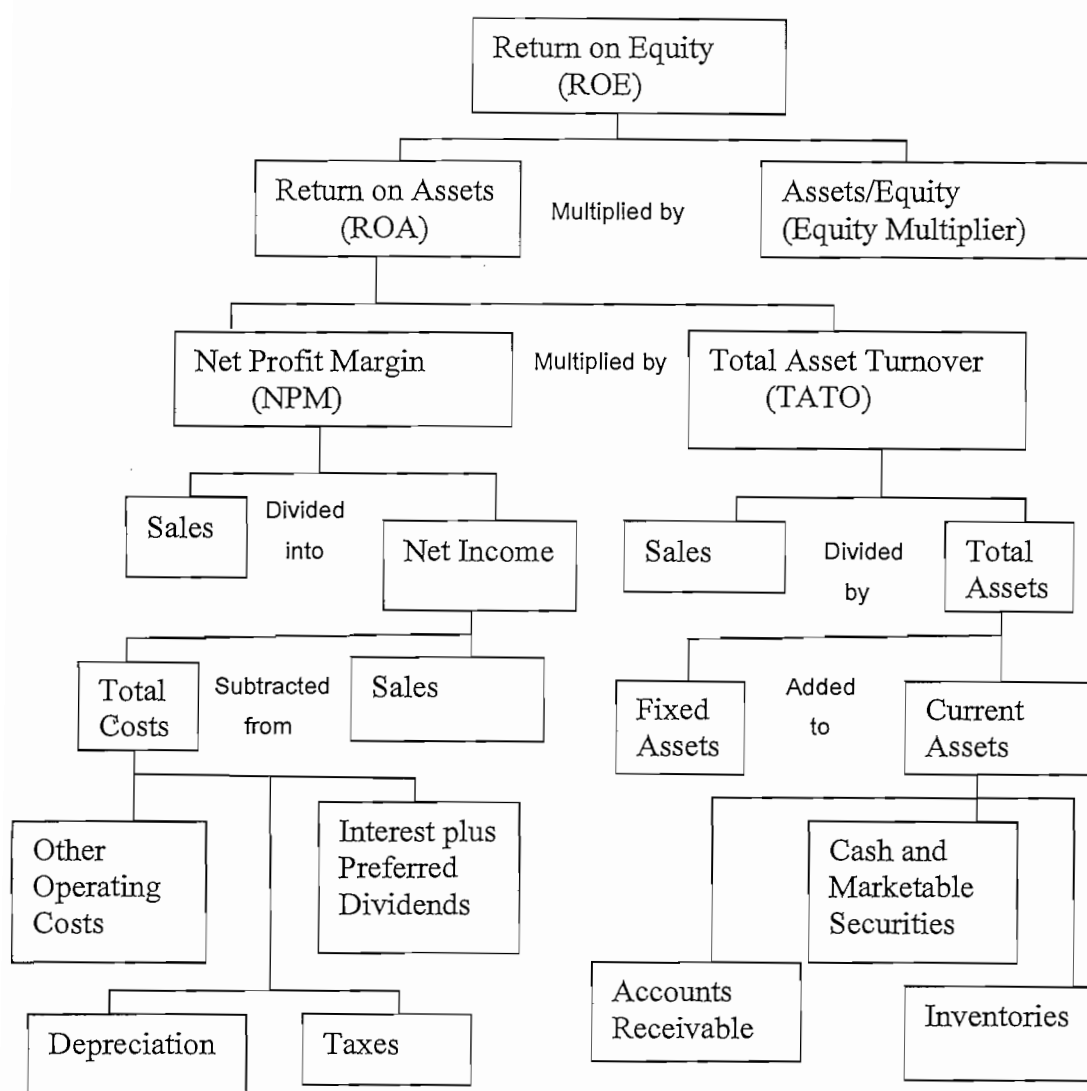
The first reason is that organisations still prepare financial statements to report the value of transactions using the traditional accounting system, and therefore use traditional measurement tools to present financial performance that directly reflect what can be found in the financial statements (Rappaport 1986: 24-26).

The second reason is the complicated nature of modern financial performance measures, which involves non-financial issues and therefore managers have difficulty in deciding which is best for organisations (Sinclair & Zairi, 2000: 147). Many academic authors have pointed out that when organisations attempt to change performance measurement tools, managers are often frustrated when the traditional financial measurement tools remain in place (Sinclair & Zairi, 2000: 148; Pettit, 2000: 59).

2.10.2 The Du Pont formula

The Du Pont formula integrates elements of both the Income Statement and Balance Sheet. It equates return on equity (ROE) with profitability, asset utilisation and leverage. Since the ROE is the end-product it would make sense for a time pressed financial analyst to skip to the end and divide net income by total equity. However, the exercise of using all the root components tells much about a company's relative financial health that would otherwise be missed if one should look only at the return on equity ratio. Computations of the basic components over time provide insight into trends, both ill and well (Posey, 2006).

Figure 2.1: Du Pont Model



(Source: Brigham & Ehrhardt, 2005: 461)

Figure 2.1 is a flow diagram of the Du Pont formula. According to Grant (2003: 147), the DuPont formula is used in practice by managers and investors to highlight the information content of a company's return on assets (among other ratios) and financial leverage. The Dupont formula expands the definition of ROE by showing that ROE can be obtained by multiplying return on assets (ROA) by a corporate leverage factor, measured by the ratio of total assets to equity, called the equity multiplier (EM). In turn ROA is measured by multiplying the net profit margin (NPM) by the total asset turnover ratio

(TATO). Grant (2003: 166), further goes on to state that financial measures like ROE and ROA are at the heart of the traditional approach to company analysis and the Dupont formula is often used to show how profitability and leverage changes at a company can impact, either positively or negatively, the shareholder's return on equity (ROE). However, according to Stern and Shiely (2001: 9), although performance measures like ROE and ROA are better indicators of corporate performance than earnings per share (EPS), it can be manipulated. For example if bonuses are linked to ROE then ROE can be increased by decreasing equity by buying-in shares either with cash on hand or with debt to finance the repurchase. On the other hand, if bonuses are linked to ROA then ROA can be increased by selling assets if the loss does not proportionately reduce the profitability of the enterprise. The latter is possible because Ward (1993: 165) argues that although a company's fixed assets are essential to the business and one of the main items of investment, it is the use of the assets which is essential and not its ownership. This means that an enterprise can get rid of unproductive assets to increase its ROA and therefore not reduce profitability at all.

2.10.3 Financial Ratios

Donegan (2002: 206) argues that if simple financial reporting metrics are based on the financial statements prepared by the company, then the analysis tools are limited in its reliance on the data that defines it and the methodologies used to derive the balances. Therefore ratios represent only guidelines in assessing financial data and in operational planning and should therefore not be used as absolutes (Tyran, 1986: 153). However, if properly interpreted and used, ratios can serve as revealing and valuable guides for analysing financial results, planning operations, and making management decisions. Ward (1993: 72) states that financial performance measures must be separated between economic measures and managerial performance measures. The economic performance measures relates to the allocation of resources based on the opportunity cost logic. The managerial performance measures must concentrate on those areas where managers genuinely exercise control, since economic results include the impact of non-

controllable, externally driven events. According to Tyran (1986: 154) the following limitations involving ratio analysis exist:

- A ratio is only as reliable as the quality and validity of the data being used.
- Varying accounting procedures among external industry organisations can complicate and distort valid industry comparisons.
- Ratios involve quantitative data which are not always indicative of organisational performance. Management expertise, judgement, and experience are the fundamentals in evaluating performance.
- In making organisational comparisons, it is important that the analyst should know what the ratio composition is.
- It is advisable to use a number of different ratios in making comparisons in order to gain a more realistic insight or perspective on actual performance analysis results.
- Inflation influences have a decided effect in ratio analysis.

When compared to Value-Based metrics there are several limitations in relying on traditional performance measures to evaluate the performance of a firm:

- The accounting numbers do not capture the non-financial indicators of manufacturing performance, which might be relevant for managerial decisions and controls (Sinclair & Zairi, 2000: 145).
- The accounting earnings do not equal cash flow, while cash is what managers are concerned with to create wealth or shareholder value (Martin & Petty, 2000: 36).
- The accounting numbers do not cover all costs of capital employed, including the opportunity cost of equity, thus the reported earnings overstate the value creations of a business's operation (Martin & Petty, 2000: 37).
- The projected expenses and revenues do not reflect business risk and financial risk, while the projected accounting earnings do not consider

the time value of money (Martin & Petty, 2000: 36 & 40; Rappaport, 1981: 140).

- The different metrics used in the evaluation of businesses or business units can give diverging results and therefore a division or business unit can be rewarded and not necessarily be the best performer. (Martin & Petty, 2000: 43).

Even though the accounting earnings and traditional measurements tools may have information content, it does not accurately measure the creation of value for shareholders and for the organisation, which is the primary goal of a successful corporate strategic plan (Rappaport, 1981:140). VBM tools successfully perform this function by taking into consideration all costs of capital used in the business. It operates on the organisation's present value of all future cash flows expected to be received (Rappaport, 1981:141). According to Wenner & LeBer (1989:53), traditional, measurement tools assumed that if a subsidiary was profitable, it was creating value. This analysis had disregarded the cost of capital and essentially treated money in the business as if it were free.

The traditional performance measures seem to leave much to interpretation due to so many variables that must be considered at the time of its use. It is also unreliable because it can so easily be manipulated to show better performance than is truly the case, especially if bonuses are linked to it. This means that to really benefit from traditional performance measures, the operations of the companies being studied should be properly understood as well as how the financial statements are compiled. The impact of externally driven events on the economic results as well as the non-financial aspects of the enterprise should also be assessed so as to effectively interpret the financial performance of the enterprise. Due to the fact that the traditional performance measurement tools are based on income-based financial figures, it measures historical performance rather than indicating future performance, which is fast becoming the need of the modern manager. Nevertheless, the following ratios are used in this research to represent the traditional

performance measurement tools that are used to measure the financial performance of the Water Boards:

- Operating Profit Margin (OPM)
- Net Profit Margin (NPM)
- Total Asset Turnover ratio (TATO)
- Current Ratio (CR)
- Debt to Assets Ratio (D/A)
- Equity Multiplier (EM)
- Return on Assets (ROA)
- Return on Equity (ROE)

The following are brief descriptions of the above-mentioned financial performance ratios.

2.10.3.1 Net profit margin

Net profit margin is calculated by dividing net profit by revenue or sales. It measures how much profit a company makes for every Rand it generates in revenue or sales. The higher the NPM, the more profitable the company.

2.10.3.2 Operating profit margin

Operating profit margin is calculated by dividing operating profit by revenue or sales. It is used to measure a company's operating efficiency. The higher the OPM, the more efficient is the operations of the organization and the more money is left over to pay for financing costs.

2.10.3.3 Total assets turnover ratio

Total assets turnover is an activity ratio. It measures how well a company uses its assets to generate sales in a year. It is calculated by dividing revenue or sales by total assets. Weaknesses in either operations or efficient use of assets, or both could result in a diminished return on assets, which will translate into a lower return on equity.

2.10.3.4 Current ratio

The current ratio is a measure of the liquidity of an organization. It is calculated by dividing current assets by current liabilities. It measures a company's ability to pay its short-term obligations. A higher CR places the company in a better position to pay back its short-term liabilities with its short-term assets.

2.10.3.5 Debt to assets ratio

The debt to assets ratio takes into account all debts of all maturities to all creditors. The D/A ratio can be defined as total liabilities divided by total assets, which indicate the percentage of assets financed with debt. The measure gives an idea of the leverage of a company and the potential risks associated with a given debt-load.

2.10.3.6 Equity multiplier

The equity multiplier indicates how much assets is financed with equity and with debt. It is calculated as total assets divided by equity. It is used to examine how a company uses debt to finance its assets. A higher EM indicates a higher financial leverage, which means that a company is relying more on debt to finance its assets.

2.10.3.7 Return on assets

Return on assets is a measure of profit per rand of assets. It is calculated multiplying NPM by TATO, which is equal to net income divided by total assets. A higher return on assets may be achieved through higher net profit margin or more rapid turnover of assets, or a combination of both.

2.10.3.8 Return on equity

Return on equity is a measure of profit per rand of equity. It is calculated by multiplying the ROA by EM, which is equal to net income divided by equity. A higher return on equity may be achieved through decreasing financing costs, a higher net profit margin or more rapid turnover of assets, or a combination of all the above.

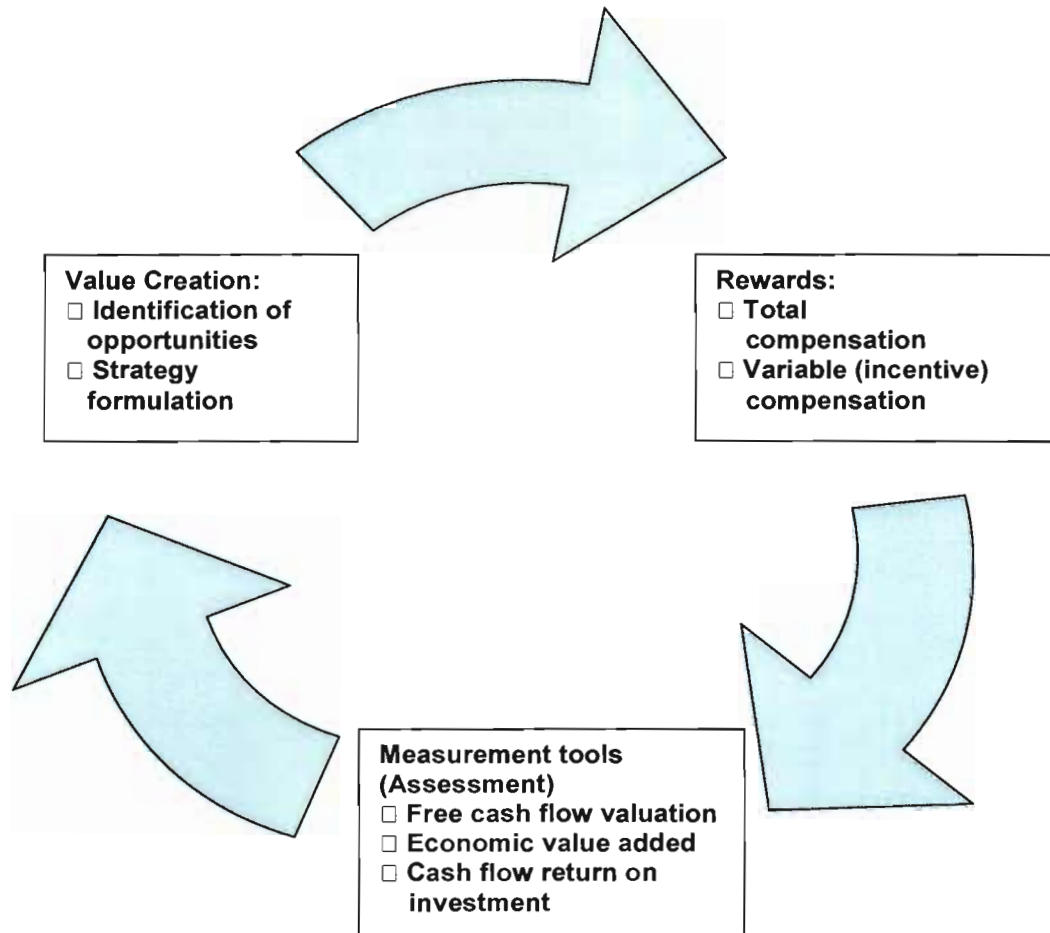
2.11 Value-Based Management

Value-Based Management has its roots in a number of disciplines from finance and strategy to accounting and human resource management. According to Arnold, G and Davies, M (2000: 1), Value-based management (VBM) is an approach to corporate strategy, operations and organisation in which the primary purpose is always shareholder wealth maximisation. It draws on the theory of finance in requiring every activity to produce a return greater than the return finance providers could have obtained (for the same risk) elsewhere. Value is created when the actual rate of return exceeds the required rate of return. Value maximisation, the heart of economic growth, is a long-term proposition that delivers higher economic output and prosperity through productivity gains, employment growth, and higher wages. The interests of stakeholders and of society are best served when scarce resources are put to their most productive use (Pettit, 2007: 27). According to Arnold, G and Davies, M (2000: 38), at the heart of VBM is the assumption that the company should be managed explicitly for shareholder value creation. This means that managers are required to seek to maximise the net present value of the ownership equity of the company through both new investment in positive net present value opportunities, and through improvements in the economic returns achieved on existing assets employed. In addition, VBM requires that a company's planning and control systems, including managerial reward schemes, be aligned so as to promote shareholder value creation at all levels of the business. A further feature of VBM is its emphasis upon so-called forward-looking value-based measures rather than traditional historic orientated accounting measures of performance. VBM relies on two important propositions: firstly, that shareholder value creation is the primary corporate objective and, secondly, that economic income is the primary measure of corporate performance.

Value-Based Management systems are based on the premise of sustained value creation in an organization. The value creation process in turn is based on future cash flows that are generated by the organization (Martin & Petty, 2000: 7). Past and present information such as profits, balance sheet and

income statements are used as a guideline in forecasting the future, but this does not provide a complete picture of the ability of an organisation to bring in future profits or positive cash flow. Value creation involves much more than merely monitoring firm performance. Value creation requires management to be effective at identifying, growing and harvesting investment opportunities (Martin & Petty, 2000: 3). Maximisation of company value and shareholder wealth has become the most important task facing corporate managers (Koller, 1994: 96). The implication for the company is that it is no longer enough to satisfy the customer; a company must also prove itself in the capital markets and management must show it is capable of maximising company value. The management style then has changed with more focus on creating shareholder value, called VBM. VBM is a financial performance tool that allows managers to compile business strategies that creates shareholder value by considering the costs of capital employed in the business (Martin & Petty, 2000: 3). VBM also links managerial behaviours with rewards that are determined by managerial performance using metrics that are directly linked to the creation of value. (Martin & Petty, 2000: 6). In doing so, it provides the sustainable cycle of value creation.

Figure 2.2: Sustainable cycle of value creation



(Source: Martin & Petty, 2000:6)

Martin and Petty (2000: 9) state that there are three primary elements that make VBM successful, namely:

- VBM must have the full and complete support of the top executives of the company before it can transform the operating culture of the firm.
- For VBM to affect individual managers' behaviour there must be some link between behaviour and compensation.
- Employees at all levels must understand the VBM system if it is to be effective in transforming behaviour.

Arnold and Davies (2000: 83) states that corporate social responsibility is concerned with the effects of the actions of businesses on the society within which it operates. Effectively it is suggested that these businesses should be

managed in such a way as to recognise its impact on society and that it should be held responsible for its actions. It can be argued that maximising the value of a firm to its shareholders also maximises the value of that firm to society at large since a thriving company should be of the means to add value to the society within which it operates.

2.11.1 The role of VBM as performance measurement tool

VBM attempts to overcome the limitations of accounting measures by connecting business strategies with the creation of shareholder value (Martin & Petty, 2000:8). While the accounting information addresses only past and present information, VBM goes one step further in determining activities that create value and also measure the value being created (Martin & Petty, 2000: 6-7). VBM incurs all cost of capital used in business and realised that discounting free cash flows expected to be received in the future will create the organisation's value (Rappaport, 1981: 141). According to Arnold, G and Davies, M (2000: 2), VBM metrics assist with the allocation of scarce resources. Once the funds are committed, value metrics can help maintain control and monitor performance, leading to analysis of areas for improvement. The question asked by Martin & Petty (2000: 35-36) is whether or not traditional accounting measures of performance is consistent in reflecting shareholder value creation and also whether the information based on traditional accounting measures can be used in the strategy formulation and performance measurement processes. The VBM concept is becoming increasingly popular as companies are shifting focus to shareholder value maximisation and investor confidence. The VBM concept provides the management of such companies with the needed support to formulate value maximising strategies and consequently increase investor confidence.

Boulton, Libert and Samek (2000: 10) argues that old answers to the question of how to create value no longer work and offer a new way of thinking about value by proposing that "a business is its assets – all of its assets". Businesses assemble assets in combinations specific to it and use these assets to build unique business models. It is the business model that

ultimately determines whether an organisation creates or destroys value and in what way. Boulton, Libert and Samek (2000: 11) states that changes comes too fast and from too many directions in the new economy that traditional approach to management and measurement are no longer adequate. Intangible assets are as important as tangible assets in driving business success in the new economy. This does not mean that investors no longer value companies based on current and future cash flows. They still do, but now take a broader view of what drives cash flows, including non-balance sheet assets and how the company exploits it. Many investors are forced to rely on own judgement due to the absence of ways to accurately measure the intangible drivers of value. VBM attempts to address this problem by showing whether value is created or destroyed and which intangible assets contribute towards value creation by measuring the value created or destroyed against specific intangible drivers.

2.11.2 The value drivers of VBM

Value drivers must not only reflect important operational aspects, but also provide non-financial information to be used as input into the VBM metric. By breaking down shareholder value into the various value drivers of the organisation, management will start to have an internal perspective of the organisation and where value is created which is consistent to the external investor perspective. For most people within the organisation, strategy is too abstract and far removed from daily activities. Value drivers help to break down strategy to a level that is both meaningful and actionable for managers (Knight, 1998: 167). The understanding of value drivers is helpful, but the real value only realizes when management uses the value drivers in decision making and the organizational processes (Knight, 1998: 168). There are two types of value drivers: financial value drivers and non-financial value drivers.

Non-financial value drivers are known as leading indicators of value. Leading indicators of value are current achievements that have a considerable positive impact on the long term value of the organisation. It is measurable and can also be communicated easily. Typical examples are production efficiencies,

customer retention rate and customer satisfaction rate, as well as internal business processes, learning and growth. The improvement or achievement of such indicators will normally have a positive benefit to value creation on the long term. Rappaport (1998: 129) argues that the process of identifying leading indicators of value requires a proper understanding of the customers, product, and markets and other sources of information to understand the total business environment of the organisation. To identify the leading indicators of value is a difficult, but challenging, rewarding and revealing exercise. Leading indicators of value are those that provide us with forward looking information.

VBM involves the systematic use of the corporate valuation model to evaluate a company's potential decisions (Brigham & Ehrhardt, 2005: 518). The authors indicate that the four value drivers are:

- The growth rate in sales (g).
- Operating profitability (OP), as measured by the ratio of net operating profit after taxes (NOPAT) to sales.
- Capital requirements (CR) as measured by the ratio of operating capital to sales; and
- The weighted average cost of capital (WACC).

All four value drivers separately impacts on the value creating capacity of a company yet all four are interlinked and therefore the most value is created when all four value drivers are managed optimally.

The sales growth rate has a positive effect on value, provided the company is profitable enough. The effect can be negative if growth requires a great deal of capital and the cost of the capital is high. Operating profitability, which measures the after-tax profit per rand of sales, always had a positive effect – the higher the better. The capital requirements ratio, which measures how much operating capital is needed to generate a rand of sales, also has a consistent effect – the lower the better since a low CR means that the company can generate new sales with smaller amounts of new capital. The

lower the capital requirement the lower the cost of capital and a lower cost of capital leads to more value creation. Therefore the WACC also has a consistent effect in that the lower it is, the higher the firm's value (Brigham & Ehrhardt, 2002: 518).

2.11.3 The performance measurement tools under the VBM framework

The founding principle underlying VBM is discounted cash flow (DCF) (Martin & Petty, 2000: 47). Over the last couple of years, various new methods of VBM were added for measuring corporate value. These methods are proposed as solutions for measuring organisations' performance.

Three popularised performance measurement tools under the VBM framework are:

- Shareholder Value Added approach (SVA) by LEK/Alcar Consulting Group and later developed into a popular tool used by McKinsey & Co.
- Cash Flow Return on Investment (CFROI) by Boston Consulting Group; and
- Economic value added (EVA Registered Trademark) by Stern Stewart & Co.

In what follows, brief descriptions of the first two measurement tools are given. EVA is the chosen performance measurement tool used in this research and therefore a more in-depth literature research is conducted on it so that the analysis in the empirical research can be fully understood.

2.11.3.1 Shareholder Value Added (SVA)

Shareholder Value Added (SVA) McKinsey & Co. and LEK/Alcar proposed a measurement called SVA. SVA is an initial tool, which measures the amount of value created, based on a forecast scenario. It addresses the 'change' in shareholder value over the forecast period (Rappaport, 1998: 49). It estimates

the value creation of an investment at a rate in excess of the cost of capital rate required by the market. If a company is to deliver superior returns to its shareholders, its units must create superior SVA. The increase in net operating profit after taxes (NOPAT) is capitalized each year and discounted back to the present, at the discount rate (k). SVA is obtained by subtracting the present value of incremental investment from the present value of the capitalized NOPAT increase. The calculations would be assessed as:

$$\text{SVA} = \frac{\text{Change in NOPAT}}{k_c (1+k_e)^{t-1}} - \text{Present value of incremental investment}$$

Where:

NOPAT	=	net operating profit after taxes
k_c	=	the cost of capital
k_e	=	the cost of equity
t	=	the period or value of growth duration

(Source: Rappaport, 1998: 55)

SVA is a disciplined process to evaluate organisational activity. It is only as good as the strategic thinking that accompanies it and there is no guarantee that the strategy with the greatest SVA number will be effectively and efficiently implemented.

2.11.3.2 Cash Flow Return on Investment (CFROI)

Cash Flow Return on Investment (CFROI) was originally designed by the Boston Consulting Group. CFROI represents a cash-based measure, meaning that it converts all accounting profits into cash flows. CFROI is the sustainable cash flow a business generates in a given period as a percentage of the cash invested in the firm's assets.

$$\text{CFROI} = \frac{\text{Cash Flow}}{\text{Capital Employed}}$$

When inflation is a significant factor, both cash flow and cash invested are expressed in deflated or current value (Martin & Petty, 2000: 129). Usually it is expressed as:

Firm's gross cash investment =

$$\frac{CF_1}{(1+CFROI)} + \frac{CF_2}{(1+CFROI)^2} + \frac{CF_n}{(1+CFROI)^n} + \frac{TV}{(1+CFROI)^n}$$

Where:

- CF = the inflation adjusted annual cash flow
- TV = the inflation adjusted terminal value of all future cash flows from year n to infinity
- n = the average economic life of the firm's assets
- CFROI = the cash flow return on investment

CFROI is one of value-based measurement tools that measure the company's performance which reflects the average underlying rates of return on all existing investments projects. The CFROI of a firm can be thought of as the aggregate weighted average internal rate of return (IRR) of all projects making up the business as a whole, as it is expressed in the CFROI model. The Boston Consulting group believes that measuring value creation in terms of rates of return is much better than measuring it with any form such as SVA or EVA since these two measures are based on a period-to-period basis.

2.11.3.3 Economic Value Added (EVA)

According to Arnold and Davies (2000: 23) EVA is a variant of economic profit, which is the modern term for residual income. Economic profit for a period is the amount earned by business after deducting all operating expenses and a charge for the opportunity cost of capital employed. A major advantage of this metric is its relative simplicity. Managers can quickly understand and use it for ex ante and ex post analysis. Arnold and Davies (2000: 107) also states EVA is claimed to have a number of important

advantages over traditional accounting measures, chiefly that economic performance is only determined after the making of a risk-adjusted charge for the capital employed in the business. Critics, however, argue that while this may be theoretically sound, the need to make arbitrary adjustments to standard accounting numbers in order to put the technique into practice makes the technique of doubtful validity.

According to De Waal (2001: 10) the quality of the performance management process enables companies to perform better, financially as well as non-financially, than those companies that are less measurement driven. Further to this Arnold and Davies (2000: 251) states that conventional accounting data is unsuitable for the purpose of financial planning and control, but that this gap has been filled by the development of value-based management (VBM) techniques and that the closest in form to financial statement data is the residual income based metric of EVA. This view is shared by Grant (2003: 2) who states that EVA is unlike traditional measures of profit such as EBIT, EBITDA and net operating income, in that EVA looks at the firm's residual profitability, net of both the direct cost of debt capital and the indirect cost of equity capital. According to Schlenker and Matcham (2005: 61), EVA as well as similar approaches such as SVA and CFROI, has been developed to determine the value of corporations and investments. The notion of EVA is that an organisation creates business value only if the return on its capital exceeds the opportunity cost of acquiring the capital from lenders or shareholders who could have invested more profitably elsewhere. According to Grant (2003: 77), basic EVA reveals that a company is not economically profitable until it covers its usual operating expenses and all of its financial capital costs such as cost of debt and equity capital. EVA is helpful for managers in that it can be used by managers to gain some strategic insight on the steps to take to improve the economic profit outlook and thereby create wealth. In this sense EVA is, in principle, superior to traditional accounting profit measures.

A company with negative EVA is not covering its costs, whether it is capital costs or any other operational costs, the order of subtraction does not matter.

According to Ehrbar (1998: 132) saying that a company with negative EVA is not covering capital costs is convenient shorthand for saying that it is losing money though it may be reporting positive earnings. It is therefore important for an analyst to be aware and understand all the factors impacting on EVA in an organisation so as to assess to what extent the different factors involved affects EVA. Ehrbar (1998: 132) also goes on to state that a negative EVA does not mean that a business automatically is a hopeless loser and should be shuttered or sold. Because EVA is a continuous improvement metric, making a negative EVA less negative is just as wealth-creating as making a positive EVA more positive. Based on the EVA formulation, Grant (2003: 77) states that to improve the economic outlook of an organisation that wealth conscious managers should take steps to:

- Increase business revenue.
- Reduce operating expenses where prudent.
- Use less capital to produce the same amount of goods and services.
- Use more capital in the presence of positive growth opportunities; and
- Reduce the cost of capital.

To increase EVA, Stewart (1990: 118), states that operating people can do countless things that fall into one of three categories measured by EVA. EVA will increase if operating profits can be made to grow without tying up more capital, if new capital is invested in any and all projects that earn more than the full cost of capital, and if capital is diverted or liquidated from business activities that do not cover the cost of capital.

According to Arnold and Davies (2000: 152) Value-based metrics take value drivers and embody it into a single measure such as EVA. Kearns (2007: 153) believes that value makes people work together towards a common goal, while Stewart (1990: 118) argues that the one performance measure to account for all the ways in which corporate value may be added or lost is EVA. According to Ehrbar (1998: 134) using one measure, such as EVA, as the basis for all decisions is what unites all employees in the pursuit of the single goal of creating value. Stern and Shiely (2001: 16) substantiate this

view and states that if EVA is properly implemented, it aligns the interest of managers with those of shareholders. Real economic profit is the measure of corporate performance, and managers have the same goal when bonuses are tied to EVA. According to Kearns (2007: 153) conventional performance measures will not naturally coalesce into value, but the only way to get value is to measure value and ensure that everyone involved is held accountable. Managers therefore still have to worry about the traditional measures of financial performance, but the worrying is always in the context of its impact on EVA. On the other hand Arnold and Davies (2000: 160) argues that although empirical evidence exists to suggest that value-based measures are becoming increasingly popular, traditional accounting measures are still dominant in practice. This low level of adoption of the value-based metrics can be ascribed to the problems associated with the implementation of these measures at divisional level. These problems can be classified as awareness, technical, political and cultural.

According to Stern and Shiely (2001: 74) an EVA program is three things: a measurement system to keep score, an incentive system to make employees partners with shareholders, and a system of financial management that allocates capital in a logical economic framework. Stern and Shiely (2001: 98) state that most companies start EVA bonus programs at the executive level and gradually push it down the ranks. It is of utmost importance though, that the employees on the shop floor be informed about EVA and its impacts on the company. EVA as a performance metric needs to be discussed with shop floor employees and what their role is in the EVA performance of the company. In this way, not only will the employees be motivated by the incentives tied to EVA, but there will be psychological ownership of activities in the company in knowing how activities impact the EVA.

EVA is based on the concept of residual income or economic profits, something which have been known for a long time. The residual income or economic profits differ from accounting profits which can be explained as:

Accounting profits = Sales – cost of goods sold –operating expenses -

interest expenses - taxes

$$\begin{aligned}\text{Economic profits} &= \text{Sales} - \text{cost of goods sold} - \text{operating expenses} - \\ &\quad \text{interest expenses} - \text{taxes} - \text{cost of equity} \\ &= \text{net operating profits after taxes (Accounting profits)} - \\ &\quad \text{cost of equity}\end{aligned}$$

(Source: Martin & Petty, 2000: 81)

The residual income or economic profits concepts is intended to measure how well a company has performed in terms of generating profits in a particular period, given the amount of capital employed to generate profits. EVA is a measure of profit less the cost of capital employed. It is one measure that properly accounts for all complex trade-offs, often between the income statement and the balance sheet, involved in creating value. EVA is defined as return on investment minus weighted cost of capital, multiplied by the total operating capital (Pettit, 2000: 63). Economic Value Added (EVA) looks much like the economic profits measure. It is computed as follows:

$$\begin{aligned}\text{EVA} &= \text{Net operating profits after taxes} - (\text{Cost of capital} \times \text{beginning Capital}) \\ &= \text{EBIT} (1 - \text{Tax rate}) - (\text{Total net operating capital})(\text{WACC}) \\ &= \text{NOPAT} - (\text{WACC} \times \text{Capital})\end{aligned}$$

Alternatively,

$$\text{EVA} = (\text{rate of return} - \text{cost of capital}) \times \text{Total net operating capital}$$

Where:

NOPAT = firm operating profits after taxes but before financing costs and noncash bookkeeping entries except depreciation

WACC = Firm's weighted average cost of capital

TOC = the total cash invested in the firm over its life, net of depreciation

TOTAL NET OPERATING CAPITAL is expressed as follows:

$$\text{TOC} = (\text{Cash} + \text{Accounts receivable} + \text{inventories}) - (\text{Accounts payable} + \text{accruals}) + \text{operating long term assets}.$$

(Source: Brigham & Ehrhardt, 2005: 110)

Alternatively, EVA is expressed as:

$$\text{EVA} = (\text{ROIC} - \text{WACC}) \times \text{TOC}$$

Where:

ROIC	=	Return on invested capital
WACC	=	Firm's weighted average cost of capital
TOC	=	the total cash invested in the firm over its life, net of depreciation

$$\text{ROIC is calculated as } \frac{\text{NOPAT}}{\text{TOC}}$$

(Source: Copeland, Koller, and Murrin, 2000: 166, 171; Martin & Petty, 2000: 88)

EVA, in other words, measures whether the company is creating or destroying value. In accordance with EVA, a company can only create value in the following ways:

- 1) Increase ROIC and hold WACC and invested capital constant.
- 2) Decrease WACC and hold ROIC and invested capital constant.
- 3) Increase the invested capital in projects/activities yielding a ROIC greater than WACC.
- 4) Withdraw capital from projects/activities that yield ROIC lower than WACC;
and
- 5) Create longer periods where the company is expected to earn a ROIC greater than WACC.

2.12 The components of EVA

For the purposes of this research the following equation will be used in calculating the EVA of the Water Boards:

$$\text{EVA} = \text{NOPAT} - (\text{Total net operating capital}) (\text{WACC})$$

The Water Boards are tax exempt and therefore OP and NOPAT is the same due to the tax effect. This results in:

$$\text{EVA} = \text{OP} - (\text{TOC})(\text{WACC}) \quad (\text{Eq. 2.1})$$

From equation 2.1 it is clear that the calculation of EVA consists of three components, namely:

- NOPAT.
- Total net operating capital (TOC); and
- WACC.

What follows is a detailed description of these components and its impacts on EVA.

2.12.1 NOPAT

Net operating profit after taxes (NOPAT) is the after-tax profit a company would have if it had no debt and no investments in non-operating assets. Because it excludes the effects of financial decisions, it is a better measure of operating performance than net income (Brigham & Ehrhardt, 2002: 118)

$$\text{NOPAT} = \text{EBIT} (1 - \text{tax rate})$$

Where:

EBIT = Earnings before interest and taxes

2.12.1.1 Return on invested Capital (ROIC)

NOPAT is also used to determine the return on invested capital (ROIC), which is used to determine whether growth is profitable. ROIC is the ratio of NOPAT to TOC, as seen in the following equation:

$$\text{ROIC} = \frac{\text{NOPAT}}{\text{TOC}}$$

If NOPAT is greater than the rate of return the investors require, which is the WACC, then the firm is creating value (Brigham & Ehrhardt, 2002: 108). If WACC exceeds ROIC, then new investments in operating capital will reduce the firm's value.

2.12.1.2 Free cash flow (FCF)

NOPAT is also used in calculating the FCF of a company using the following equation:

$$\text{FCF} = (\text{NOPAT} + \text{Depreciation}) - \text{Net investment in operational capital}$$

Free cash flow (FCF) is the cash flow available for distribution to investors after the company has made all the investments in fixed assets and working capital necessary to sustain ongoing operations. These cash flows are relevant for estimating the firm's value since it represents cash available to compensate all investors, which are both debt holders and shareholders. These available cash flows are called "free cash flows" (Copeland et al., 2000: 134; Martin & Petty, 2000: 52). Free cash flow can be divided into two parts: 1) the present value of cash flows from operations during the forecast period and 2) the present value of cash flows to be received beyond the forecast period (Martin & Petty, 2000: 57). The value of a firm primarily depends on its expected future free cash flows. The value of a firm is estimated by discounting the expected future cash by the weighted cost of capital (WACC) of the firm. An organisation is creating value only if it earns a rate of return on

invested capital that exceeds the weighted average cost of capital (Martin & Petty, 2000: 3; Copeland et al., 2000: 64). The formula for the DCF corporate valuation model is:

$$CV = \frac{FCF_1}{(1+WACC)} + \frac{FCF_2}{(1+WACC)^2} + \frac{FCF_n}{(1+WACC)^n} + \frac{TV}{(1+WACC)^n}$$

Where:

$$TV = \frac{FCF_n(1+g)}{(WACC-g)}$$

CV = the company value (value of operation)

TV = the terminal value

FCF = future free cash flows

WACC = constant weighted average cost of capital

g = the growth rate of the free cash flow

n = number of years in the explicit period

2.12.2 Total net operating capital (TOC)

Brigham & Ehrhardt (2005: 104) defines total net operating capital (TOC) as net operating working capital (NOWC) plus operating long term assets. NOWC is defined as operating current assets (cash, accounts receivable and inventories) less operating current liabilities (accounts payable and accruals). These definitions are expressed in the following two equations:

$$TOC = NOWC + FA$$

Where:

NOWC = Current Assets minus Current Liabilities

FA = Fixed Assets

Therefore:

$$TOC = CA - CL + FA \quad (Eq. 2.2)$$

Where:

NOWC	= Net operating working capital
CA	= Current assets
CL	= Spontaneously Changing Current liabilities
FA	= Fixed assets

It is evident from equation 2.1 that if all else remains constant, the higher the TOC, the lower the EVA. Therefore any additional capital investments made should be utilised to such an extent as to increase NOPAT by greater margins than the investment. In so doing, the EVA will be positive and value is therefore added to the firm.

2.12.3 Weighted average cost of capital (WACC)

An estimate of the firm's WACC is an attempt to quantify the average return expected by all investors in the firm namely, creditors of long-term interest-bearing debt, preferred stockholders and common stockholders. Weighted averages allow companies to see how much interest it has to pay for every Rand used in financing its operations. The cost of capital is an economic concept, where the cost is based on the opportunity cost of the invested capital (Martin & Petty, 2000: 64). The cost of capital is essential as it is required that investments should yield returns that are greater than the cost of capital to create shareholder value (Rappaport, 1986: 55-56). Such costs are based on the proportions of debt and equity that an organisation targets for its structure. This is different from an accounting concept of cost, where the cost of equity is not considered when computing the corporate net income. The weighted average cost of capital is expressed as:

$$\text{WACC} = W_D K_D + W_P K_P + W_C K_S$$

Where:

- W_D = the weight of debt in capital structure
- W_P = the weight of preferred stock in capital structure
- W_C = the weight of common equity in capital structure

K_D = the cost of debt after taxes

K_p = the cost of preferred stock

K_s = the cost of common equity

(Source: Brigham & Ehrhardt, 2005:9-5)

In the case of public water utilities there is no preferred stock, so the preferred stock component will be left out in calculating the WACC for the different Water Boards. The equation used in this research is therefore:

$$WACC = W_D K_D + W_C K_S \quad (\text{Eq. 2.3})$$

This means that only the cost of debt and the cost of common equity need to be calculated to determine the WACC of the Water Boards.

2.13 Estimating the cost of debt

Cost of debt is the effective rate that a company pays on its current debt. The rate applied to determine the cost of debt (r_d) should be the current market rate the company is paying on its debt. If the company is not paying market rates, an appropriate rate payable by the company should be estimated. The cost of long bonds that is used to raise long-term debt used to finance capital budgeting projects is usually used in estimating WACC (Brigham & Ehrhardt, 2005: 309).

The required rate of return to debt holders (r_d), is not equal to the company's cost of debt due to the tax deductible interest payment. The government pays part of the total cost and as a result the cost of debt to the firm is less than the rate of return required by debt holders. The after-tax cost of debt is equal to $r_d (1 - \text{tax rate})$.

Therefore if a company can borrow at an interest rate of 11 percent, and has a marginal tax rate of 40 percent, then its after-tax cost of debt is equal to 6.6 percent:

$$\begin{aligned}
 r_d (1 - T) &= 11\%(1 - 0.4) \\
 &= 11\%(0.6) \\
 &= 6.6\%
 \end{aligned}$$

Where:

r_d = Cost of Debt
 T = Marginal Tax Rate

(Brigham & Ehrhardt, 2005: 309).

Public water utilities are tax exempt and therefore do not benefit from the tax deductible interest payment, but instead have to pay the full interest on its debt. This means that the required rate of return to debt holders is equal to the company's cost of debt. The cost of debt used in this research for the Water Boards is the 10-year government long-bond rates for each respective year over the five years that was researched.

2.14 Estimating the cost of equity

The cost of equity is more complicated to measure. Since there is no agreement to pay a specific rate of return to common shareholders, the cost of equity should be the implicit rate of return that will induce investors to buy and hold the company's shares (Rappaport, 1986: 56-57). Unlike debt, which the company must pay in the form of predetermined interest, equity does not have a concrete price that the company must pay, yet the company still has a cost of equity.

There are three models that can be used to estimate cost of equity (r_s), these are: the Capital Asset Pricing Model (CAPM), the Discounted Cash Flow (DCF) approach, and the Bond Yield Plus Risk Premium model.

2.14.1 Estimating the cost of equity with CAPM

The CAPM can provide a convenient and consistent set of return estimates. CAPM is an important tool used to analyse the relationship between risk and rates of return (Brigham & Erhardt, 2005: 147). Cost of equity according to CAPM is calculated as:

$$r_s = r_{rf} + \beta(r_m - r_{rf}) \quad (\text{Eq 2.4})$$

Where:

r_s	=	Cost of Equity
r_{rf}	=	Risk-free rate of return
r_m	=	Market rate of return
β	=	Beta

The CAPM is based on three components.

- The **risk-free rate of return (r_{rf})** that a company can expect if it chooses risk-free investments such as government bonds.
- The **equity market risk premium ($r_m - r_{rf}$)**, which is the returns investors expect as compensation for taking extra risk by investing in the stock market over and above the risk-free rate. This is the expected return on market less the risk-free rate of return; and
- **Beta (β)**, which measures how much a company's share price reacts against the market as a whole. A company's beta can be estimated by making use of linear regression statistics using historical data of the returns on the shares of the company (r_s) against the returns of a market portfolio proxy (r_m). Monthly return data can be used when determining the regression. A beta of one means that the company moves in line with the market. If the beta is greater than one, the share exaggerates the market's movement. A beta less than one is more stable in that any movement in the market is higher than that of the share. A negative beta means the share price moves in an opposite direction to the market (Brigham & Erhardt, 2005: 152-155).

The Modigliani & Miller proposition II with taxes argues that the expected return on equity is positively related to leverage and that risk increases with leverage (Brigham & Erhardt, 2005: 588). Robert Hamada combined the CAPM and the Modigliani and Miller model to develop the **Hamada equation** (Brigham & Erhardt, 2005: 575). The equation is as follows:

$$\beta_L = \beta_U [1 + (1 - T)(D/S)] \quad (\text{Eq 2.5})$$

Where:

- D = the market value of debt
- S = the market value of equity
- T = tax rate
- β_U = the firm's unlevered beta coefficient; that is the beta it would have if it has no debt.
- β_L = the firm's levered beta coefficient; that is the beta it would have if it has debt.

The Hamada equation shows how increases in the debt to equity ratio (D/S) increases beta (Brigham & Erhardt, 2005: 565). For example if a firm has a debt to equity ratio of 0.6, a tax rate of 33% and an unlevered beta of 0.95. By substituting these values into the Hamada equation, a levered beta of 1.33 is obtained: $\beta_L = 0.95 [1 + (1 - 0.33)(0.6)] = 1.33$. The difference between leveraged beta and unlevered beta: $\beta_L - \beta_U = 0.38$. This means that if the market value of debt remains constant for the firm, the financial leverage for the firm increased market risk as measured by β by a risk factor of 0.38, or by 40 percent.

Therefore once an unlevered beta (β_U) is determined, the Hamada equation can be used to estimate how changes in the debt/equity ratio would affect leveraged beta (β_L) and thus the cost of equity (r_s).

2.14.2 The Discounted Cash Flow (DCF) approach

The Discounted Cash Flow (DCF) approach expresses the cost of equity as the current dividend divided by the current stock price plus the expected growth in dividends.

$$r_s = (D_1/P_0) + \text{expected } g$$

Where:

- D_1 = the expected dividend on common equity
- P_0 = the market price of the common stock per share
- g = the expected growth rate in dividends

Of these three inputs, the growth rate in dividends is by far the most difficult to estimate. The most commonly used approaches for estimating the growth rate are: historical growth rates, analysts' forecasts and the retention growth model. Growth according to the retention growth model is calculated as:

$$g = \text{ROE (retention ratio)}$$

Where:

- g = Growth rate
- ROE = Return on Equity
- Retention ratio = $1 - \text{Payout ratio}$

(Brigham & Erhardt, 2005: 317).

2.14.3 The Bond-Yield-Plus-Risk-Premium approach

The bond yield plus risk premium (BY+P) is essentially an ad hoc procedure to estimate a firm's cost of equity because a judgmental risk premium is added to the interest rate of the firm's own long-term debt. The firm's cost of equity is estimated by taking the firm's bond yield-to-maturity and adding a fixed risk premium to this yield.

$$r_s = \text{Bond Yield} + \text{Bond risk premium}$$

For example, a firm with a bond yield of 11% and a bond risk premium of 3.7% will have a cost of equity equal to 14.7%. Because the bond risk premium is a judgmental figure, so too the value of the cost of equity is a judgmental figure. This approach therefore does not produce a precise cost of equity, but is believed to assist the user to get more or less close to the real figure (Brigham & Ehrhardt, 2005: 319).

2.14.4 Comparison of the CAPM, DCF, and BY+P methods

Any or all three of these methods can be used to estimate the cost of equity of a firm. The onus lies on the financial analyst to decide to use the average of the three methods or choose the result of one over the other. According to Brigham & Ehrhardt (2005: 320) surveys shows that CAPM is the most widely used method for calculating cost of equity and the BY+P is used primarily by companies that are not publicly traded. The financial analyst would have to use his or her judgment as to relative merits of each estimate depending on the circumstances under which the company finds itself. Therefore both careful analysis and judgment are required in estimating the cost of equity of a company.

2.15 Finances of public enterprises

Financial performance measurement has been under the spotlight since the 1980s. The performance of the non-profit organisation (NPO) has also been studied extensively, although agreement about NPO financial performance measurement and overall performance evaluation has remained elusive to both researchers and practitioners (Richie and Kolodinsky, 2003: 368). The financial performance measures differ between companies. In the for-profit organisation there is a number of measures currently employed ranging from simple financial ratios to more complex measures which include VBM. The financial performance measures used in non-profit organisations are more

limited in that it has stakeholders instead of stockholders and therefore have fund capital instead of equity capital. The cost of fund capital can not be established with certainty due to the controversy surrounding the opportunity cost of fund capital (Brigham and Ehrhardt 2005: 30-5). These institutions are also tax exempt, which means that although it does not pay taxes it also cannot reduce the cost of debt by $(1 - T)$. This has major implications on capital structure decisions in that the cost of debt for non-profit entities does not differ much from investor-owned firms depending on the chosen capital structure. The non-profit organisations are expected to provide a social value in addition to a purely economic value and therefore project analysis should consider social value along with financial value. The difficulty in assigning a value for social value and the cost of fund capital hampers cash-flow analysis and the value of the organisation thus cannot be accurately established. The non-profit organisation can, however, add value to the for-profit organisation. As stated by Ott (2001: 228), by allying itself with a non-profit, a corporation not only gains the non-profit's staff, clientele trustees and donors, but it also saves on advertising and promotional costs because the alliance usually brings free publicity and many public-relations opportunities. Public-private partnerships can drive value creation for both entities, although the tools used to measure value creation will differ in each case.

2.16 Financial performance measures of public enterprises

According to Boyle (1989: 17) in the private sector, criteria such as profit or loss and market share can and are used to establish some measure of performance. In the public sector, however, the notion of a market has limited applicability and different criteria must be used, usually criteria pertaining to aims and objectives. Efficiency and effectiveness are the two most commonly used criteria for assessing organisational performance. Efficiency is measured by the ratio of inputs to outputs whereas effectiveness is the degree of success of activities or services in meeting its objectives. Therefore to determine effectiveness, the objectives have to be clear regardless of whose objectives it is. Boyle (1989: 20) further states that economy should be added to the concepts of efficiency and effectiveness. Economy meaning ensuring

that assets and services purchased are procured and maintained at the lowest possible cost consistent with a specified quality and quantity. According to Boyle (1989: 95) the environment within which the civil service operates is different to that of the private sector. While it is possible to learn from the private sector experiences, it would be a mistake to assume that such experience is directly transferable and workable in a civil service context. The fundamental difference between the civil service and private sector is the political environment within which the civil service operates. However, Kearns (2007: 19) states that all organisations should be described as value organisations and should be able to declare, unequivocally, what value it adds to society. Not-for-profit does not mean not-for-value. Both for-profit and non-profit organisations exist to serve customers and if either fails to satisfy the needs of customers it should cease to exist. This means that non-profit organisations have to add value to society in satisfying the needs of its customers. To continue in this vane the non-profit organisation needs to remain viable and therefore be financially sustainable. To remain financially sustainable it needs to generate sufficient surplus similar to the for-profit organisations.

According to Jackson (2006: 30) when it comes to the risk assessment activities of the operations on an organisation, amongst others, financial management is an area of potential risk in non-profit operations. Financial discrepancies and mismanagement can result in legal problems, the erosion of the organisation's donor base, and the creation of a difficult public relations situation. Sarbanes-Oxley was passed in 2002 and has been used to promote greater accountability within both the non-profit and the private sector (Jackson, 2006: 6). Currently, only two of the provisions in Sarbanes-Oxley apply directly to non-profit organisation. The first is the adherence of the non-profits to "whistleblower protection" and the second is that non-profits are expected to have a fully functioning document preservation policy in place. Public enterprises, therefore, are increasingly expected to operate like private enterprises. The sustainability of the private enterprise, just like the public enterprise, is dependent on the financial performance of the enterprise. Therefore despite some obvious differences between public and private

enterprises, the financial performance measures of both types of enterprises should be alike.

There are a number of financial performance measures that are currently being used by both small and large enterprises to assess financial performance. The measures employed by different companies differ from one another based on the type of business and the choices of management. Many different financial measures have been used with great success. According to Donegan (2002:205) there must be an understanding of the underlying assumptions of analysis tools before it can be relied upon to make decisions. Ratios should also not be taken out of context or to rationalise a decision, but should rather be used as part of a series of measures that augment the owner or manager's subjective understanding of the business. The power in analysis tools lies in its simplicity and objectivity. This shows that although some measurement tools in some instances may not be effective as assessment tools, it can be of great use with the necessary insight into factors that affect the tools being used.

Due to the fallible nature of traditional financial performance measures and globalisation, more and more modern financial performance measures are being used by more private and public companies as time goes by. These modern financial performance measures, such as EVA, is said to take into consideration the non-financial factors that impacts on the financial performance of a company. The non-financial factors are as important in the public sector as it is in the private sector. Therefore the shortcomings of traditional performance measures impacts on the public sector as well. Four essential reasons are mentioned by Johnson, Natarajan and Rappaport (1981:53) about why earnings-based financial performance statistics fail to measure change in economic value for shareholders. These are:

- Earnings figures vary with the choice of different accounting methods.
- Earnings numbers do not reflect differences in systematic risk faced by various companies.

- Earnings figures do not account for investment in working capital and fixed capital needed to support sales growth; and
- Reported earnings do not incorporate changes in a company's cost of capital due to shifts in inflationary expectations.

However, Kaplan and Norton in Rutterford, J (2001: 280) argue that although traditional performance measures are out of step with the skills and competencies companies are trying to master today and rather focus on operational measures, managers should not have to choose between the two. No single measure can provide a clear performance target or focus attention on critical areas of the business and therefore senior executives do not rely on one set of measures to the exclusion of the other. The balanced scorecard is used to give managers a comprehensive view of the business by complementing financial measures with operational measures.

Balachandran, Nagarajan and Rappaport (1986: 69) states that the operating margin ratio is widely used by both security analysts and management to assess the firm's operating profitability or efficiency, while Paquette (2005: 73) states that sales and earnings growth rates are financial performance measures commonly used by companies. The compound growth rate is the rate of growth that needs to be achieved each year to get from one year in a data set to the next. Historically speaking this would mean that a bigger compound growth rate would indicate better performance. Rappaport (1981: 140), however, states that the accounting earnings and traditional measurement tools do not accurately measure the creation of value for the organisation. To create shareholder value, which could also be interpreted as stakeholder value in the case of a public enterprise, Rappaport (2006) also argues that a company should not manage earnings or provide earnings guidance. Focussing on earnings for short-term gains and to meet earnings benchmarks causes companies to forgo investment in value-creating opportunities. Also the accountant's bottom line approximates neither a company's value nor its change in value over the reporting period.

These different views and admissions by the various researchers and practitioners show that both the modern as well as the traditional performance measures have a place in modern financial performance measurements. This is even more so for the non-profit organisation in the light that its valuation is much more complicated than that of the for-profit organisation due to its financial structure and cash flows as mentioned previously. There are numerous traditional as well as modern performance measures that can be employed by a public enterprise and each has advantages and disadvantages. The number and type of financial performance measures used depends on the company that employ it and whether there is consensus that the particular performance measures will be effective as an indicator of financial performance. Many studies have shown that the traditional performance measures are effective and still used today, while there are many examples of how traditional financial performance measures have failed.

Though the modern financial performance measures definitely have its merits and give a more holistic view of financial performance of a business, the traditional financial performance measures, although more limited by the absence of non-financial factors, still have sufficient information content to point out where the problem lies and where to focus to remedy a situation. This shows that a combination of tradition as well as modern financial performance measures will serve to complement one another and in so doing be much more effective in assessing financial performance of a company. Therefore EVA is used in conjunction with the ratios of the Dupont formula to obtain a more comprehensive view of the financial performance of the different Water Boards in this research.

2.17 Financial management in South African Water Boards

This investigation will focus on the Water Boards of South Africa and its financial performance in an attempt to establish whether it has effective financial management. Although there are measures in place to monitor the expenditure of South African Water Boards with respect to the PFMA, there

are many instances where the sustainability of the Water Board is not priority. Water Boards sometimes tend to opt for the more expensive route and this could be ascribed to the fact that it is essential services and government funding always serves as a lifeline. The demand for potable water and sanitation is on the increase and the revenue fluctuates based on supply and consumer purchasing power. This means that because the supply of potable water and sanitation can not be curbed due to non-payment of services, the revenue that the Water Boards can generate is essentially out of the Water Boards' control. Water Boards, however, do have much more control over its expenses and in this way have some means of controlling its sustainability. The financial performance of Water Boards therefore is not as dependent on its revenue as it is on its expenditure.

The operational costs and assets of a company are essential in showing how much money is used to generate revenue. A company produces a profit and is considered sustainable if the revenue is greater than its expenses. Over-expenditure on operations and unnecessary assets thus leads to higher costs and if this is greater than the revenue, it means a deficit is generated by the company. Based on this, the traditional financial performance measures that will be used in this study will be based on the Du Pont formula to assess returns and EVA to assess value creation of the public enterprise.

When it comes to strategic planning and evaluation Rappaport, A (1986: 59) states that the projected (commonly five-year) financial statements commonly serve as the basis for judging the attractiveness of the strategic or long-term plan even while the organisational dynamics and the sophistication of the strategic planning process vary widely among companies. The chosen financial performance measures for this study will therefore be used to assess the performance of the Water Boards by using five years historical data from the financial statements of the different Water Boards. The performance measures will focus on operational costs and assets to observe how the management of expenses affects the performance of the Water Boards.

“A metric or ratio should not exist on its own; it should be compared to the company over time or to other companies in a similar industry” (Donegan, 2002: 205). Therefore the financial performance over the chosen five year period of the different water boards will be used to check whether there was an improvement in the sustainability of the Water Boards or not with regards to the expenditure management. The performances of each Water Board will be compared to each other to ascertain if there are differences and why. Finally the overall performance of the different Water Boards will be compared to an industry average of “similar” listed companies to see how the financial performance of a non-profit organisation compares to a similar for-profit organisation.

Arnold and Davies (2000: 110) further states that the foundation of performance measurement is the identification of the reasons for the evaluation of performance. The objectives of this research are clearly stated in section 1.3 of this dissertation. Therefore the reasons for the evaluation of performance are clearly identified. Based on the information from the literature study, it was decided to use both EVA and the chosen accounting ratios to assess the performance of the Water Boards in South Africa.

2.18 Summary

In chapter two the background as to how the Water Boards in South Africa operate with respect to its financial management and value adding activities. The importance of financial performance measurement tools is established with respect to measuring and monitoring the financial sustainability of the Water Boards. The two categories of financial performance measures, namely traditional and modern financial performance measures are dealt with and the differences are extensively discussed. Value-based management as the modern financial performance measurement is researched and EVA is broken down into its constituents, since EVA is used to evaluate the performance of the Water Boards. The research shows that although the Water Boards are non-profit organisations, which usually employs traditional performance ratios in its financial management, the value-based management approach, which is

more applied in the private sector, can also be used for the Water Boards. Therefore both the traditional financial performance ratios and EVA is used in this research in an attempt to establish if there is effective financial management in the Water Boards.

CHAPTER 3

EMPIRICAL RESEARCH METHODOLOGY

3.1 Introduction

In the previous chapter a sound theoretical basis was given to the reasons for the research conducted by reviewing the relevant literature pertaining to the effective financial management of companies and NPO's including Water Boards. In this chapter the empirical research methodology is explained.

3.2 The research process

Explanatory or causal research identifies cause-and-effect relationships between variables (Zikmund, 2000: 51). It requires a process of data collection, analysis and interpretation and takes a quantitative approach; that is, gathering numerical data to ensure objective and accurate results. In the quantitative study the focus of the research is quantity and its goal are predictions, control, description, confirmation, hypothesis testing. Its associate phrases are experimental, empirical, and statistical. The research in this study therefore takes a quantitative approach because the numerical data from the financial statements of the Water Boards are gathered and analysed in an attempt to address the questions posed in the problem statement of this paper.

3.3 Data collection

An in-depth literature study was conducted initially to understand how the different Water Boards in South Africa operate and why it would be necessary to assess the financial management practices of these NPO's. The literature study was also used to gain insight into the financial performance measurement tools that are used in the private sector and how the same tools can be used in the financial management of South African Water Boards.

Fifteen out of the seventeen Water Boards in South Africa were chosen for this study due to the difficulty experienced in obtaining the financial statements of the rest of the Water Boards. These are: Albany Coast Water; Amatola Water Board; Bloem Water; Botshelo Water; Bushbuckridge Water Board; Ikangala Water; Lepelle Northern Water; Magalies Water; Mhlathuze Water; Namakwa Water Board; Overberg Water; Pelladri Water Board; Rand Water; Sedibeng Water and Umgeni Water.

The financial statements of the Water Boards were taken out of the annual reports of the different Water Boards. The income statements and balance sheets of the fifteen Water Boards were used to assess performance with respect to expenditure and the consequent impact on Economic Value Added (EVA). Five consecutive years of financial statements were used and the financial ratios calculated to observe and compare the performance of each Water Board against one another and also against a chosen industry average. Due to the difficulty experienced in obtaining the financial statements, some of the Water Boards have only four consecutive years of data. In other words, in some cases data for the year 2004 is missing and in other cases data for the year 2008 is missing.

3.4 Calculation of the EVA

First, a spreadsheet was compiled of all fifteen Water Boards for the five years under study in order to calculate the EVA (Appendix 1). The following values were entered onto the spreadsheet: Revenue; Operating Cost (OC); Operating Profit (OP); Net Income (NI); Fixed Assets (FA); Current Assets (CA); Current Liabilities (CL); Total Liabilities (TL) and Equity.

The Debt to Equity ratio was calculated and an unlevered beta coefficient of 1 was used to calculate the leveraged beta coefficient by means of the Hamada Equation (Equation 2.5). The return on equity was calculated using the Capital Asset Pricing Model (CAPM) (Equation 2.4). The expected market return is equal to the growth in the capital return index plus dividend yield in a specific year and the risk-free rate of return is the 10-year long-bond rate for that

specific year. The 2008 data was not available for both these values and therefore the expected market return was taken as the long term JSE expected return of about 16% and the risk-free return was calculated as an average of the available data from 2002 to 2007. The cost of debt of the individual Water Boards were taken as the 10-year long-bond rates for the five years under study. The respective weights of the equity and debt of the Water Boards were calculated as equity/ (total liabilities + equity) and total liabilities/ (total liabilities + equity) respectively. The WACC is calculated by using equation 2.3 and the TOC is calculated using equation 2.2. EVA is ultimately calculated using equation 2.1.

3.5 Benchmarking

According to Boyle (1989: 23) performance assessment does not usually involve an absolute statement of efficiency, effectiveness and economy, rather for comparative purposes, performance is judged against some referent. Some common referents are: comparison over time, comparison against targets/standards, comparison with other organisations, and comparison within organisations. Arnold and Davies (2000: 109) argues that performance itself is not absolute but rather comparative and it is essential in evaluating performance to be able to assess comparatively, hence a quantitative approach to performance evaluation is essential even if some aspects of performance are qualitative in nature. Measurement theory states that measurement is essentially a comparative process, and comparison provides the purpose for the measurement. Measurement enables the comparison of the constituents of performance in the following areas:

- Temporally by enabling the comparison of one time period with another.
- Geographically by enabling the comparison of one business, sector or nation with another.
- Strategically by enabling alternative courses of action and its projected consequences to be compared.

Benchmarking is a comparative process that can be defined as the search for the best industry practices that will lead to superior performances (Zairi, 1994: 61). It is a continuous process where the continuous improvement philosophy can be applied and in a sense is the only way of moving forward and for establishing performance standards.

According to Zairi, M (1994: 62) there are four types of benchmarking:

1. Internal benchmarking. In large organisation between various business units.
2. Competitive benchmarking. Specifically comparing competitor to competitor using the product or function of interest.
3. Functional benchmarking. The comparison between similar functions within the same broad industry.
4. Generic benchmarking. Establishing the comparison of business functions or processes that are the same regardless of type of industry.

The two approaches that have been adopted in most industrial organisations with respect to benchmarking can either be cost-driven or process-driven (Zairi, 1994: 63). Cost-driven benchmarking is about applying the principles of benchmarking from a distance and comparing some aspects of performance with those of competitors with aim being cost reduction. Process-driven benchmarking on the other hand is considered as a continuous process and uses the philosophy of continuous improvement. Unlike cost-driven benchmarking, the focus of process-driven benchmarking is not necessarily on the competitor but on a benchmarking partner in an attempt to understand and challenge the processes and practices of an organisation. Process-driven benchmarking also does not necessarily look at the outcome in terms of cost reduction, although the benefits that leads from it often results in great cost reduction. More importantly, it helps organisations sustain superior performance through a strengthening of processes and business behaviour.

For the purpose of this study, the chosen financial performance measures of the Water Boards are benchmarked against the same financial performance measures of an industry average. The chosen industry average is the average

of all the publicly traded industrials for the respective years over the five-year period that is used in this study (Appendix 3). Table 3.1 shows the figures for the industry average for the five years under study.

Table 3.1: Industry average ratios

Ratio	2004	2005	2006	2007	2008
OPM (%)	37.55	10.61	10.90	11.80	14.54
NPM (%)	15.18	10.35	7.80	9.60	11.51
TATO	1.76	1.77	1.64	1.61	1.66
CR	1.38	1.44	1.59	1.56	1.41
D/A	0.65	0.62	0.62	0.60	0.61
EM	3.74	3.35	3.40	4.89	6.68
ROA (%)	26.72	18.34	12.83	15.47	19.12
ROE (%)	99.89	61.45	43.68	75.73	127.83
EVA (Rand)	1643678.92	1824897.37	2320324.00	2776864.03	1327482.14

3.6 Data analysis

Once the data from the financial statements of the Water Boards was captured on the spreadsheet, the financial performance measures were calculated (Appendix 1). The figures for all five years for the chosen financial performance measures of both the Water Boards and the industry averages are depicted in appendix 2.

The chosen financial performance measures of the fifteen Water Boards over the five year period was analysed by making use of bar graphs, tables and correlation matrices. The graphs are used to compare the different Water Boards and its performance measures with one another to establish how each Water Board performs over the five years under research. The graphs are also used to compare the performance measures of the Water Boards to that of the industry average. The comparison with the industry average is used to

observe how the Water Boards perform in relation to similar publicly traded industries.

The correlation matrices of the fifteen Water Boards of every year of the research are used to observe whether or not there are any correlations between the variables. This should indicate how, if any, and to what degree one performance measure is related to another.

3.7 Summary

The financial data of the fifteen Water Boards was captured from the financial statements from 2004 to 2008. The financial performance measures used in the research are calculated from the data and the data is analysed by making use of bar graphs, tables and correlation matrices. These analytical tools with the relevant data and the analysis and findings from the data are discussed in chapter four.

CHAPTER 4

DATA ANALYSIS AND FINDINGS

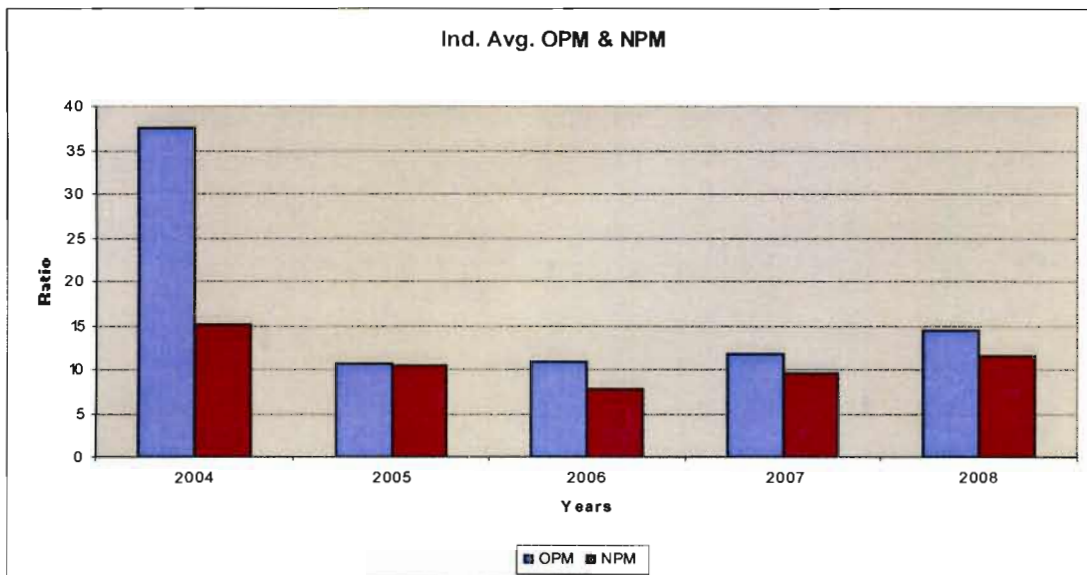
4.1 Introduction

In this chapter the calculated ratios and the EVA for the Water Boards as well as the industry average is analysed. Graphs and tables are used to depict the financial performance measures in an attempt to observe trends and establish whether there is effective financial management in the Water Boards. The industry average is first discussed, followed by the Water Boards and then the Water Boards are benchmarked against the chosen industry average. The financial performance measures of the two Water Boards with the highest and lowest EVA are compared to one another. This is done to try and observe which of the ratios differs the most from one another and in so doing establish which factors impact the most on the EVA of the Water Boards. Lastly, correlation matrices are compiled for the performance measures of the fifteen Water Boards over the five years. These matrices are used to observe whether there are any relationships amongst the performance measures.

4.2 The Industry Average

The following graphs depict the chosen ratios for this research for the industry average over the five years of the study.

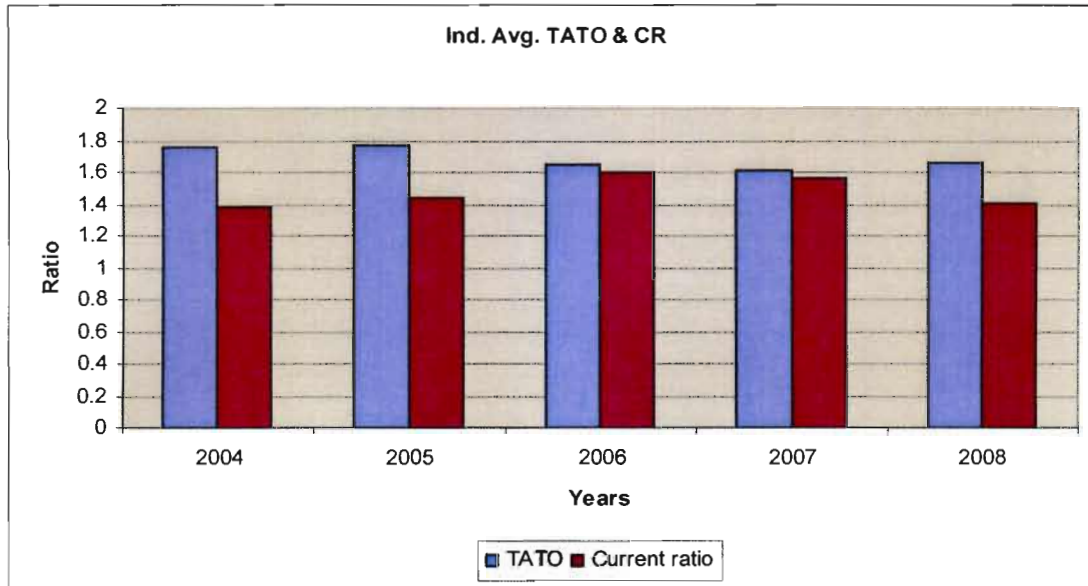
Figure 4.1: Industry average OPM & NPM



(Source: Own)

From figure 4.1 it can be seen that OPM is higher than NPM for every year over the five years. This is to be expected since only cost of sales and operating cost is subtracted from revenue to obtain the operating profit while the net profit is calculated by subtracting cost of sales plus all other operating expenses plus financing expenses plus tax from the revenue. The highest difference between the two ratios was in 2004 and the lowest difference in 2005. This can be ascribed to the fact that the financing expenses are much higher for the industry average in 2004 than it is for the other four years. There are virtually no financing expenses in 2005 and the cost of sales plus operating cost constitutes all the expenses for that year. There is a decrease in NPM from 2004 to 2006 and then it increases from 2006 to 2008. This shows that the difference between the revenue and the total expenses decrease from 2004 to 2006 and then increases from 2006 to 2008. A similar trend is observed for TATO and CR as can be seen in figure 4.2 where there is a decrease in the TATO from 2004 to 2007 and then an increase in 2008. The CR increases from 2004 to 2006 and then decreases from 2006 to 2008.

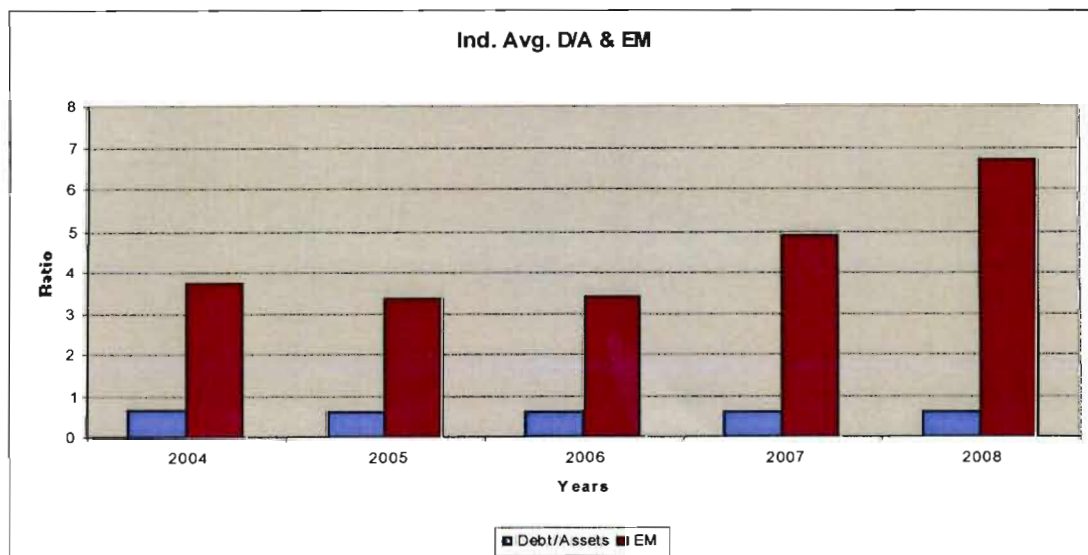
Figure 4.2: Industry average TATO and CR



(Source: Own)

The highest TATO is found in 2004 and 2005. The high TATO in 2004 could be the cause of the high OPM and NPM in 2004. The high TATO in 2004 and 2005 mean that the assets are more efficiently utilised for the revenue earned for these two years. The sudden drop in OPM and NPM in 2005 could be due to smaller revenue generated since the highest TATO is in 2005 with a concurrent low EM in the same year as is seen in figure 4.3.

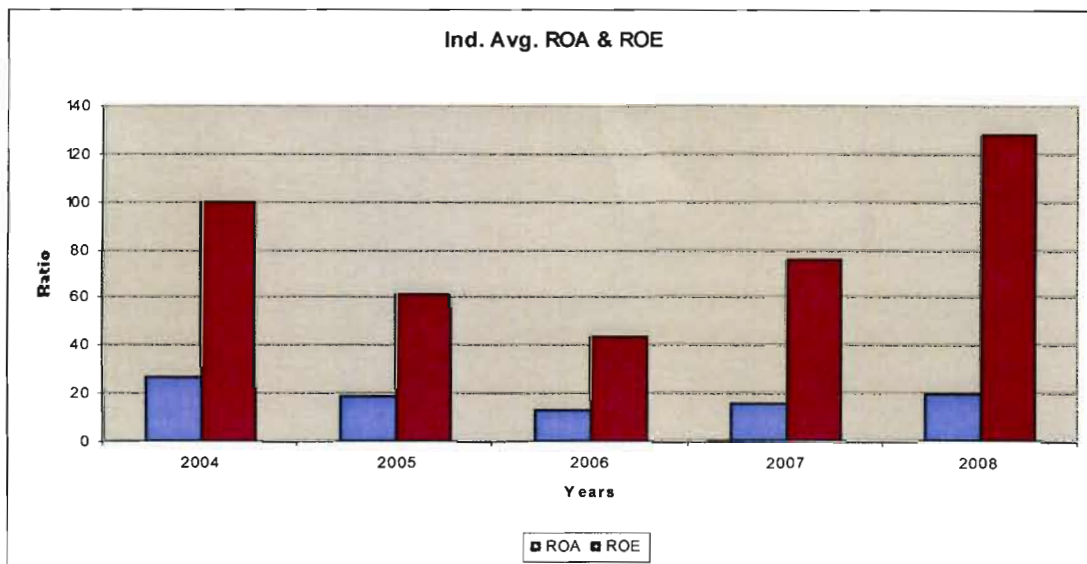
Figure 4.3: Industry average D/A & EM



(Source: Own)

In figure 4.3 it can be seen that the D/A ratio remains virtually unchanged over the five years while the EM first gradually decreases from 2004 to 2005 and then steeply increases from 2006 to 2008. Assuming that the equity remains unchanged, it means that the debt and assets both increased in tandem from 2006 to 2008. The assets become increasingly larger than the equity year after year over these three years. This also explains the lower TATO and lower OPM and NPM from 2006 to 2008 due to the higher assets acquired to generate the revenue. The combination of the two ratios indicates that more debt was used in acquiring the assets with each consecutive year. The impact of the high assets acquisition is evident in the ROA and ROE ratios as seen in figure 4.4.

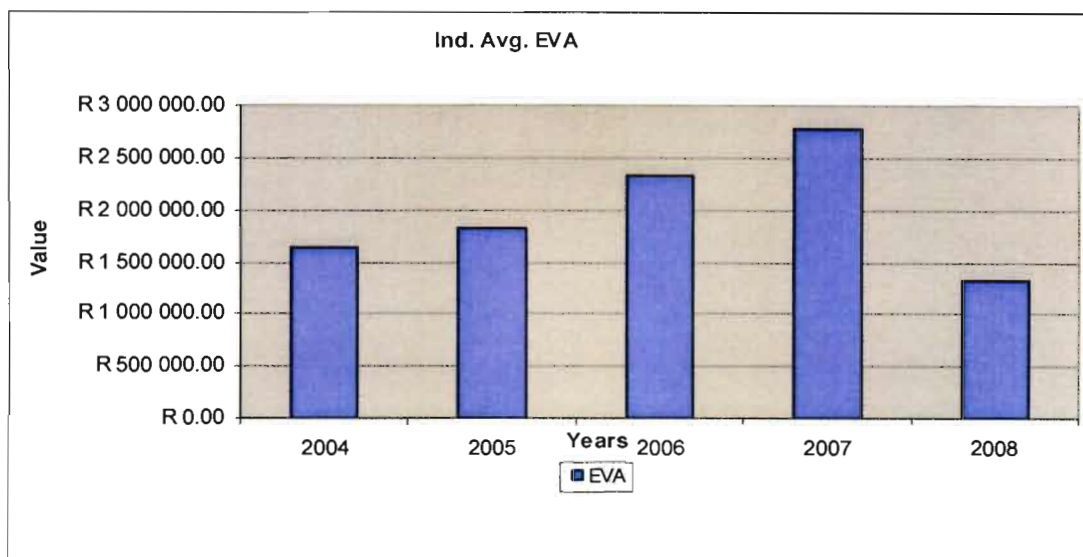
Figure 4.4: Industry average ROA & ROE



(Source: Own)

Figure 4.4 shows that there is not much change in the ROA, but a much greater fluctuation of ROE over the five years. Although both ratios show the same trend the ROA is always smaller than ROE for all five years. This substantiates the finding in figure 4.3 where the assets is much larger than the equity and therefore the net income to assets must be smaller than the net income to equity. The decrease from 2004 to 2006 and increase from 2006 to 2008 for both ratios is due to the same trend that was established for NPM in figure 4.1.

Figure 4.5: Industry average EVA



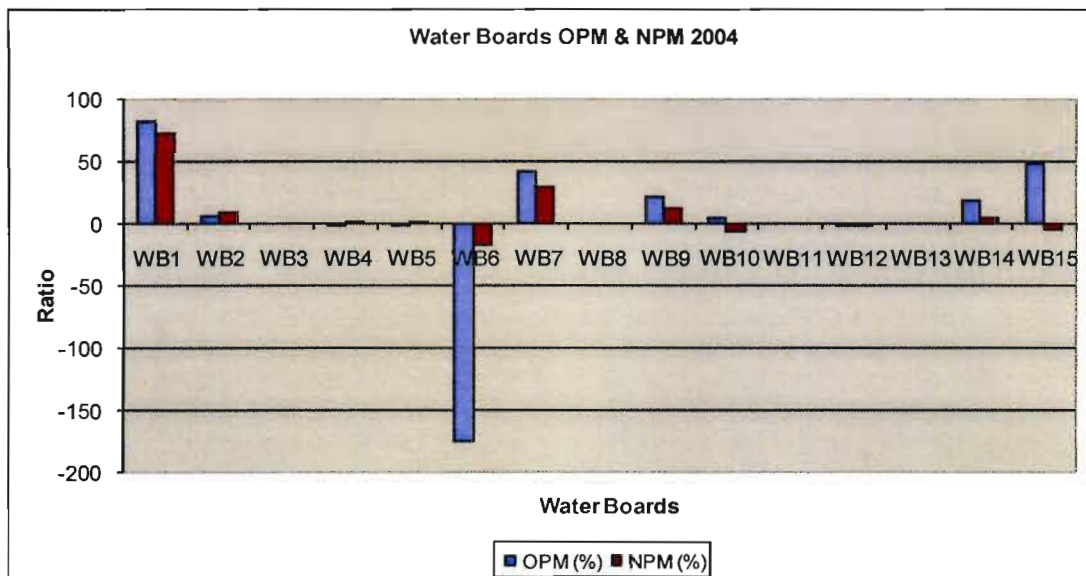
(Source: Own)

Figure 4.5 shows that the EVA for the industry average is positive for all five years. This means that the companies that make up the industry average all manage to create value. There is an increase in the value created from 2004 to 2007 and then a drop in 2008. The EVA values in figure 4.5 contrasts the ROE ratios in figure 4.4. This shows that ROE does not mean that value is created and therefore can not be used to establish whether value is created nor destroyed.

4.3 The Water Boards

The following graphs depict the financial performance measures of the Water Boards over the five years. The performance measures are calculated from the figures obtained from the income statements and balance sheets of the different Water Boards. The financial statements of the Water Boards are compiled in line with the PFMA and therefore adhere to the same accounting policy. The graphs are used to observe whether there are any trends and relationships between variables in an attempt to understand the financial management of the different Water Boards. The first five graphs show the performance measures for the year 2004.

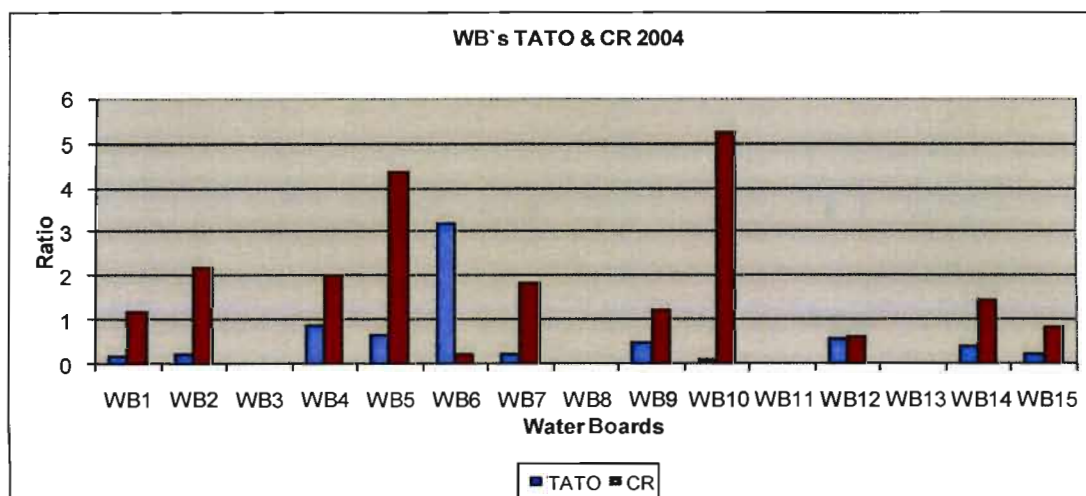
Figure 4.6: Water Boards OPM & NPM 2004



(Source: Own)

From figure 4.6 it can be seen that WB1 has the highest OPM and NPM than all the Water Boards for the year. WB6 has the lowest OPM and NPM of the year with both ratios being negative. The very large negative OPM for WB6 is due to the much higher operating cost than the revenue for 2004. The better figure for NPM of WB6 is due to a better net income caused by extraordinary income that was added after the operating cost was deducted. There seems to be no correlation between the OPM and NPM and TATO for WB1 as can be seen in figure 4.7.

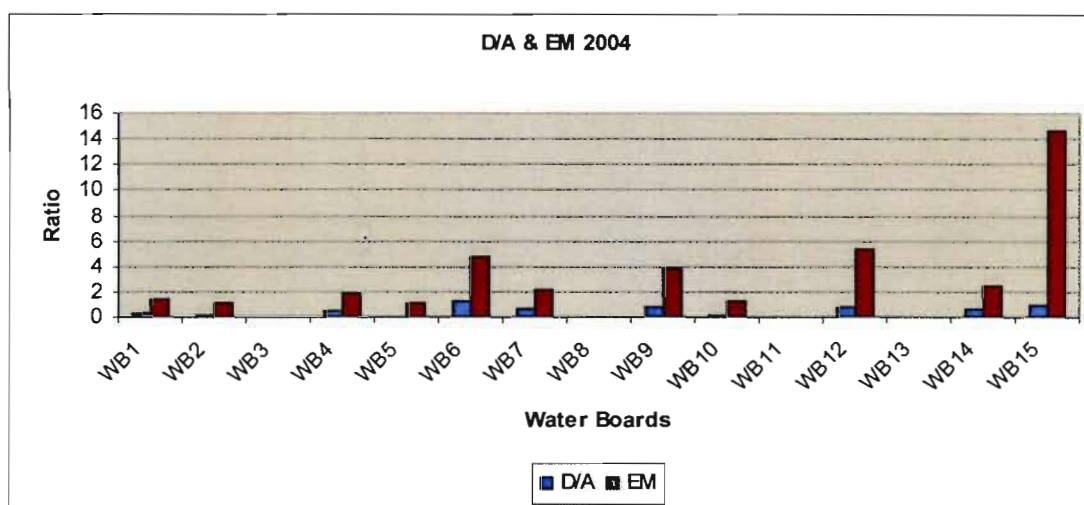
Figure 4.7: Water Boards TATO & CR 2004



(Source: Own)

In figure 4.7 WB1 has the second lowest TATO of all the Water Boards, which indicates a relatively low efficiency in its asset utilisation. Figure 4.7 shows that both the TATO and CR are positive for all the Water Boards for the year. WB10 has the highest CR, but also the lowest TATO. The high CR is due to the low current liabilities relative to its current assets and the low TATO is due to the higher total assets for the revenue that was generated in the year. The high TATO for WB6 is due to the low total assets that were used in generating much higher revenue.

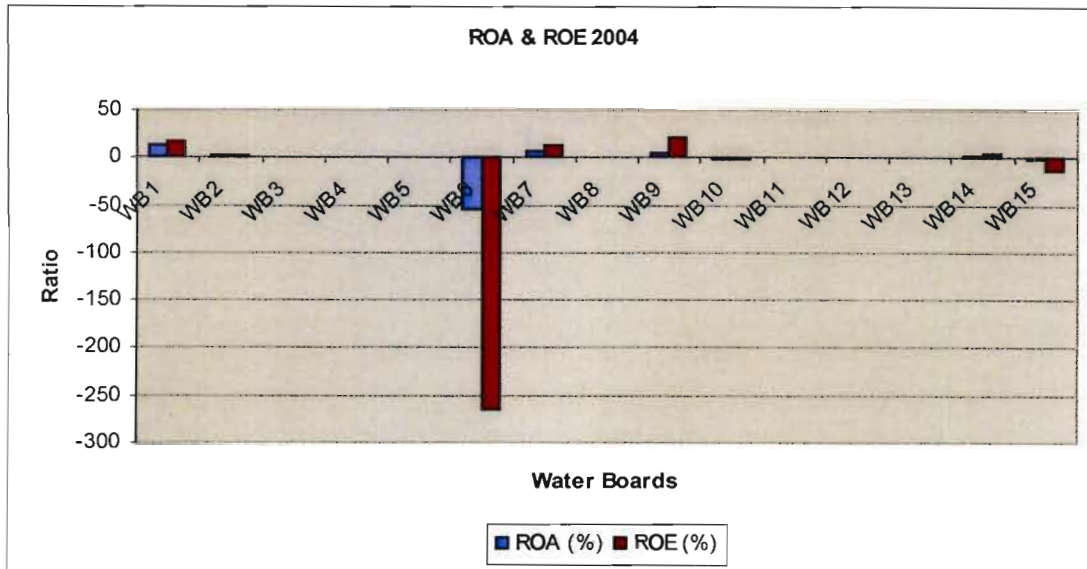
Figure 4.8: Water Boards D/A & EM 2004



(Source: Own)

The low total asset value is brought about by a low current asset value, which results in a low CR. Although WB6 has a high TATO due to a low total asset value, it also has a high EM due to a low equity value as can be seen in figure 4.8. In figure 4.8 the EM is always higher than the D/A ratio with WB15 having the highest EM. The high EM is due to the very high figure for total assets compared to the equity. The low D/A ratio is due to the total liabilities and total assets being more or less the same. WB5 Water has the lowest D/A ratio due to a lower total liabilities value than the total assets for the year. This is consistent with the high CR for WB5 as found in figure 4.7 where the current liabilities is lower than the current assets. The high OPM and NPM ratios for WB1 in figure 4.6 can be related to the ROA and ROA ratios in figure 4.9.

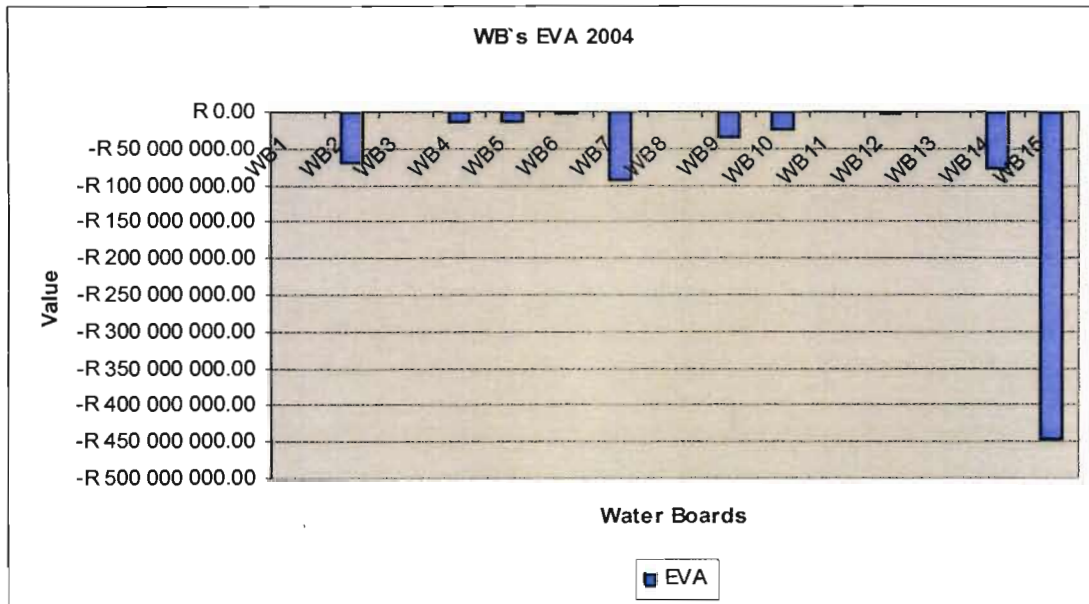
Figure 4.9: Water Boards ROA & ROE 2004



(Source: Own)

Figure 4.9 shows that both the ROA and ROE are low for all the Water Boards with WB1 having the highest ROA and the second highest ROE of all the Water Boards. The ROA appears to be lower than the ROE for each Water Board indicating that the assets are more than the equity for each Water Board and this is seen in the EM ratios of figure 4.8. This in conjunction with the D/A ratios may indicate an ineffective use of debt. The high negative ROE for WB6 is due to a large negative net income and a smaller equity value for the year. The smaller negative ROA for WB6 is due to the negative net income and a higher total assets value than the equity for the year. The negative ROA and ROE ratios are consistent with the negative OPM and NPM ratios found in figure 4.6. The EVA values as seen in figure 4.10 shows that there is no marked correlation between the financial ratios and the EVA of the Water Boards.

Figure 4.10: Water Boards EVA 2004

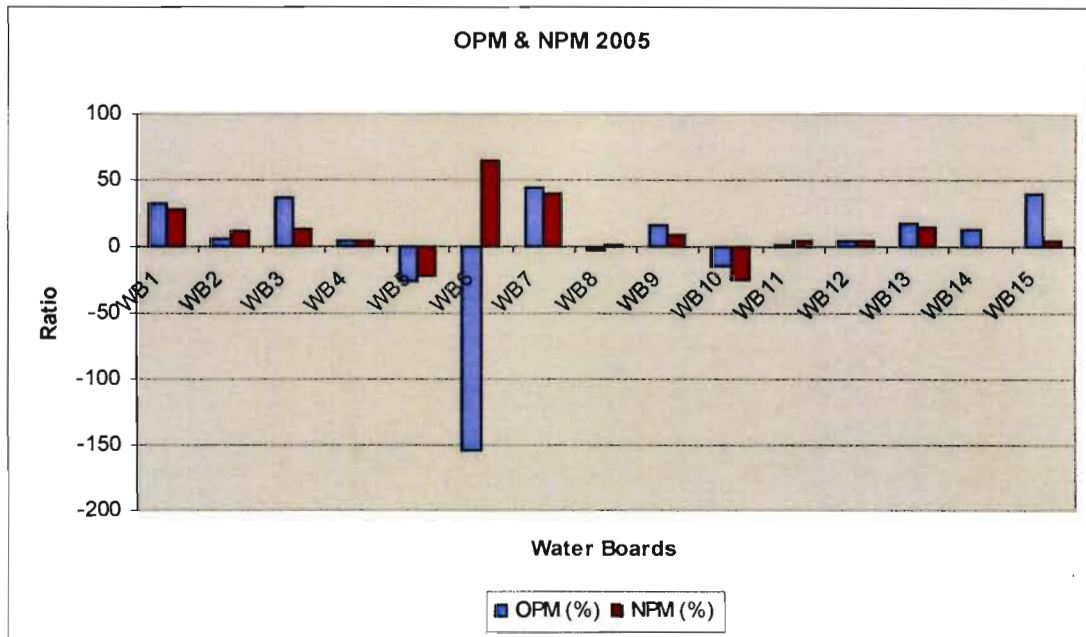


(Source: Own)

In Figure 4.10 it can be seen that all the EVA's of the Water Boards are negative for the year. This means that each Water Board has destroyed value through its operations and financial decisions. WB15 has the highest negative value for EVA and therefore has destroyed the most value when compared to the rest of the Water Boards. This is due to the higher magnitude of its operations and a concurrent high asset value, which causes a relatively higher WACC than is found in the rest of the Water Boards.

The following graphs are the performance measures of all the Water Boards for the year 2005.

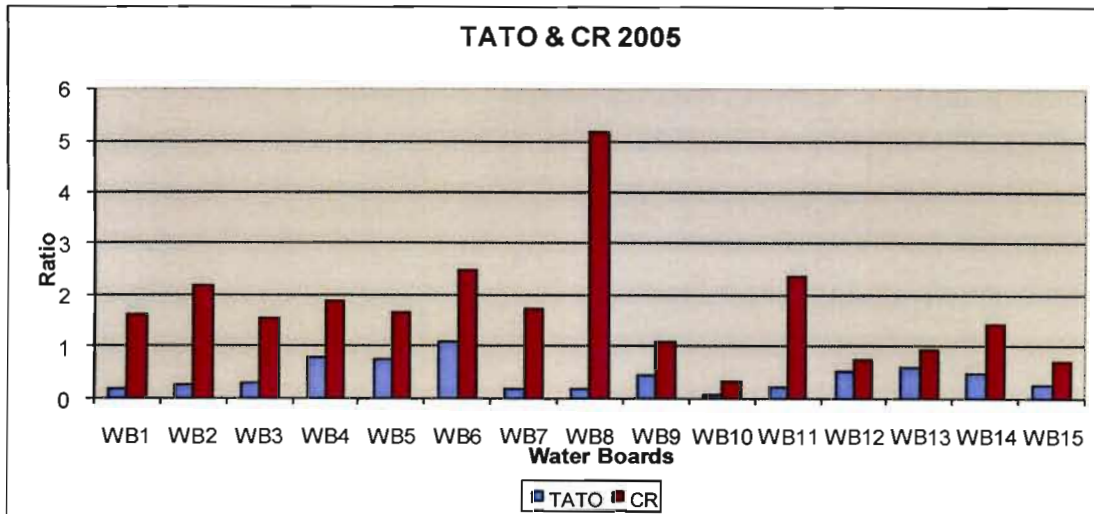
Figure 4.11: Water Boards OPM & NPM 2005



(Source: Own)

In figure 4.11 All the Water Boards have different values for both ratios, but generally there is a tendency of OPM being greater than NPM. This could be due to extraordinary expenses or high financing costs by the Water Boards. WB6 once again has a very large negative OPM and also the largest positive NPM. The negative OPM is due to the negative operating profit caused by an operating cost that is higher than its revenue. The positive NPM is caused by a larger positive net income relative to its revenue of all the Water Boards. The large NPM for WB6 is supported by the TATO in figure 4.12, which shows that WB6 is the only Water Board for the year with a TATO greater than 1.

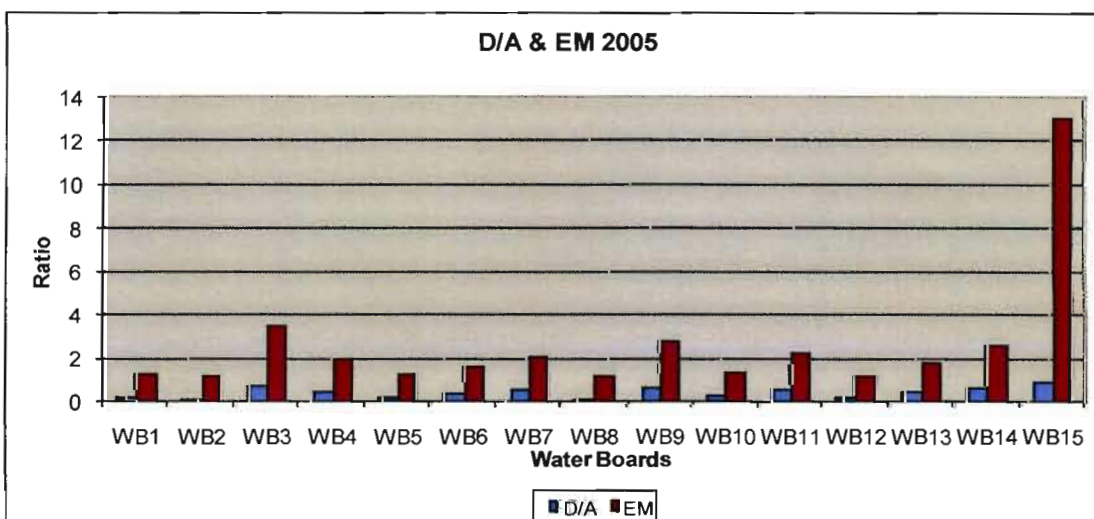
Figure 4.12: Water Boards TATO & CR 2005



(Source: Own)

In figure 4.12 it can be seen that for 2005 the CR is higher than TATO for all the Water Boards. The CR is greater than 1 for all, but four of the Water Boards. This shows that the current assets are less than the current liabilities for WB6, WB12, WB13 and WB15. Except for WB6, all the Water Boards have a TATO less than 1. This shows that for the rest of the Water Boards for 2005, the revenue generated is less than the total assets. This fact is emphasised for WB15 as seen in figure 4.13. It has the highest EM of all the Water Boards for the year.

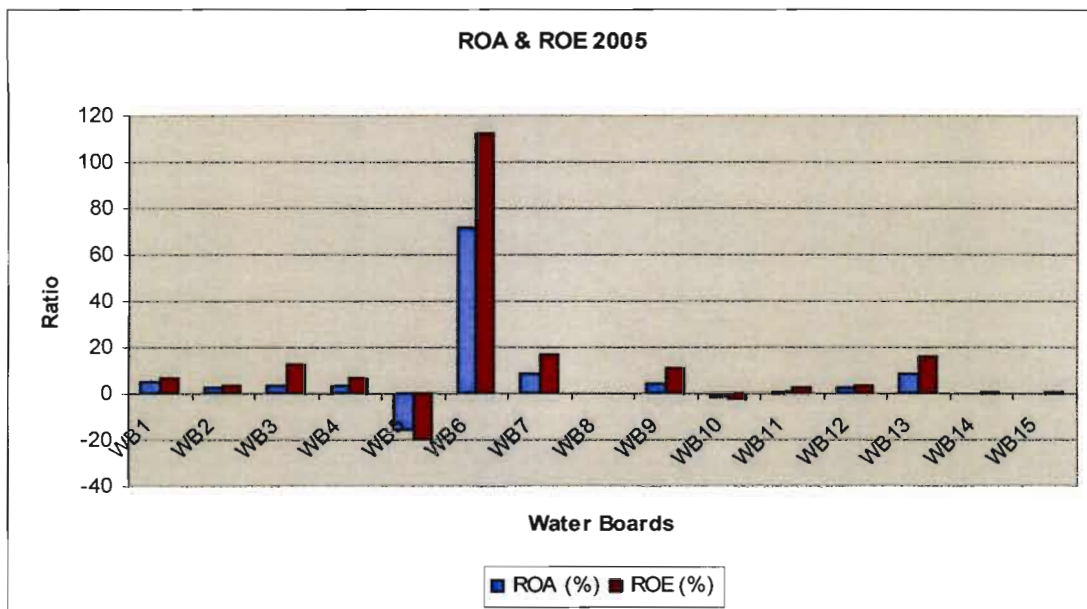
Figure 4.13: Water Boards D/A & EM 2005



(Source: Own)

This is due to a very low equity value as compared to the total assets. This means that the total assets are financed mostly by debt, specifically long term debt. A ratio of 0.9 for the D/A ratio for WB15 confirm the latter statement. The rest of the Water Boards have better D/A and EM ratios than WB15 in that less debt is used for the acquisition of assets. The acquisition of assets that are not fully utilised is further proven by the ROA and ROE ratios as seen in figure 4.14 with WB15 having the some of the lowest ROA and ROE ratios relative to most of the Water Boards.

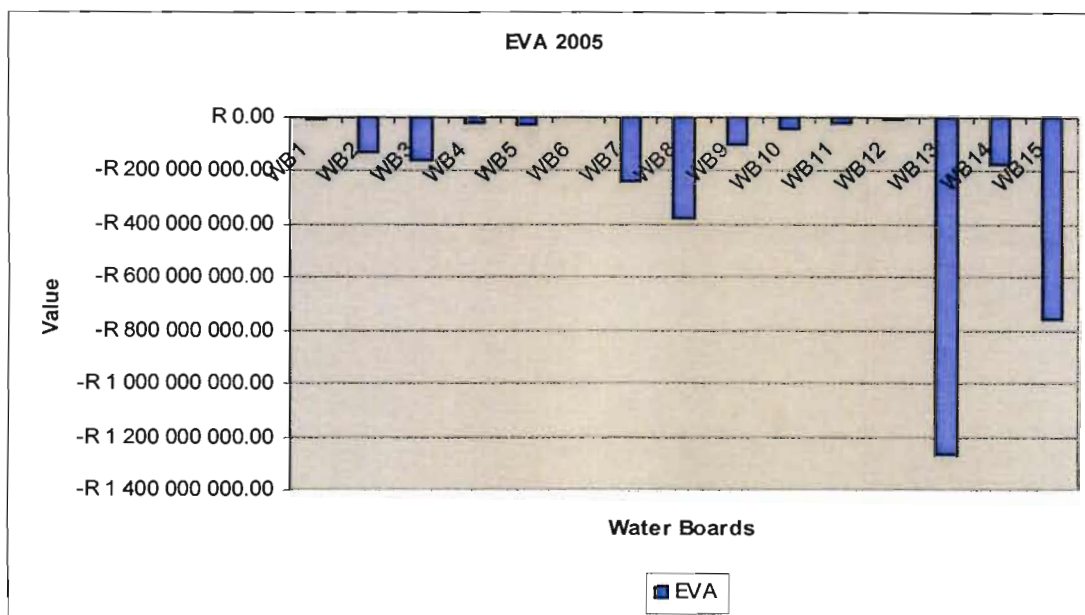
Figure 4.14: Water Boards ROA & ROE 2005



(Source: Own)

Figure 4.14 shows that WB5 has the largest negative ROA and ROE due to a negative net income. WB6 has the highest ROA and ROE for the year. This is to be expected since it has the largest net income of all the Water Boards with a relatively low equity as seen in figure 4.13 for WB6. A greater ROE than ROA for WB6 in figure 4.14 indicates that the assets are larger than the equity of the Water Boards for 2005. This, together with the D/A and EM ratios in figure 4.13, points to the ineffective use of debt for WB6 for the year. There is some correlation that can be drawn between the EVA in figure 4.15 and the rest of the ratios with respect to the Water Boards.

Figure 4.15: Water Boards EVA 2005

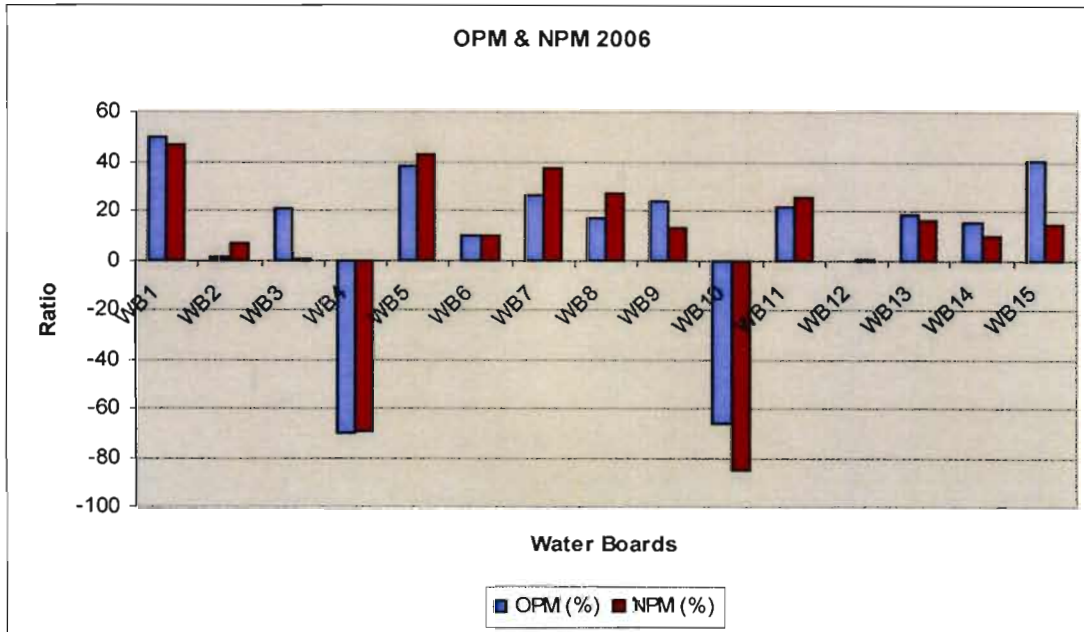


(Source: Own)

From figure 4.15 it can be seen that all the Water Boards destroyed value in 2005. WB6 has the highest EVA and WB13 the lowest EVA with WB15 having the second lowest EVA for the year. WB6 had the highest NPM, TATO, ROA and ROE of all the Water Boards for the year, while WB13 and WB15 had lower values for the same ratios. WB15 had the highest EM and very low returns, which could be the reason why the EVA is so low and value is destroyed. This points to an ineffective use of debt in acquiring too much assets and the inefficient use of the assets of the WB15.

The following graphs are the performance measures of the Water Boards for the year 2006.

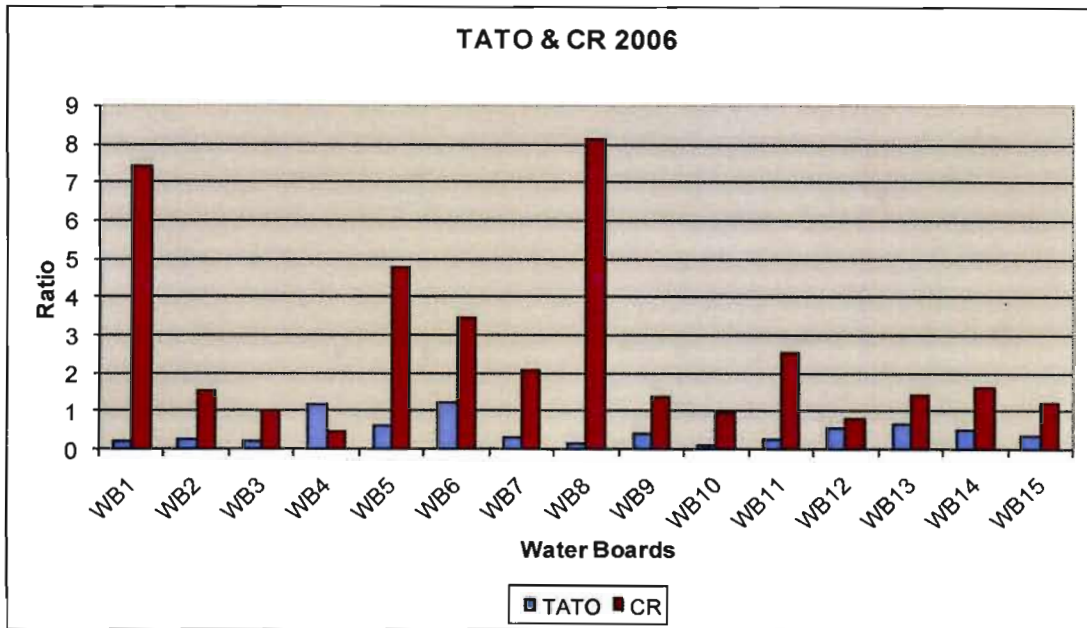
Figure 4.16: Water Boards OPM & NPM 2006



(Source: Own)

In figure 4.16 it can be seen that OPM is lower than NPM for six of the Water Boards due to the extraordinary income that is added to the net income of these Water Boards. OPM is higher than NPM for six of the Water Boards because no extra income is added to the net income for these Water Boards. One Water Board has equal OPM and NPM and WB4 and WB10 have negative OPM and NPM. Both WB4 and WB10 have negative operating profit and net income for 2006. This could be the result of the sum of the costs of sales, operational costs and financing costs being greater than the revenue generated in both cases. WB1 has the highest OPM and NPM of all the Water Boards for the year. The TATO in figure 4.17 does not corroborate the findings in figure 4.16.

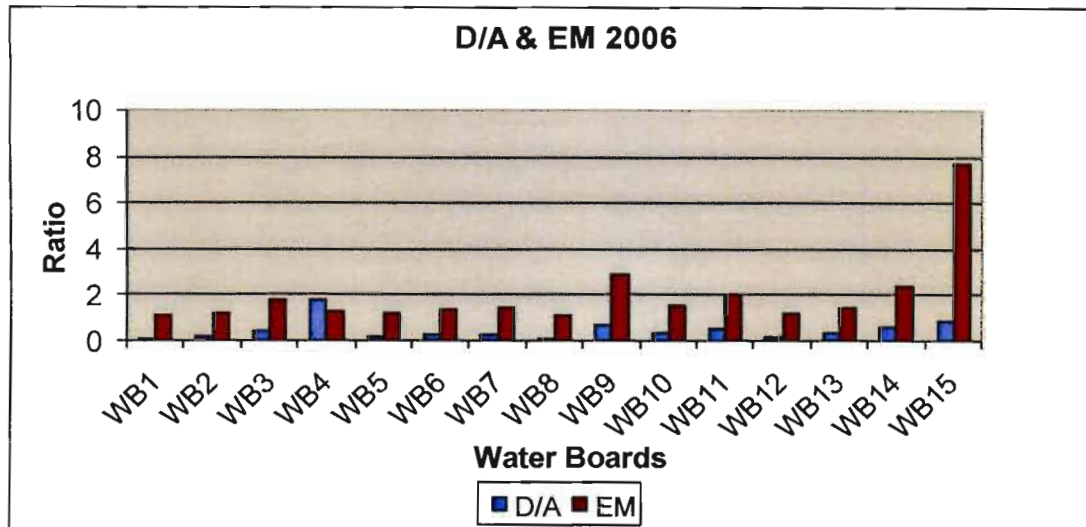
Figure 4.17: Water Boards TATO & CR 2006



(Source: Own)

WB1 with the highest OPM and NPM has TATO that is less than one and the third smallest of all the Water Boards. WB6 has low OPM and NPM ratios relative to the rest of the Water Boards yet it has the highest TATO of all the Water Boards for the year. WB4 is the only Water Board with TATO higher than CR and the second largest TATO of all the Water Boards for the year yet it is one of only two Water Boards with negative OPM and NPM ratios for the year. WB4 has the lowest CR for 2006. This is due to the low current assets to the current liabilities. WB6 has a much higher CR due to its high current asset value for 2006, but has a TATO that is equal to that of WB4. Both of these Water Boards have a TATO that is greater than one and the highest for the year and therefore generated higher revenue than the value of the assets used in generating the revenue. The differences between the Water Boards are that WB4 has higher current liabilities and WB6 has higher current assets making up the total assets of the two Water Boards.

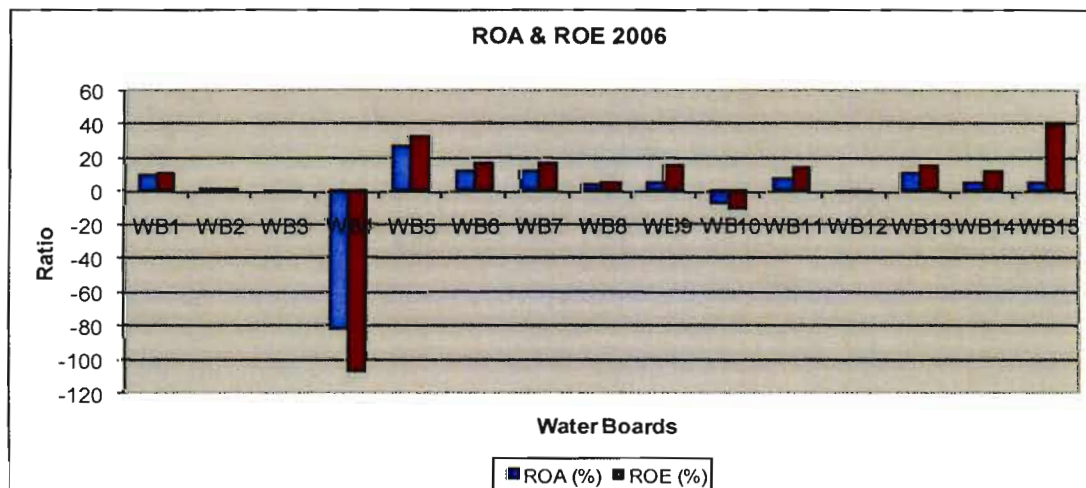
Figure 4.18: Water Boards D/A & EM 2006



(Source: Own)

In figure 4.18 all the Water Boards have a higher EM than D/A ratio except for WB4 with the highest D/A ratio, which is also higher than the EM. WB4 has the only D/A ratio greater than one, which means that WB4 has higher debt than its total assets for 2006, which explains the high TATO due to the low total asset value found in figure 4.17. WB15 has the highest EM for 2006, which shows that its total assets are far greater than its equity relative to all the other Water Boards for the year. The total assets are mostly financed with debt, which can be seen in a D/A ratio of 0.87. This finding is supported by the ROA and ROE in figure 4.19 with a ROE much higher than ROA for WB15.

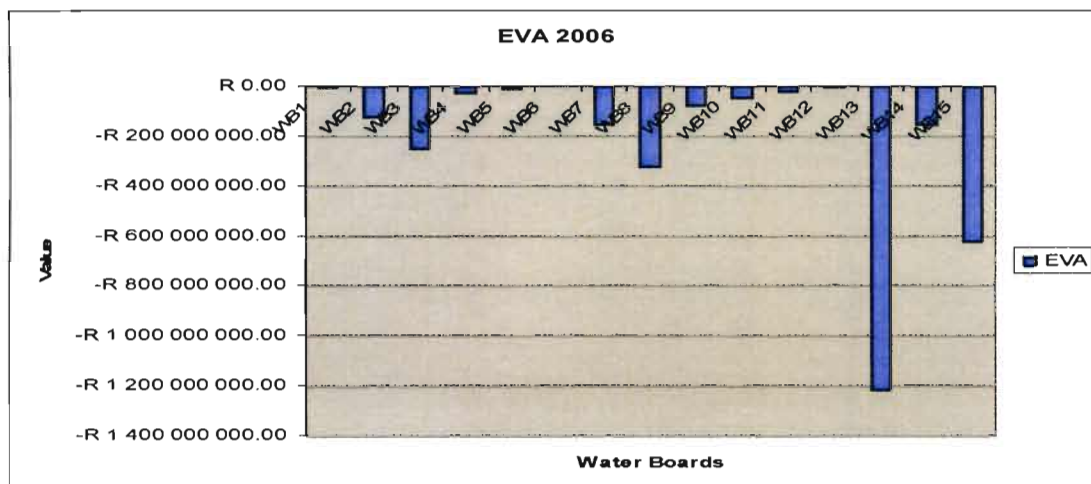
Figure 4.19: Water Boards ROA & ROE 2006



(Source: Own)

In figure 4.19 WB4 and WB10 are the only two Water Boards with negative ROA and ROE due to a negative net income, which is confirmed by the negative OPM and NPM found in figure 4.16 for these two Water Boards. WB4 has the largest negative ROA and ROE than all the Water Boards due to the largest negative net income for the year. This is a result of the operational cost that is larger than the revenue of all the Water Boards for the year. The EVA as found in figure 4.20 does not reflect the findings for the other ratios. WB4 with the lowest returns has one of the least negative EVA values of all the Water Boards for the year. WB15 with the highest ROE has the second largest negative EVA of all the Water Boards of the year.

Figure 4.20: Water Boards EVA 2006

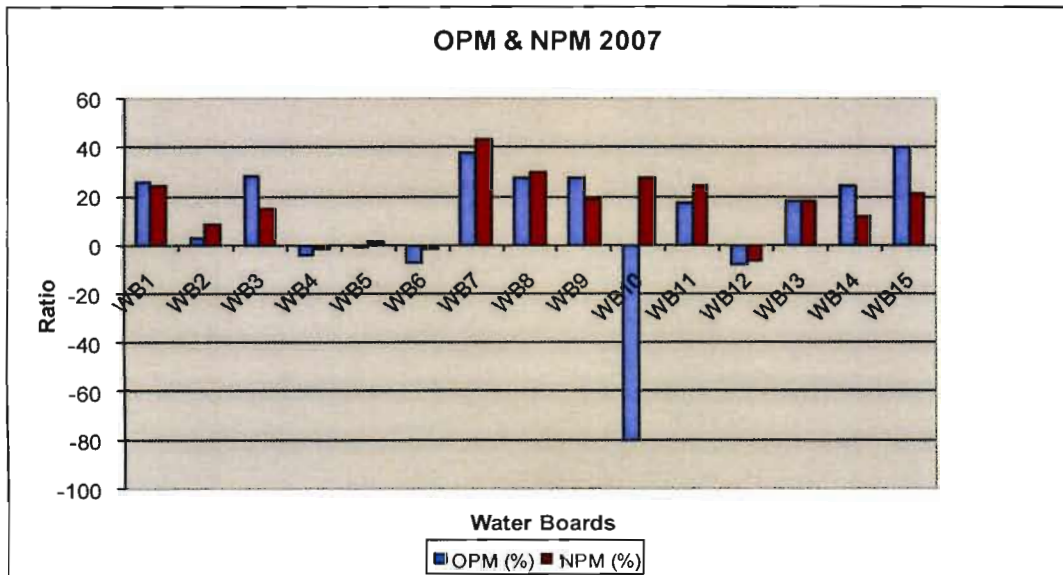


(Source: Own)

The negative EVA as seen in figure 4.20 shows that all the Water Boards destroyed value. Figure 4.20 shows that WB13 has the highest negative EVA of all the Water Boards followed by WB15 for 2006. These two Water Boards have the highest revenues and operating profits of all the Water Boards for the year, but also the highest WACC and TOC and therefore destroy the most value through its operations.

The following graphs are the performance measures of the Water Boards for the year 2007.

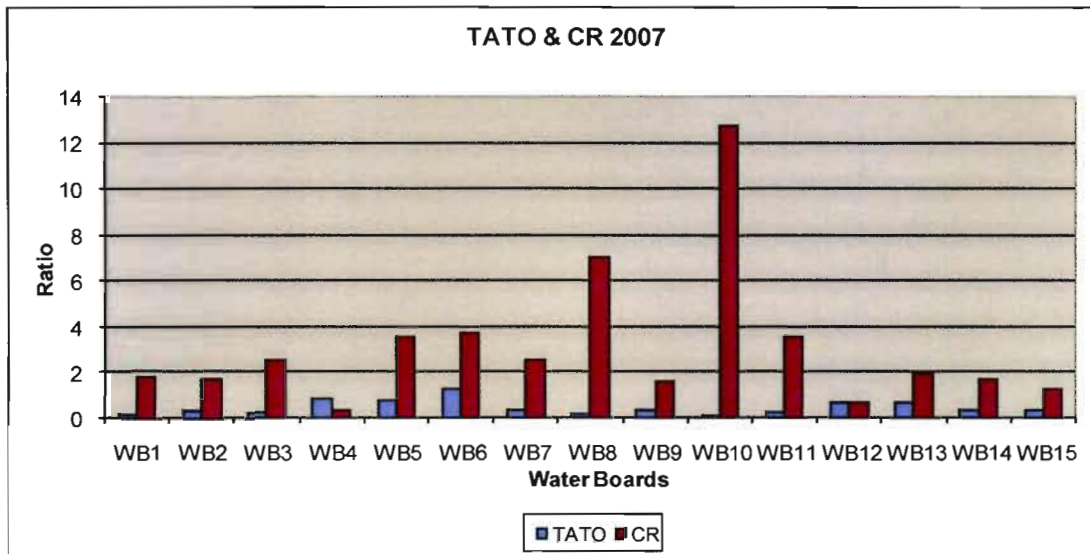
Figure 4.21: Water Boards OPM & NPM 2007



(Source: Own)

In figure 4.21 WB10 has the highest negative OPM for 2007 because it has the largest negative operating profit of all the Water Boards for the year. The OPM and NPM readings for all the Water Boards differ from one another both in magnitude and in which of the two ratios is higher than the other. A higher NPM than OPM generally indicates that other income was factored in with the non-operating profit to calculate the net income. The negative OPM of WB10 is supported by the highest CR and the lowest TATO it has of all the Water Boards of the year as found in figure 4.22.

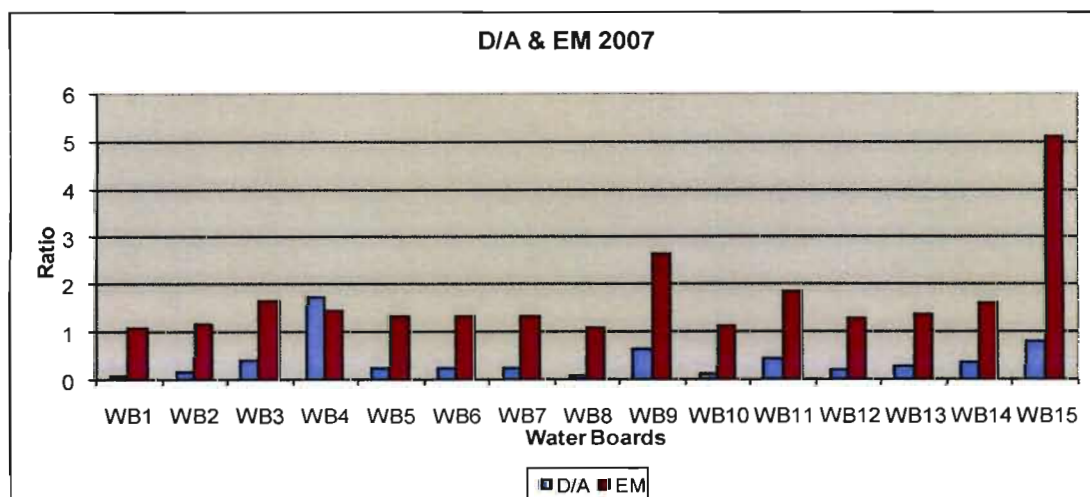
Figure 4.22: Water Boards TATO & CR 2007



(Source: Own)

In figure 4.22 all the Water Boards except for WB4 have a higher CR than TATO for 2007 with WB10 having the highest CR and also the lowest TATO. This means that WB10 has the highest current assets to current liabilities ratio and also the highest total assets used for the revenue generated in 2007. This leads to higher operational costs than revenue and a resulting in a negative OPM found in figure 4.21. WB6 has the highest TATO for the year with revenue slightly higher than the total assets used, yet both the OPM and NPM are negative from figure 4.21.

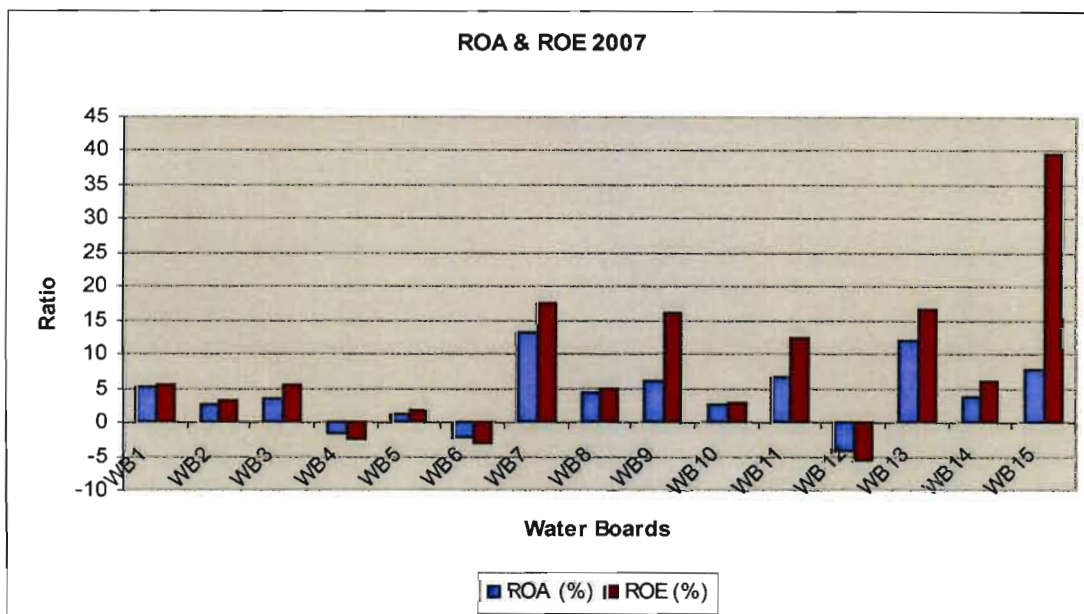
Figure 4.23: Water Boards D/A & EM 2007



(Source: Own)

In figure 4.23 WB4 once again is the only Water Board that differs from the rest of the Water Boards. All the Water Boards except for WB4 have a higher EM than D/A ratio with WB15 having the highest EM. The high EM is the result of a higher assets value in relation to equity, which means that a higher debt is used to finance the total assets. WB4 has the highest D/A ratio for the year with its total liabilities almost two times higher than its total assets. This shows that WB4 operates with a very low asset value in generating revenue. This finding is confirmed by the lowest CR and the second largest TATO for WB4 of all the Water Boards for 2007 as found in figure 4.22. The negative ROA and ROE for WB4 and WB6 in figure 4.24 is in line with the negative OPM and NPM in figure 4.21.

Figure 4.24: Water Boards ROA & ROE 2007

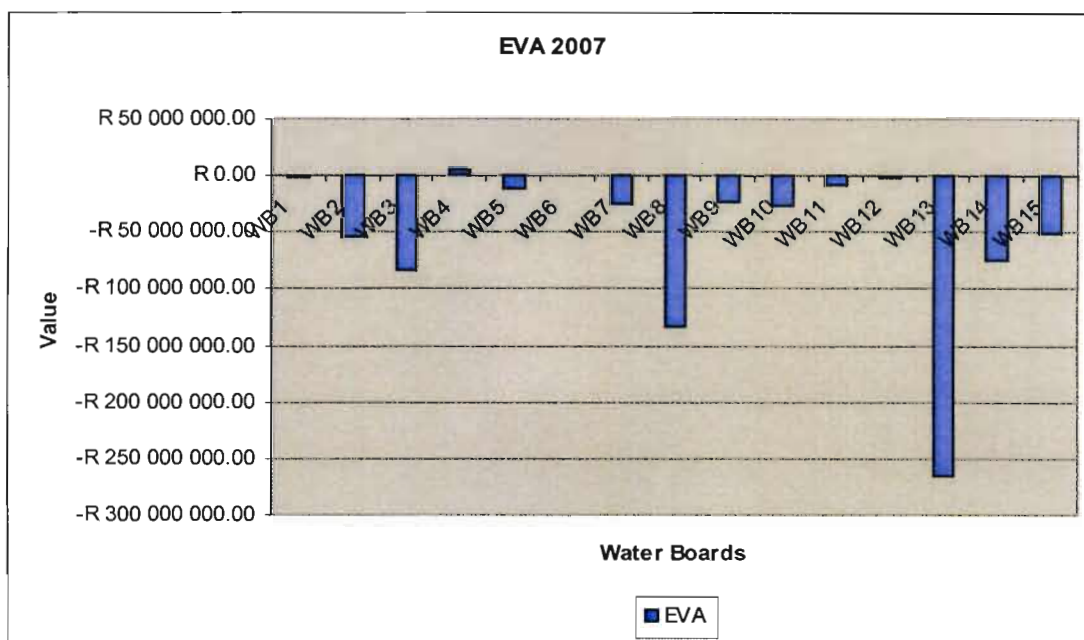


(Source: Own)

In figure 4.24 a general trend is observed of ROA being lower than ROE for the Water Boards in 2007, which indicates a higher asset value than equity for the Water Boards. WB15 has the highest ROE of the year, which is to be expected since it also has the highest EM for the year as seen in figure 4.23. This confirms that it uses much debt to finance its assets. Although WB15 has a relatively low TATO, the returns are positive due to the magnitude of its operations. This is in line with its large positive OPM and NPM values for the year. The low TATO and high assets value for the year in this instance points

to an ineffective use of debt in acquiring unnecessary assets because WB15 seems to require fewer assets to generate revenue due to its scale of operations. WB12 has the highest negative ROA and ROE due to the highest negative net income of all the Water Boards for the year. WB7 has the largest ROA and the second largest ROE of all the Water Boards, which is in line with the OPM and NPM as seen in figure 4.21 yet the rest of the ratios do not differ much from the rest of the Water Boards. This stands to reason that the only advantage WB7 would have is the efficiency of its operations. The fact that the ratios do not indicate whether value is created or destroyed is evident in the EVA values of the Water Boards in figure 4.25.

Figure 4.25: Water Boards EVA 2007



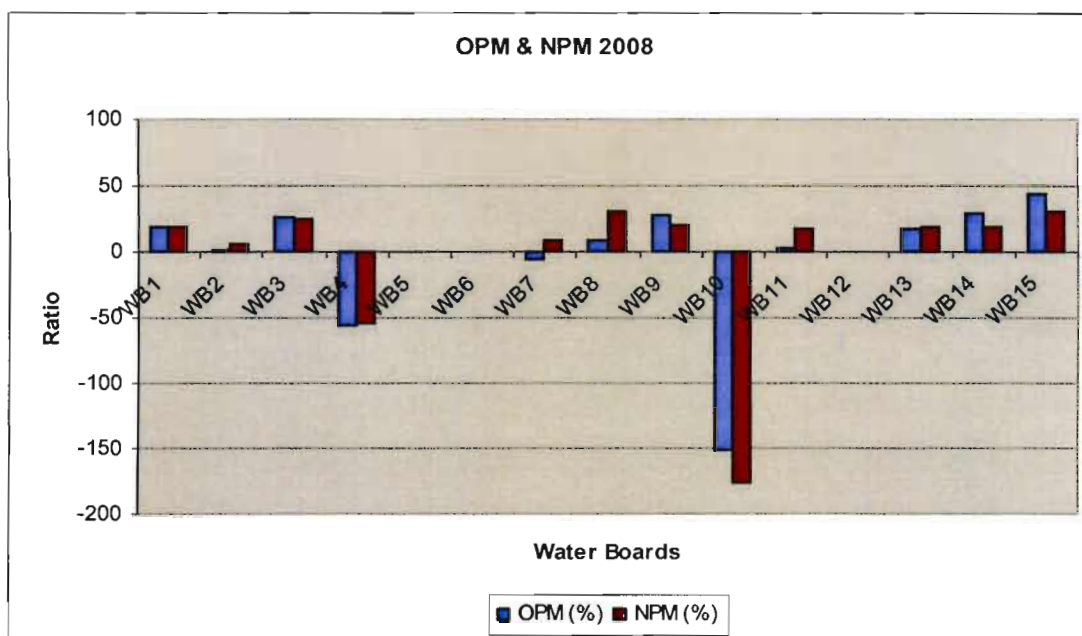
(Source: Own)

In figure 4.25 WB13 has the most negative EVA and WB4 the only positive EVA of all the Water Boards for the year. These two Water Boards differ in the magnitude of its operations. WB13 has a much higher revenue and equity used in its operations. With this comes a much greater cost of equity and therefore a smaller EVA. WB4 has a positive EVA due to a higher operating profit than its WACC. WB4, WB6 and WB12 have the only negative ROA and ROE ratios yet the highest EVA of all the Water Boards for 2007. WB13 with the largest negative EVA has the second largest ROA and the third largest

ROE of the Water Boards for the year. There seems to be no correlation between the EVA and the financial ratios of the Water Boards.

The following graphs depict the chosen financial performance measures for the 15 Water Boards for the year 2008. Three of the Water Boards do not have data for 2008 and therefore no ratios could be calculated. The three Water Boards are: WB5, WB6 and WB12.

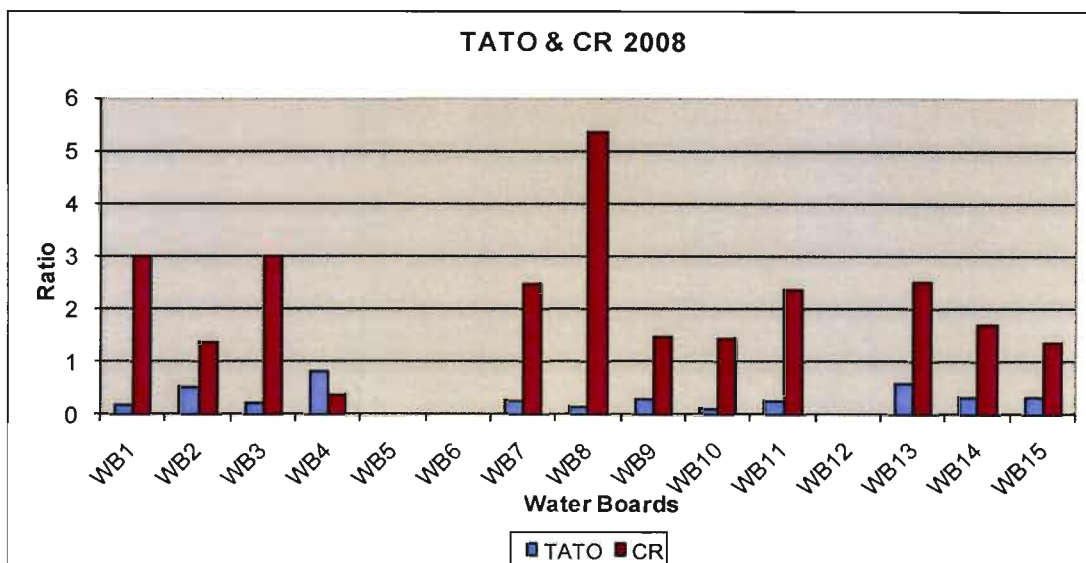
Figure 4.26: Water Boards OPM & NPM 2008



(Source: Own)

In figure 4.26 WB10 has the highest negative OPM and NPM due to having the largest negative operating profit and net income for 2008. WB4 has the second largest negative operating profit and net income for the year. WB15 has the highest OPM and NPM for 2008 with a higher OPM than NPM, which means that the operating profit is higher than the net come for the Water Board. WB4 is the only other Water Board besides WB10 with a negative OPM and NPM and also has the highest TATO and D/A ratio with the lowest EM of all the Water Boards for 2008 as seen in figure 4.27 and 4.28 respectively. This means that WB4 has a very low total asset value in relation to its revenue generated and therefore an ineffective use of debt.

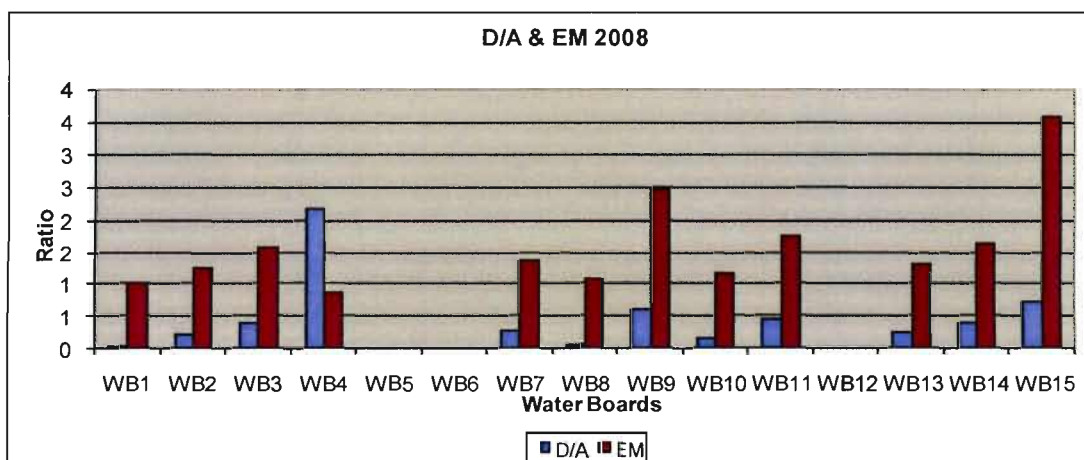
Figure 4.27: Water Boards TATO & CR 2008



(Source: Own)

In figure 4.27 all the Water Boards except for WB4 has a higher CR than TATO for 2008. This is similar to the trend observed in 2007 as is seen in figure 4.22. WB4 also has the highest TATO of all the Water Boards for the year, although the revenue is still less than the total assets employed. WB8 has the highest CR, which means it has the highest current assets to cover its current liabilities for the year. WB10 has the lowest TATO for the year, which could be the cause of its negative returns as seen in figure 4.29.

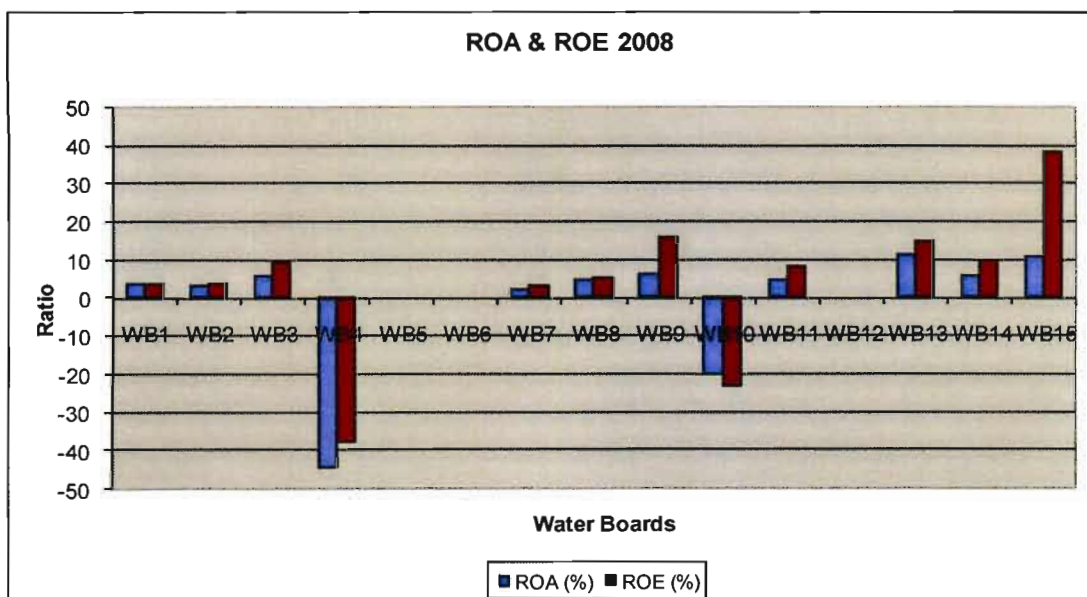
Figure 4.28: Water Boards D/A & EM 2008



(Source: Own)

In figure 4.28 WB4 once again is the only Water Board that differs from the rest in terms of its D/A ratio and EM. WB4 also has the highest D/A ratio of all the Water Boards due to its high total liabilities. WB1 Water has the lowest D/A ratio of all the Water Boards for the year due to a very low debt compared to its total assets. This is supported by the high CR found in figure 4.27. WB15 has the highest EM of all the Water Boards due to the magnitude of its operations. This is evident in the fact that it has the largest returns of all the Water Boards for the year as seen in figure 4.29.

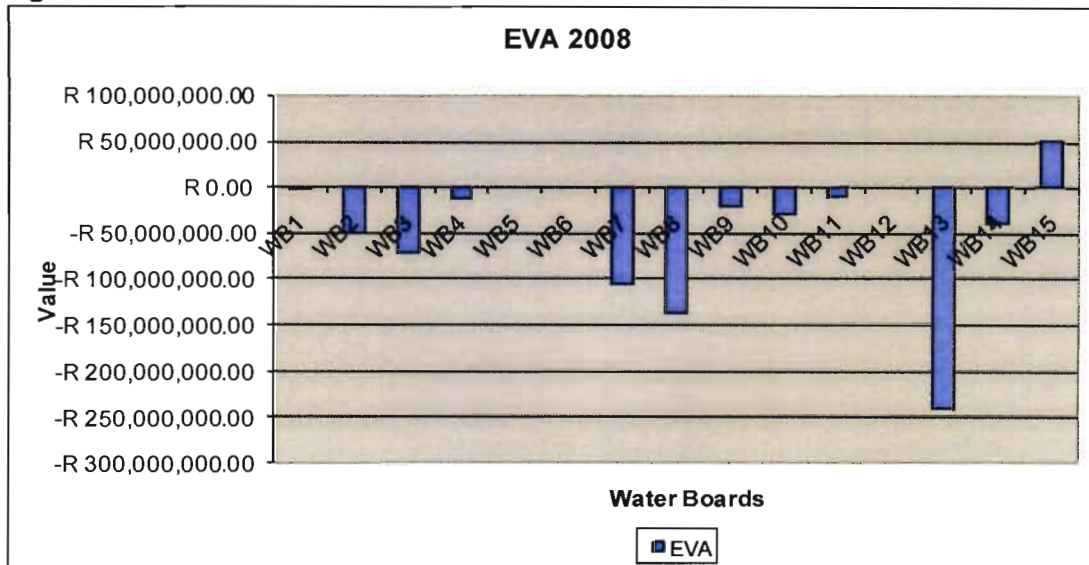
Figure 4.29: Water Boards ROA & ROE 2008



(Source: Own)

From figure 4.29 WB4 has the highest negative ROA and ROE for 2008 and this is in line with the negative OPM and NPM as seen in figure 4.26. WB15 has the highest ROE and second highest ROA of all the Water Boards for the year. WB10 has both negative ROA and ROE due to its negative net income for the year, which is an indication of its inefficient operations as is evident in figure 4.26 with negative OPM and NPM ratios. The returns as seen in figure 4.29 once again do not truly reflect what is found in figure 4.30 for EVA.

Figure 4.30: Water Boards EVA 2008



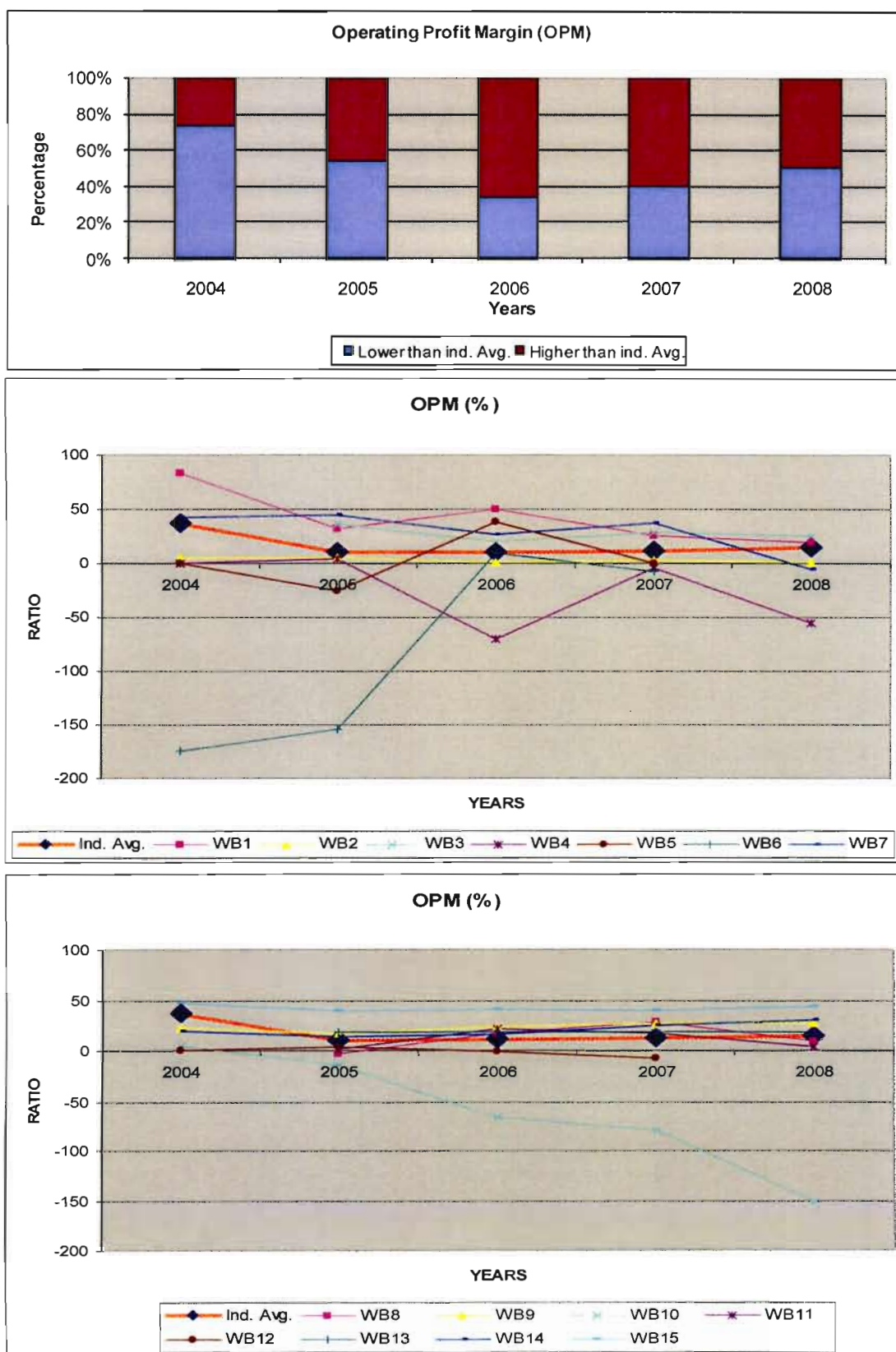
(Source: Own)

In figure 4.30 it is seen that WB15 is the only Water Board with a positive EVA for 2008 due to its higher operating profit than its WACC. It also the highest returns from figure 4.29 for 2008. WB13 has the largest negative EVA of all the Water Boards for the year due to its higher WACC than its operating profit yet it has the second largest ROA and ROE of all the Water Boards for the year. WB4 and WB10 have the only negative returns in figure 4.29, but have two of the highest EVA values of all the Water Boards for 2008.

4.4 Benchmarking

The following graphs show how the fifteen Water Boards compare to the industry average. Each financial performance measure is compared by means of a percentage bar graph and a line graph. The bar graph is used to show what percentage of the Water Boards have higher and lower than industry average values for each of the five years covered by the research. The line graph shows which of the Water Boards have higher and lower values for each variable investigated than industry average for every year.

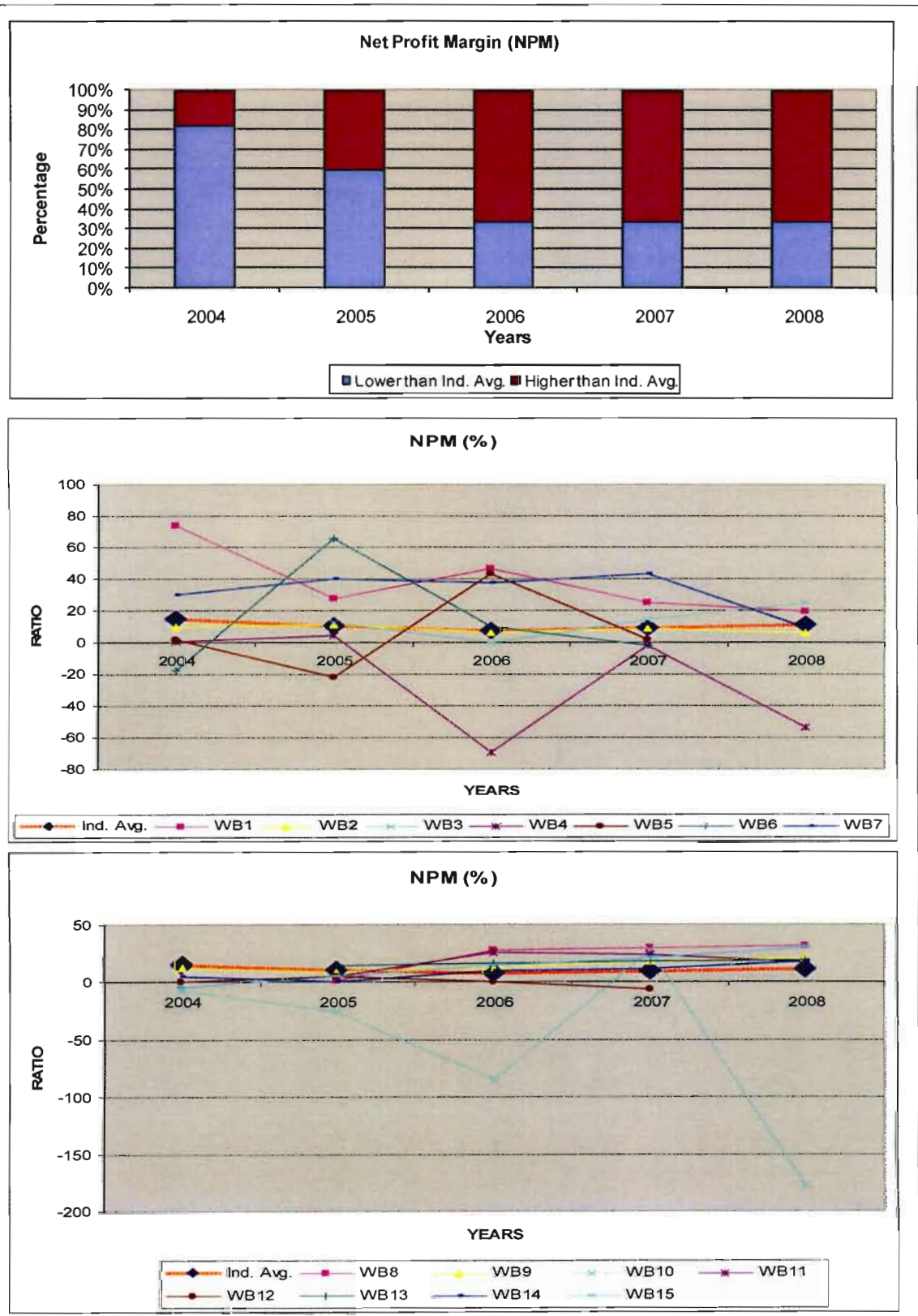
Figure 4.31: Benchmarking of OPM



(Source: Own)

In figure 4.31 with respect to the OPM, about 70 percent of the Water Boards have values lower than industry average in 2004. The percentage of Water Boards that has an OPM lower than the industry average drops to 30 percent in 2006 and gradually rises to about 50 percent in 2008. WB1, WB3, WB7 and WB15 are the Water Boards that have consistently higher values than the industry average over all five years. This means that these four Water Boards have more effective and efficient operations in that the costs incurred in generating the revenue is lower than for the industry average. The rest of the Water Boards perform worse than the industry average in minimising costs to generate revenue.

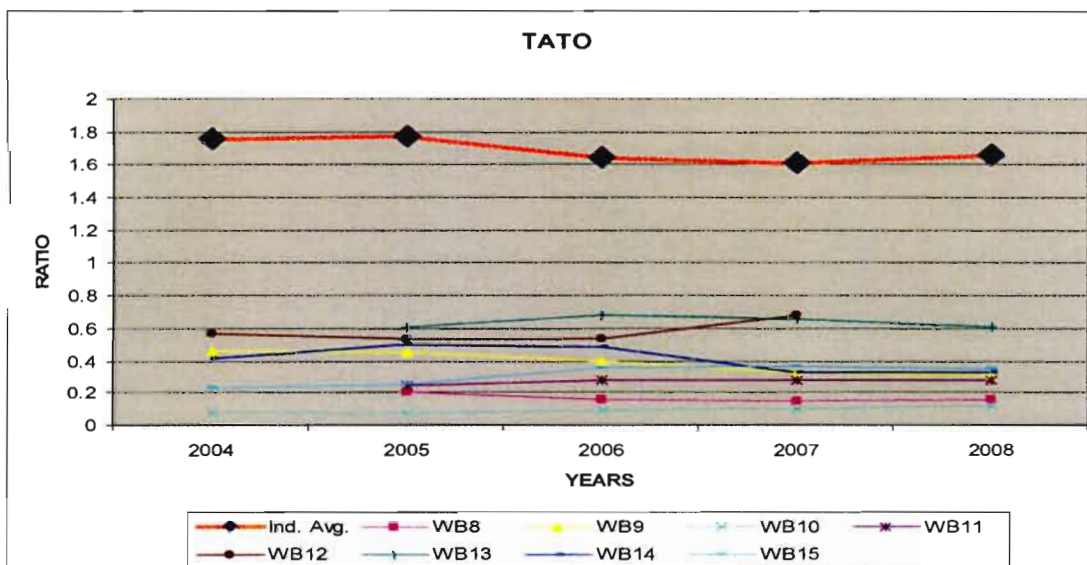
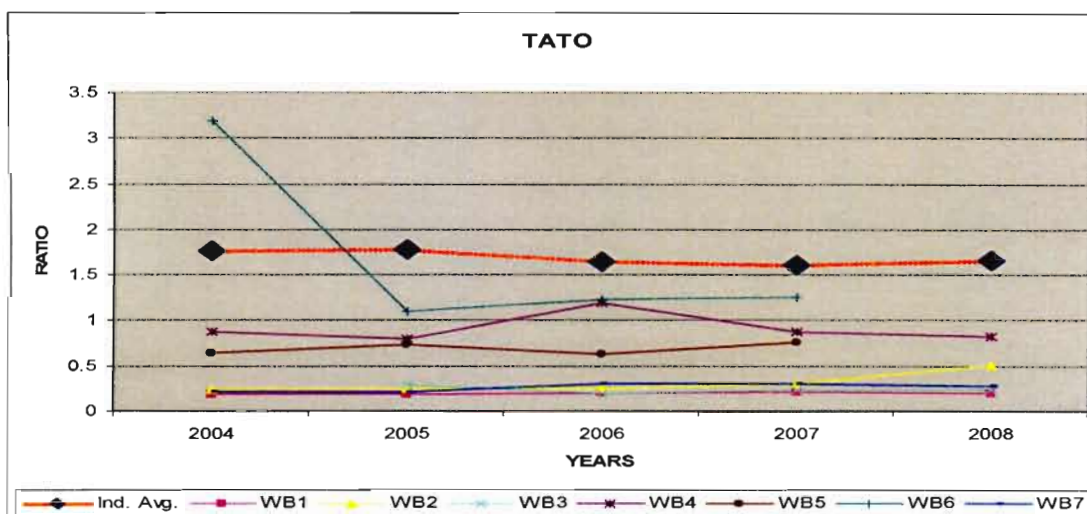
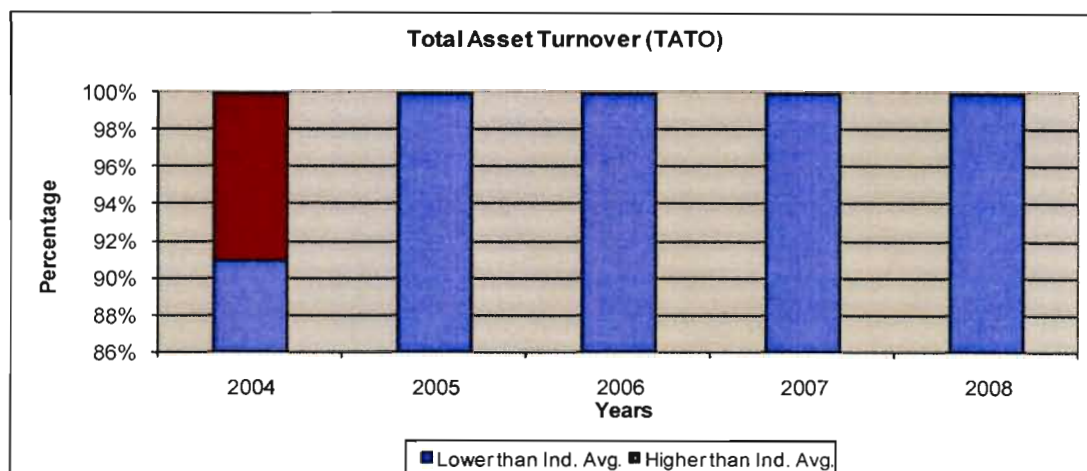
Figure 4.32: Benchmarking of NPM



(Source: Own)

The OPM and NPM have a similar trend as can be seen in figure 4.31 and 4.32 respectively and indicate that the Water Boards perform increasingly better from 2004 to 2006 and then the performance gradually worsens from 2006 to 2008. The sub-par results in 2004-2005 for the Water Boards with respect to the NPM in figure 4.32 could be due to the high costs associated with inefficient operations and the heavy use of debt. The increases in NPM in 2006-2008 therefore could signal more efficient operations and optimal use of financial leverage.

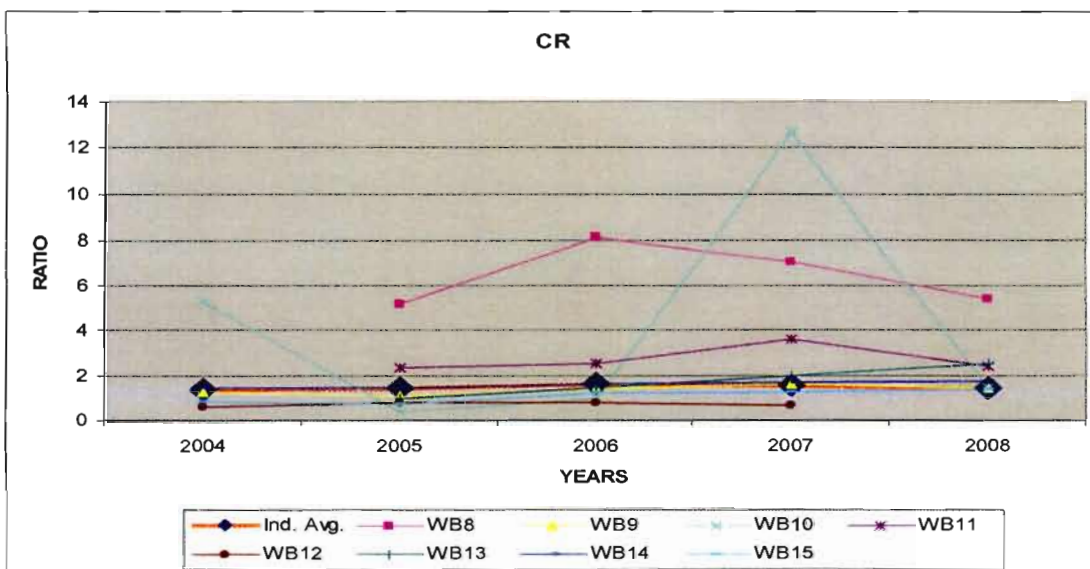
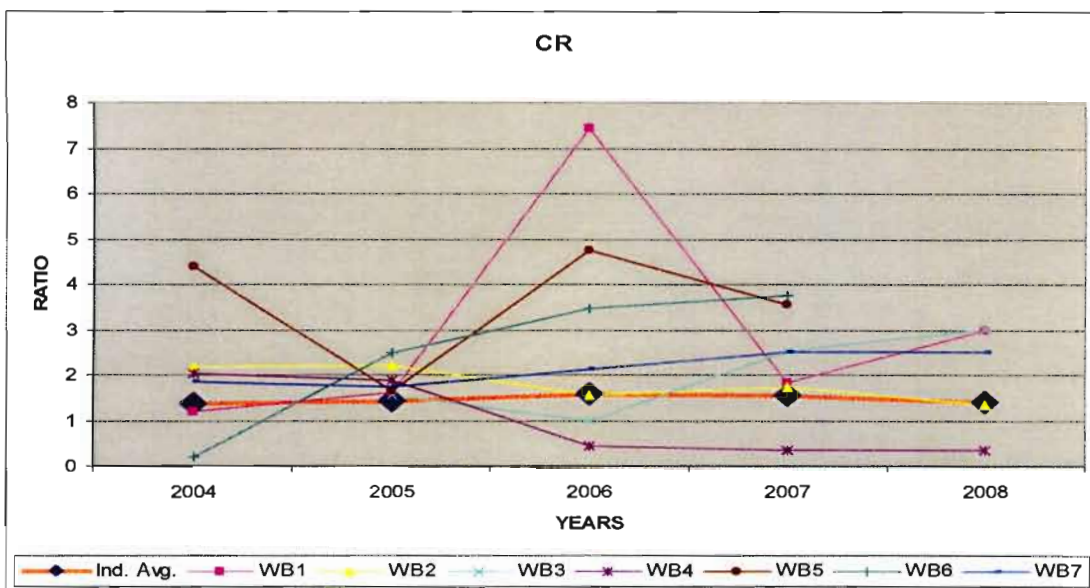
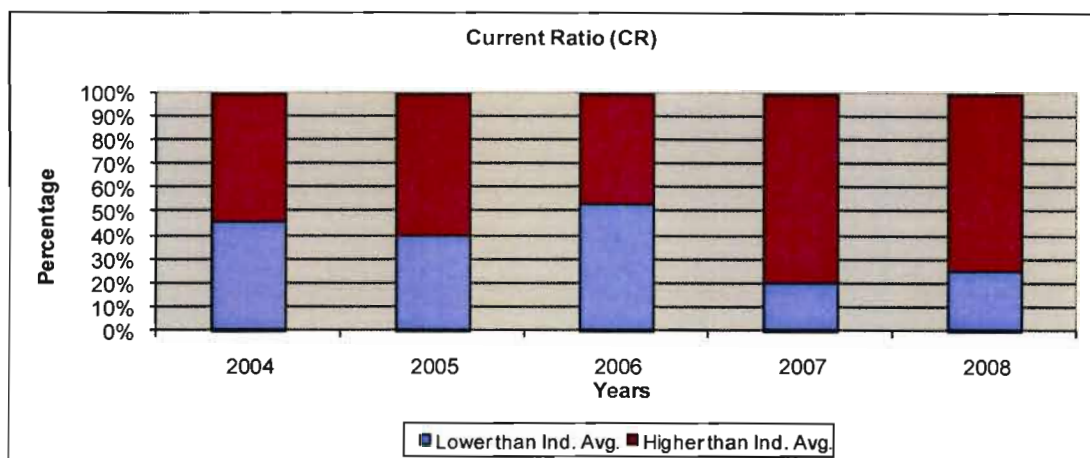
Figure 4.33: Benchmarking of TATO



(Source: Own)

Except for WB6 in 2004, the TATO for all the Water Boards are lower than the industry average for the five years. This could be the result of a very low current asset value in that year with a concurrent stable revenue stream and therefore can be seen as an outlier. The low TATO shows that the Water Boards either have too much assets that are not optimally utilised to generate revenue or that the revenue stream can be hampered by factors that might be out of the control of the Water Boards.

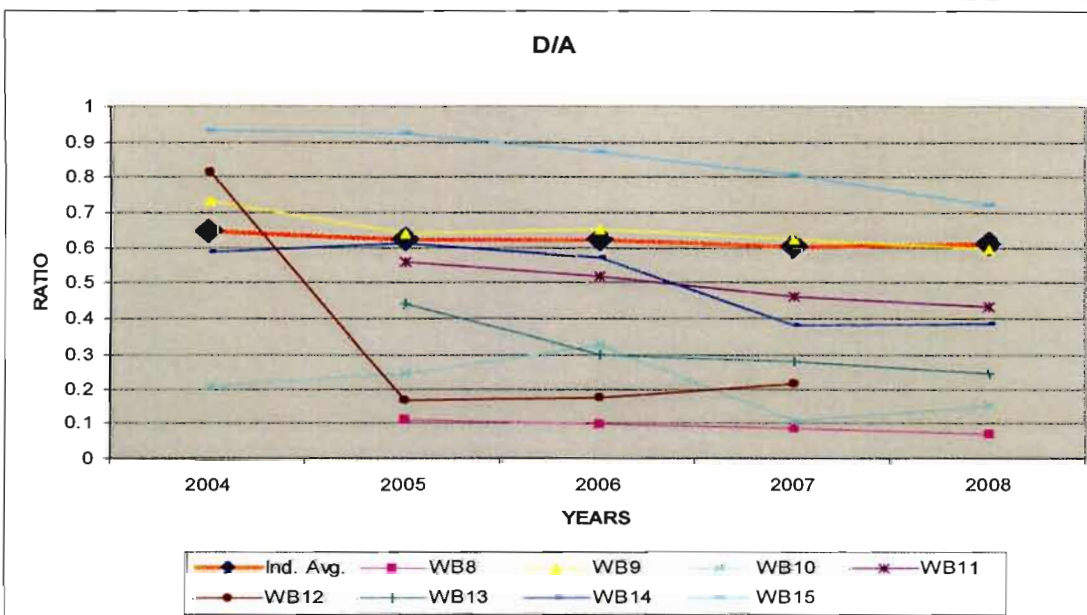
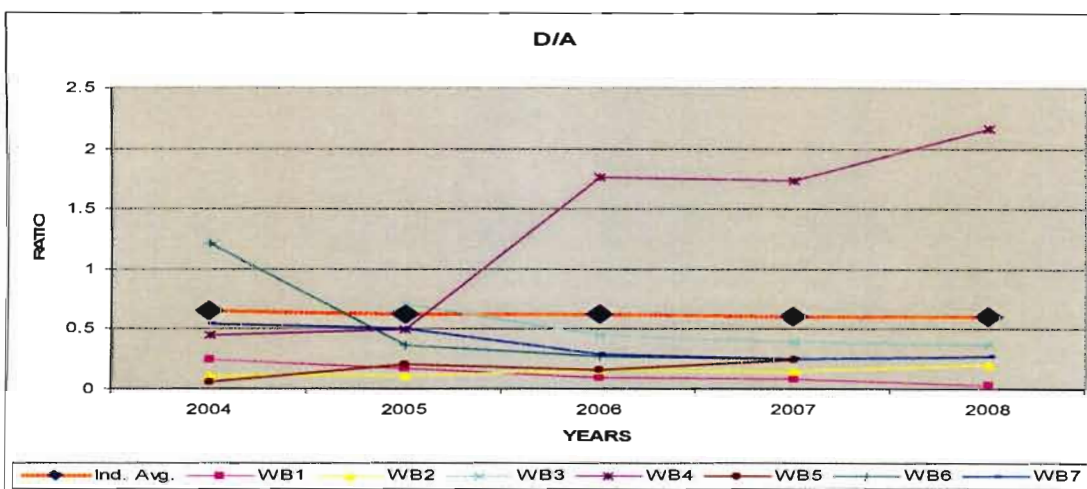
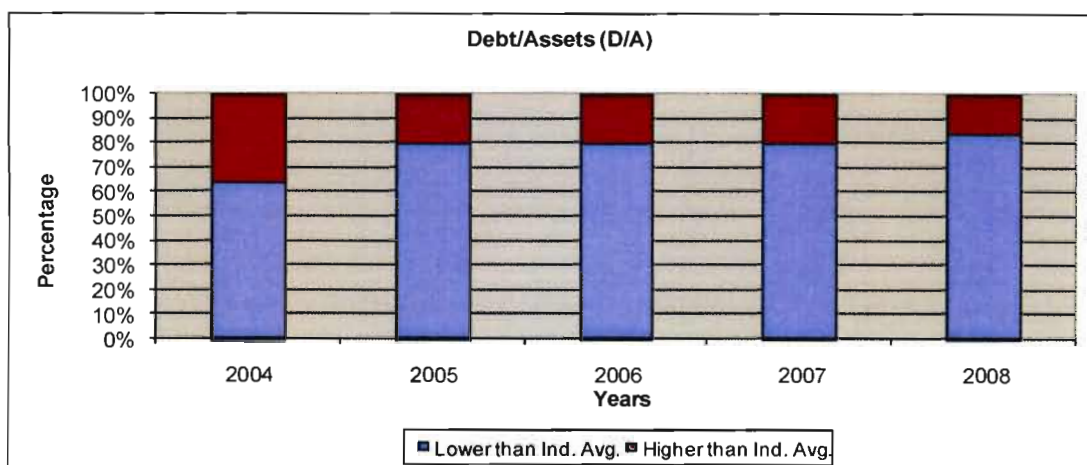
Figure 4.34: Benchmarking of CR



(Source: Own)

When it comes to the CR and D/A in figure 4.34 and figure 4.35 more similarities can be observed between the performances of the Water Boards with that of the industry average. With respect to the current ratio, except for the year 2006 with about 45 percent of the Water Boards higher than industry average, more than 50 percent of the Water Boards had values higher than the industry average in 2004, 2005, 2007 and 2008. This could be an indication of a relatively strong liquidity position of these Water Boards. On the other hand the high current ratios could mean that the Water Boards have much money tied up in non-productive assets such as excess cash or inventory. In the latter case it would then rather be better to reinvest the excess in the operations of the Water Boards. This together with the lower than industry average TATO supports the notion that the assets of the Water Boards are not fully utilized to generate income and therefore create economic value. WB1, WB2, WB5, WB7, WB8 and WB11 have values that are consistently higher than the industry average with respect to CR.

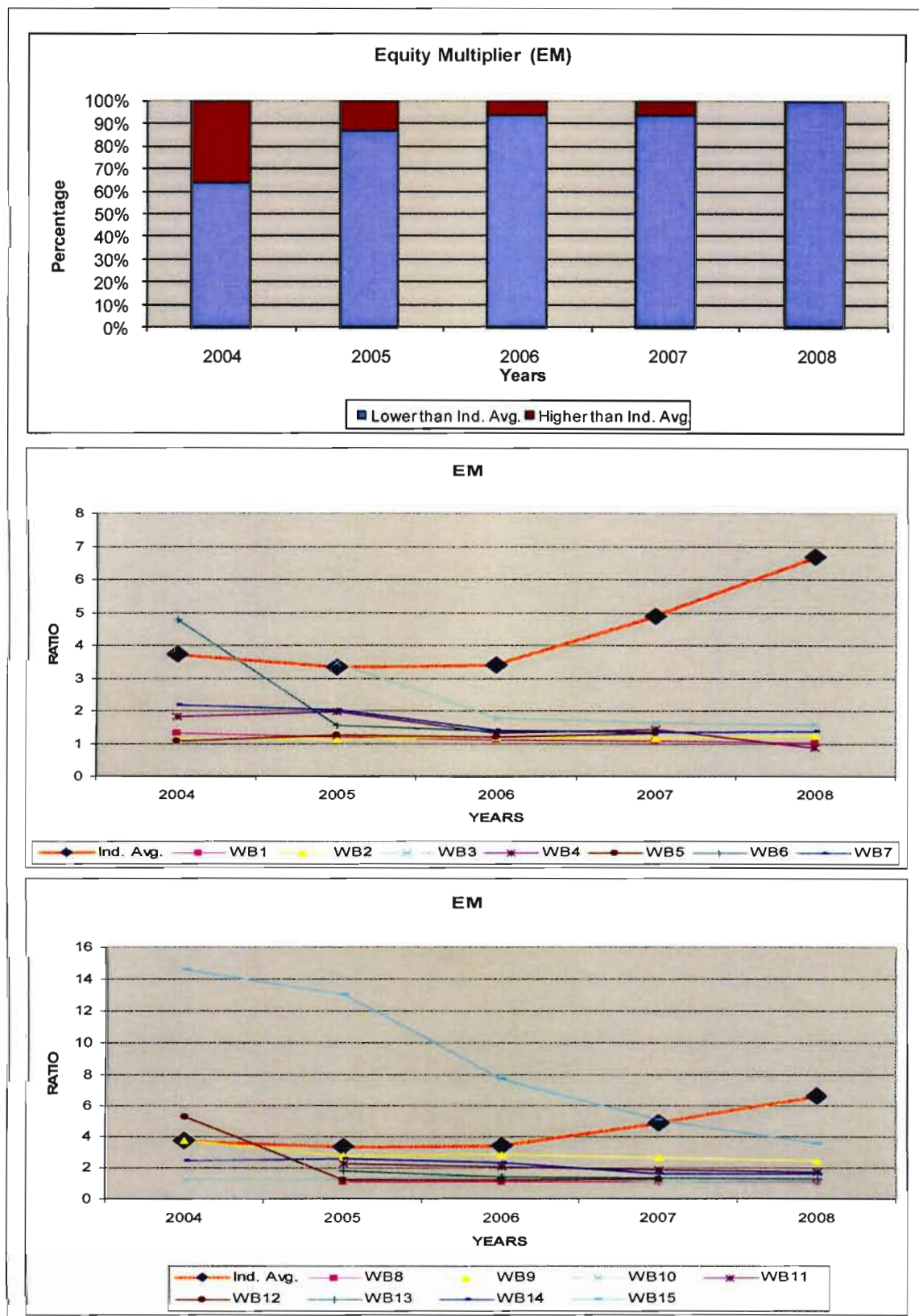
Figure 4.35: Benchmarking of D/A ratio



(Source: Own)

In figure 4.35 it can be seen that the D/A ratio for most of the Water Boards over the five years is lower than the industry average. About 60 percent of the Water Boards are lower than industry average in 2004 and about 80 percent are lower than industry average in the other four years. This means that the Water Boards generally have lower debt to assets over the five years. It would seem as if the Water Boards have very high asset values with which it operates. This finding is supported by the lower than industry average TATO as found in figure 4.33 and the higher than industry average CR as found in figure 4.34. WB4, WB9 and WB15 are consistently higher than the industry average over the five years with respect to the D/A ratio.

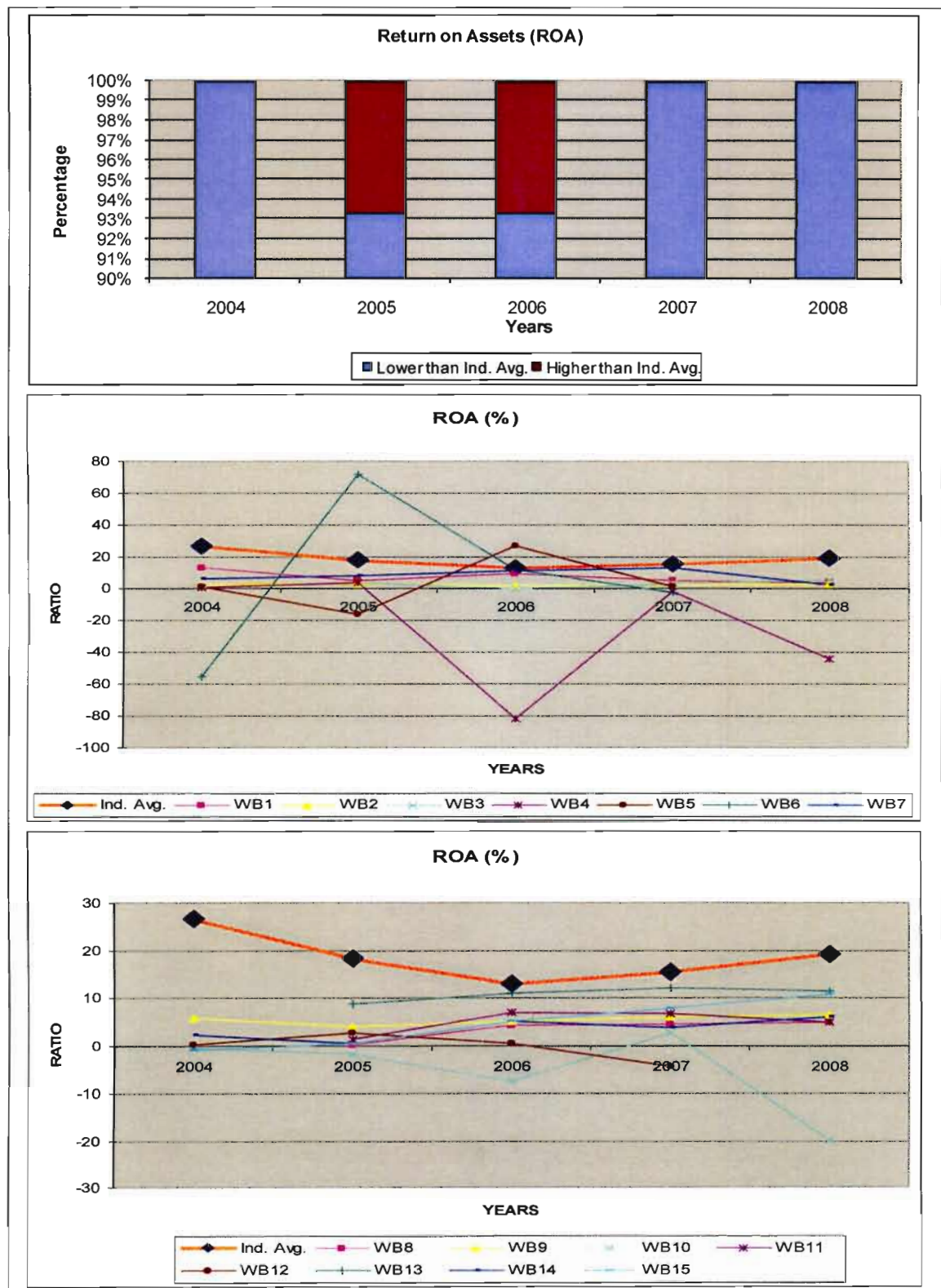
Figure 4.36: Benchmarking of EM



(Source: Own)

The EM proved to be lower than industry average for most of the Water Boards over the five years in figure 4.36. This finding seems to contradict the findings in figures 4.33; 4.34 and 4.35, which indicates that the Water Boards use too much assets in its operations. However, the lower than industry average EM suggests that the greater portions of the assets of the Water Boards are financed by the equity of the Water Boards, which is not the case for the industry average. There is also a marked increase in the number of Water Boards with lower than industry average figures for both the D/A ratio and the EM. This lower than industry average EM and D/A together indicates that the Water Boards used lower debt than the industry average for the acquisition of its assets. The amount of debt used by the industry average increased year on year as found in figure 4.3 with the assets becoming increasingly more than the equity as shown by the EM. This finding is supported by figure 4.36, which shows that the number of Water Boards with lower than industry average increased with respect to EM from about 60 percent in 2004 to 100 percent in 2008. WB15 is the only Water Board that has an EM higher than the industry average for more than one year, from 2004 to 2007. This is due to the magnitude of Water Board's operations, which requires a high asset value. This means that although the Water Boards have excessive assets, the industry average uses more financial leverage to acquire assets, which it uses much more efficiently than the Water Boards.

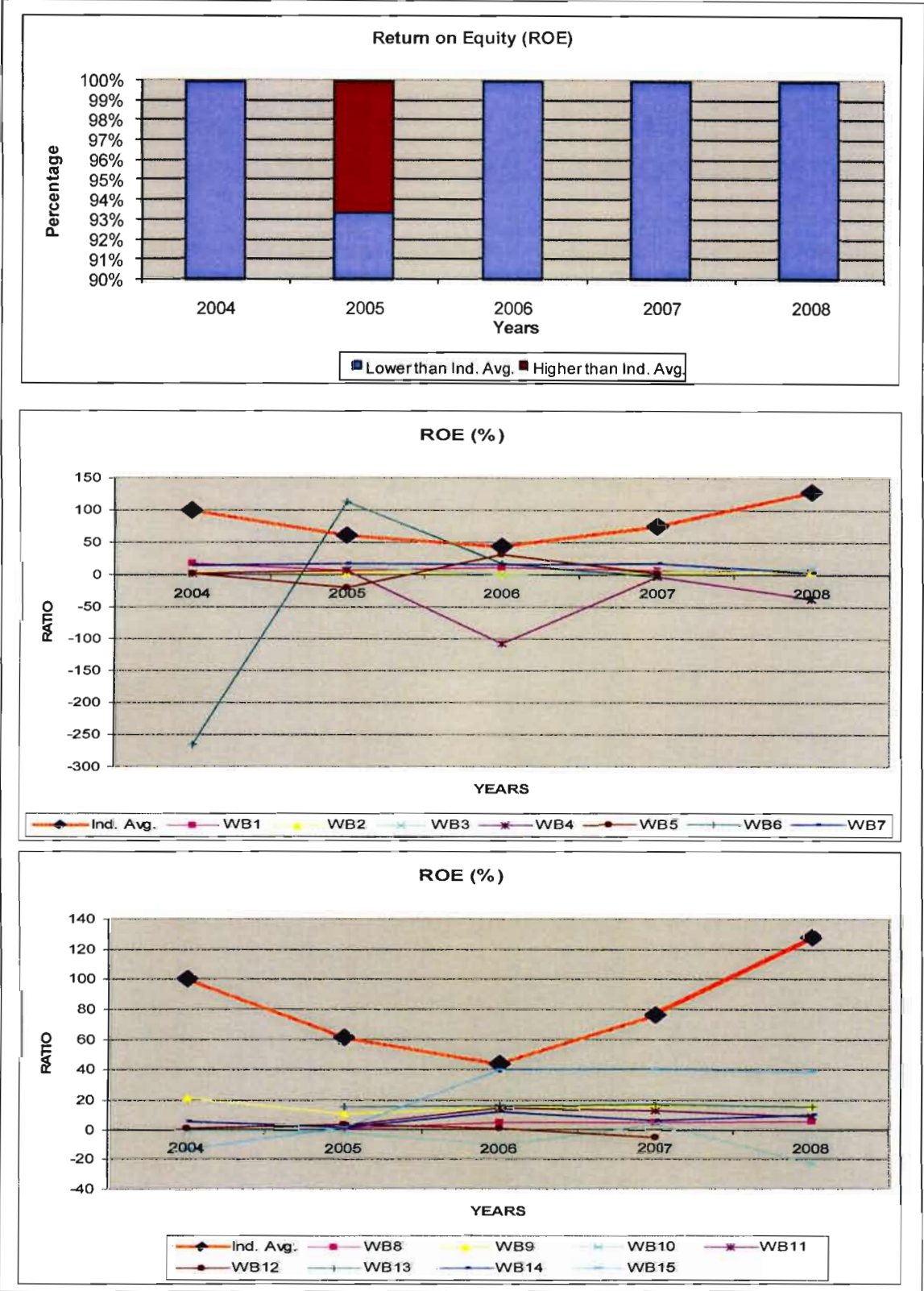
Figure 4.37: Benchmarking of ROA



(Source: Own)

The lower than industry average ROA found in figure 4.37 confirms the above-mentioned findings with regard to the excessive assets that is not fully utilised. Only WB6 in 2005 and WB5 in 2006 were higher than industry average with respect to ROA. This shows that the industry average consistently generates superior returns on its assets. Even though the industry average has a high asset value, it uses the assets more effectively and efficiently than the Water Boards. This finding is confirmed by the sub-optimal ROE generated by the Water Boards as seen in figure 4.38.

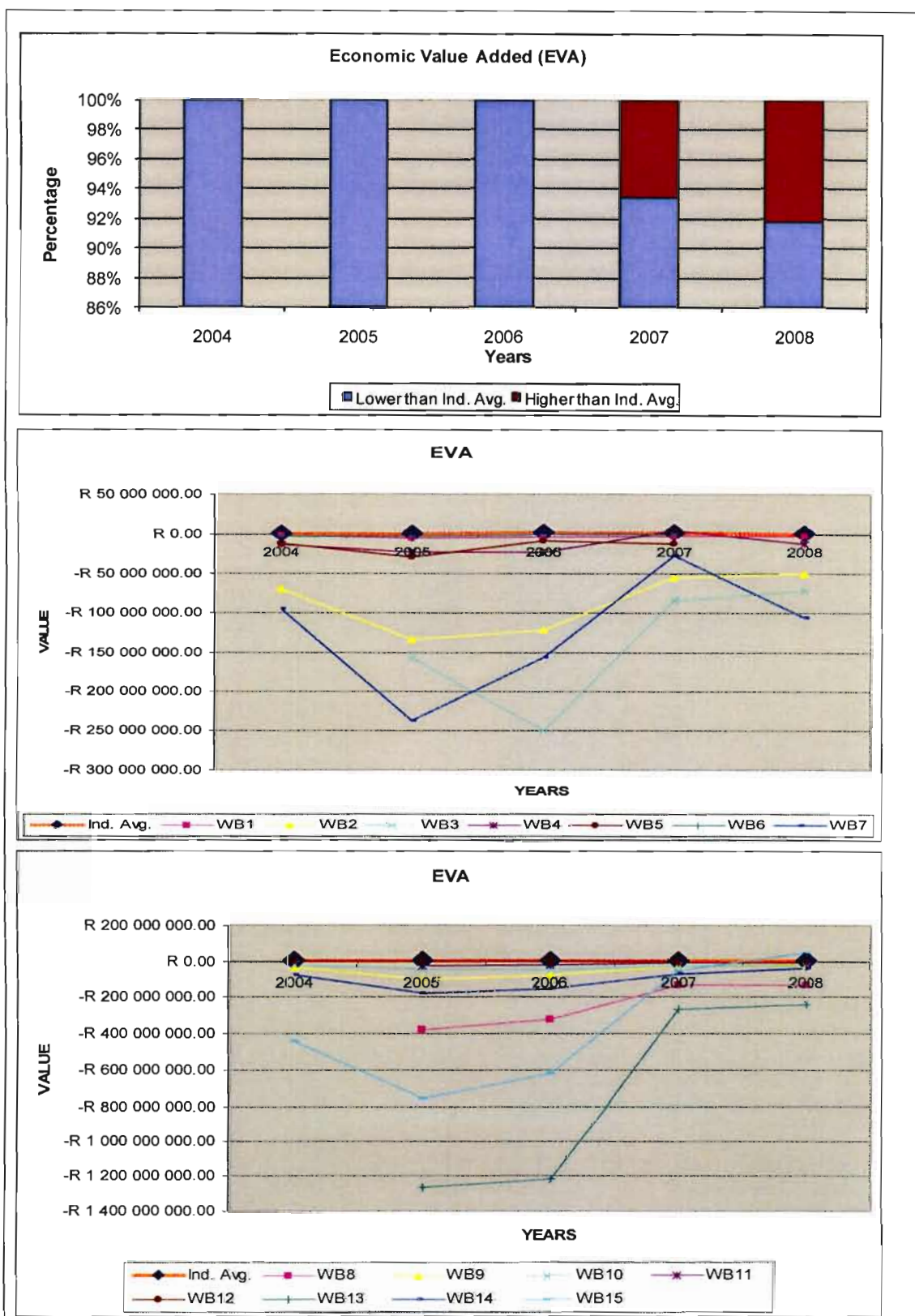
Figure 4.38: Benchmarking of ROE



(Source: Own)

WB6 had the only ROE that was higher than the industry average of all the Water Boards over the five years in 2005 as seen in figure 4.38, bouncing back from the lowest ROE of all the Water Boards over the five years in 2004. This is due to the large negative net income in 2004 followed by a large positive net income in 2005. Based on these results it would seem that the Water Boards performed poorly with respect to returns on assets and equity. This would suggest that the finances of the Water Boards are not effectively managed to ensure optimal returns. These poor returns as seen in figure 4.37 and 4.38 substantiates the findings in figure 4.39 where the EVA of all the Water Boards, except for WB4 in 2007 and WB15 in 2008, are lower than the industry average for all five years.

Figure 4.39: Benchmarking of EVA



(Source: Own)

As found in figure 4.39, the industry average EVA is positive for all five years and therefore besides the two occasions where WB4 and WB15 had a positive EVA in 2007 and 2008 respectively, the rest of the Water Boards all had EVA lower than the industry average for all five years. These two Water Boards are also the only two that have values higher than the industry average in its respective years. Although only WB15 was higher than the industry average in 2008, it appears as a higher percentage in figure 4.39 due to the fact that 11 Water Boards were measured and not 15 as is the case in 2007. The negative EVA's shows that value was destroyed rather than created by the respective Water Boards. The only difference between the Water Boards is the extent to which value was destroyed by each Water Board. The sub-par results for the ROA and ROE of the Water Boards seems to substantiate the EVA figures. The only other comparisons that could be drawn between the different Water Boards in this regard are the differences in the extent to which value was destroyed and the causes thereof.

4.5 Comparisons between the Water Boards with the highest and lowest EVA.

The following tables presents the EVA values of the Water Boards with the highest and the lowest EVA from 2004 to 2008. Due to the different orders of magnitude the EVA has been calculated as a factor of the TOC of the Water Boards. The EVA factor is therefore used to determine which Water Board had the highest and the lowest EVA over the five years. The two Water Boards with the highest and lowest EVA for each year are then compared to one another with respect to the financial performance ratios. This is done to determine which of the financial ratios most differ from one another in an attempt to establish which ratio most impacts the EVA of the Water Boards.

Table 4.1 depicts the EVA/TOC of the fifteen Water Boards. This table is used to observe which of the Water Boards have the highest and the lowest EVA/TOC for each year.

Table 4.1: EVA/TOC of the Water Boards

Water Board	2004	2005	2006	2007	2008
WB1	-0.08	-0.39	-0.30	-0.13	-0.12
WB2	-0.23	-0.44	-0.40	-0.18	-0.15
WB3		-0.34	-0.35	-0.12	-0.09
WB4	-0.24	-0.39	0.69	-0.14	0.23
WB5	-0.24	-0.69	-0.13	-0.19	
WB6	26.29	-3.11	-0.23	-0.31	
WB7	-0.14	-0.35	-0.30	-0.04	-0.18
WB8		-0.46	-0.37	-0.14	-0.14
WB9	-0.13	-0.37	-0.27	-0.08	-0.06
WB10	-0.24	-0.47	-0.46	-0.26	-0.33
WB11		-0.45	-0.34	-0.14	-0.15
WB12	-0.25	-0.43	-0.40	-0.25	
WB13		-0.31	-0.26	-0.05	-0.04
WB14	-0.15	-0.38	-0.31	-0.10	-0.05
WB15	-0.13	-0.30	-0.23	-0.02	0.02

(Source: Own)

From table 4.1 the Water Boards with the highest and lowest EVA/TOC for each year are:

- WB6 with the highest and WB12 with the lowest EVA/TOC in 2004.
- WB15 with the highest and WB6 with the lowest EVA/TOC in 2005.
- WB4 with the highest and WB10 with the lowest EVA/TOC in 2006.
- WB15 with the highest and WB6 with the lowest EVA/TOC in 2007.
- WB4 with the highest and WB10 with the lowest EVA/TOC in 2008

Table 4.2: Comparison between the highest and lowest EVA

2004									
Water Board	EVA/ TOC	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)
WB 6	26.29	-174.79	-17.44	3.19	0.20	1.21	4.77	-55.58	-264.88
WB 12	-0.25	-0.50	0.05	0.57	0.63	0.81	5.33	0.03	0.16
2005									
Water Board	EVA/ TOC	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)
WB 15	-0.30	39.47	4.81	0.25	0.70	0.92	13.04	0.36	0.92
WB 6	-3.11	-154.05	65.41	1.10	2.48	0.36	1.56	72.02	112.52
2006									
Water Board	EVA/ TOC	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)
WB 4	0.69	-69.89	-69.13	1.18	0.45	1.76	1.31	-81.91	-107.39
WB 10	-0.46	-65.90	-85.22	0.09	0.98	0.33	1.49	-7.57	-11.26
2007									
Water Board	EVA/ TOC	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)
WB 15	-0.02	39.87	21.25	0.37	1.23	0.80	5.10	7.76	39.57
WB 6	-0.31	-7.47	-1.90	1.25	3.75	0.25	1.33	-2.38	-3.17
2008									
Water Board	EVA/ TOC	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)
WB 4	0.23	-55.45	-54.01	0.82	0.36	2.17	0.86	-44.30	-37.94
WB 10	-0.33	-152.20	-177.18	0.11	1.46	0.15	1.18	-19.82	-23.31

(Source: Own)

From table 4.1 with respect to OPM and NPM it can be seen that except for 2004, that there is a trend towards the Water Board with the higher EVA/TOC to have a higher OPM and NPM. In 2008 the higher OPM and NPM was even negative. In 2004 the OPM and NPM was much lower for WB6 with the highest EVA/TOC for the year compared to a much higher OPM and NPM for

WB12 with a much lower EVA/TOC. This shows that OPM and NPM cannot conclusively be used to indicate what the EVA of the Water Boards would be in a particular year. With respect to ROA and ROE a similar pattern is observed. Except for 2007, the ROA and ROE of the Water Board with the highest EVA/TOC for the year had the lower ROA and ROE over the five years. This could indicate that the lower the ROA and ROE for a Water Board is, the higher the EVA for that year. Here again, it would seem that ROA and ROE cannot be used to determine the EVA of the Water Boards. The TATO and EM of the two Water Boards with the highest and lowest EVA/TOC for each year alternate with each consecutive year. The trends observed for TATO and EM is opposite to one another in that when TATO is higher in a year then EM is lower in the same year for the same Water Board, albeit the Water Board with the highest or lowest EVA/TOC. Therefore both TATO and EM does not seem to be consistent in indicating its impact on the EVA of the Water Boards and therefore control of these two ratios would not be able to ensure value creation within the Water Boards. The alternating values for TATO and EM for the Water Boards are supported by the trend observed with respect to the Water Boards with the highest and lowest EVA/TOC over the five years. Except in 2004, there is a distinct pattern as to which of the Water Boards have lowest and the highest EVA/TOC from 2005 to 2008. WB15 and WB6 have the highest and the lowest EVA/TOC respectively in 2005 and 2007. WB4 and WB10 have the highest and the lowest EVA/TOC respectively in 2006 and 2008. It can therefore be established that WB15 and WB4 are the best performers and WB6 and WB10 the worst performers over the five years with respect to EVA. The D/A and CR are the only ratios that show consistency over the five years between the Water Boards compared. D/A is higher and CR is lower for the Water Board with the highest EVA/TOC in every year over the five years. This could indicate that the EVA of the Water Boards is influenced mostly by lower current assets and higher debt.

4.6 Relationships amongst variables

The following tables show the correlations between the ratios of the 15 Water Boards for every year over the five years researched in this study. It is used to

determine how strongly related the traditional financial ratios are to one another and to also to determine which of the traditional financial ratios, if any, are the most strongly related to EVA.

Table 4.3: 2004

2004	OPM	NPM	TATO	CR	D/A	EM	ROA	ROE	EVA
OPM	1.00								
NPM	0.64	1.00							
TATO	-0.94	-0.44	1.00						
CR	0.17	-0.13	-0.38	1.00					
D/A	-0.51	-0.39	0.61	-0.75	1.00				
EM	0.01	-0.31	0.06	-0.47	0.66	1.00			
ROA	0.96	0.56	-0.96	0.30	-0.63	-0.18	1.00		
ROE	0.93	0.44	-0.96	0.35	-0.62	-0.17	0.99	1.00	
EVA	-0.29	0.16	0.25	0.22	-0.31	-0.87	-0.10	-0.11	1.00

(Source: Own)

From table 4.3 the highest positive correlation is between ROA and ROE ($r = 0.99$). This shows that ROA and ROE have a very strong relationship, which indicates that the one moves in tandem with the other amongst the Water Boards. Both ROA and ROE have strong positive correlations to OPM ($r = 0.96$ and 0.93 respectively) and weakly positive correlations to NPM ($r = 0.56$ and 0.44 respectively). The weaker correlations between NPM and ROA and ROE is substantiated by the findings in figure 4.6 where the NPM showed more volatility due to the extraordinary income and costs that are used in calculating net income. The stronger relationships between OPM and ROA and ROE could be due to efficient operations, which results in higher returns. The correlation between OPM and NPM ($r = 0.64$) is also strongly positive, which indicates a strong relationship between the operating profit and the net income of the Water Boards. The positive correlation between EM and D/A ($r = 0.66$) and TATO and D/A ($r = 0.61$) is due to the use of debt to finance assets, which results in a change in assets in relation to the equity and the revenue generated by the Water Boards. The most negative correlations are between TATO and ROA ($r = -0.96$), TATO and ROE ($r = -0.96$), TATO and OPM ($r = -0.94$) and TATO and NPM ($r = -0.44$). This indicates that the Water Boards have efficient operations in generating returns with an ineffective utilisation of assets. This is confirmed by the trends observed from the benchmarking graphs, where the OPM, NPM, ROA and ROE compares much

better to the industry average than the TATO for every year. The strongest positive correlation with EVA was a weakly positive correlation between TATO and EVA ($r = 0.25$).

Table 4.4: 2005

2005	OPM	NPM	TATO	CR	D/A	EM	ROA	ROE	EVA
OPM	1.00								
NPM	-0.37	1.00							
TATO	-0.69	0.34	1.00						
CR	-0.24	0.19	0.00	1.00					
D/A	0.30	0.09	-0.01	-0.36	1.00				
EM	0.29	-0.05	-0.17	-0.29	0.74	1.00			
ROA	-0.78	0.83	0.56	0.16	0.01	-0.09	1.00		
ROE	-0.77	0.83	0.58	0.15	0.04	-0.09	1.00	1.00	
EVA	-0.29	-0.01	0.06	0.11	-0.31	-0.42	0.07	0.07	1.00

(Source: Own)

From table 4.4 the highest positive correlation is between ROA and ROE ($r = 1.00$). This means that the relationship between it is so strong that any movement in one can be explained by the movement in the other. This is evident in figure 4.14 where it is observed that whatever the ROA is for a particular Water Board, the ROE moves in the same direction in the same order of magnitude, but always to a lesser degree. The strong positive correlation between NPM and ROA is identical to the correlation between NPM and ROE ($r = 0.83$). The correlation is stronger than the previous year indicating that the relationship amongst these variables became stronger and could be due to more effective cost management and financing decisions by management. The correlation between D/A and EM ($r = 0.74$) is similar to what it is in 2004, but the correlation between TATO and D/A has deteriorated ($r = -0.01$) from the previous year. The strong relationship between D/A and EM points to the fact that the debt of the Water Boards are mostly used for the acquisition of assets. There is almost no relationship between TATO and D/A in 2005, which could mean that TATO is more affected by the operations of the Water Boards rather than the utilisation of assets. This finding is based on the fact that the TATO of the Water Boards differ more from one another in figure 4.12, whereas the D/A is more constant in 2005 in figure 4.13. The correlation between TATO and ROA ($r = 0.56$) and TATO and ROE ($r = 0.58$) are stronger relationships than in 2004, which could mean that the Water Boards assets are better utilised in revenue generation in 2005. The most

negative correlations are between OPM and ROA ($r = -0.78$) and OPM and ROE ($r = -0.77$). This is a drastic change from the strong relationships observed on the previous year and could indicate that the operations of the Water Boards became less efficient in 2005. This finding agrees with the low TATO as mentioned above that is affected more by the operations rather than asset utilisation in 2005. The strongest positive correlations is between EVA and ROA ($r = 0.07$), EVA and ROE ($r = 0.07$), and EVA and TATO ($r = 0.06$). These are such weak correlations, that there almost exist no relations amongst them. For the second year in a row the EM has the strongest negative correlation with EVA ($r = -0.42$).

Table 4.5: 2006

2006	OPM	NPM	TATO	CR	D/A	EM	ROA	ROE	EVA
OPM	1.00								
NPM	0.95	1.00							
TATO	-0.28	-0.19	1.00						
CR	0.45	0.54	-0.20	1.00					
D/A	-0.50	-0.54	0.47	-0.49	1.00				
EM	0.27	0.06	-0.11	-0.27	0.34	1.00			
ROA	0.77	0.73	-0.41	0.36	-0.84	0.07	1.00		
ROE	0.80	0.71	-0.41	0.26	-0.71	0.33	0.96	1.00	
EVA	-0.21	-0.14	0.02	0.13	0.01	-0.33	-0.16	-0.24	1.00

(Source: Own)

From table 4.5 the strongest positive correlation is once again between ROA and ROE ($r = 0.96$) followed closely by the correlation between OPM and NPM ($r = 0.95$). In both cases figure 4.16 and 4.19 corroborates these relationships where it can be seen that if ROA and OPM is positive or negative, the ROE and NPM of the Water Board follows suite, although to a lesser degree. The strong positive correlations between OPM and ROA ($r = 0.77$), OPM and ROE ($r = 0.80$), NPM and ROA ($r = 0.73$), and NPM and ROE ($r = 0.71$) shows that the efficient operations and effective financial management of the Water Boards determine for the most part what the returns will be. The correlation between TATO and D/A is stronger than in 2005 ($r = 0.47$), which once again indicates that TATO is influenced more by inefficient use of assets rather than the operations of the Water Boards. This is supported by the weak negative correlations between OPM and TATO ($r = -0.28$) and NPM and TATO ($r = -0.19$). The strongest negative correlation is between D/A and ROA ($r = -0.84$) followed by D/A and ROE ($r = -0.71$), which

could also be an indication of ineffective use of debt. These relationships indicate that when less debt is used in the acquisition of assets, the higher is the ROA because less fruitless assets are purchased. Also the less debt used means more of the assets are financed with equity and therefore a higher ROE. All the correlations between EVA and all the ratios are either weakly positive or weakly negative. Therefore it would appear that none of the financial ratios has a strong relationship with EVA.

Table 4.6: 2007

2007	OPM	NPM	TATO	CR	D/A	EM	ROA	ROE	EVA
OPM	1.00								
NPM	0.25	1.00							
TATO	-0.13	-0.73	1.00						
CR	-0.68	0.38	-0.34	1.00					
D/A	0.10	-0.30	0.32	-0.41	1.00				
EM	0.38	0.11	-0.09	-0.27	0.37	1.00			
ROA	0.50	0.82	-0.48	-0.01	-0.16	0.27	1.00		
ROE	0.52	0.55	-0.35	-0.16	0.12	0.83	0.75	1.00	
EVA	-0.24	-0.23	0.14	-0.03	0.21	0.03	-0.51	-0.28	1.00

(Source: Own)

From table 4.6 the highest correlation is between EM and ROE ($r = 0.83$) followed closely by the correlation between NPM and ROA ($r = 0.82$). The strong relationship between EM and ROA is an indication of the amount of assets of the Water Boards and if it is has been used efficiently in its operations. The high correlation between NPM and ROA ($r = 0.82$) and NPM and ROE ($r = 0.55$), and the negative correlation between TATO and ROA ($r = -0.48$) and TATO and ROE ($r = -0.35$) could be an indication of good operations and inefficient asset utilisation. This is supported by the strong relationship between EM and ROE and the weaker relationship between EM and ROA, which could indicate that even though the assets were not fully utilised, that less assets were acquired by the Water Boards in 2007. This then could lead to a higher net profit for the year and therefore a better ROE. This is further supported by figure 4.22 showing a low TATO for all the Water Boards and figure 4.24 that shows that ROA and ROE are almost equally matched for most of the Water Boards. This could mean that the financing cost associated with asset acquisition was reduced in 2007. The similar correlations between OPM and ROE ($r = 0.52$) and NPM and ROE ($r = 0.55$) could also be an indication of the minimised impact of the financing cost on

the net profit of the Water Boards. Figure 4.21 supports this in showing how similar both OPM and NPM are for every Water Board in 2007 and that NPM is higher than OPM for four of the Water Boards. The most negative correlation is between NPM and TATO ($r = -0.73$). This further supports the findings above with respect to inefficient asset utilisation in that the efficient operations of the Water Boards could be more the cause of positive returns in 2007 rather than how well the assets have been utilised. Once again no strong relationship could be established between any of the financial performance ratios and EVA. All the correlations were weakly positive to weakly negative.

Table 4.7: 2008

2008	OPM	NPM	TATO	CR	D/A	EM	ROA	ROE	EVA
OPM	1.00								
NPM	0.98	1.00							
TATO	0.05	0.06	1.00						
CR	0.29	0.39	-0.55	1.00					
D/A	-0.15	-0.16	0.74	-0.60	1.00				
EM	0.44	0.33	-0.13	-0.24	0.03	1.00			
ROA	0.73	0.69	-0.44	0.47	-0.74	0.45	1.00		
ROE	0.79	0.72	-0.28	0.26	-0.47	0.74	0.91	1.00	
EVA	-0.08	-0.16	-0.14	-0.49	0.32	0.44	-0.25	-0.03	1.00

(Source: Own)

From table 4.7 the strongest correlations are between OPM and NPM ($r = 0.98$) and ROA and ROE ($r = 0.91$). This is confirmed by figure 4.26 and 4.29 where it can be observed that OPM and NPM as well as ROA and ROE are in proportion to one another for every Water Board for the year 2008. The high positive correlations between OPM and ROA ($r = 0.73$), OPM and ROE ($r = 0.79$), NPM and ROA ($r = 0.69$), and NPM and ROE ($r = 0.72$) again in 2008 is an indication that the operations of the Water Boards is strongly related to the returns generated for the year. The weak positive correlations between OPM and TATO ($r = 0.05$) as well as the negative correlations between ROA and TATO ($r = -0.44$) and ROE and TATO ($r = -0.28$) is an indication of inefficiency of asset utilisation and that the assets of the Water Boards have minimal impact on the revenue generated in 2008. The high positive correlation between TATO and D/A ($r = 0.74$) and weak negative correlation between TATO and EM ($r = -0.13$) could be an indication of less assets being used in

the generation of revenue for the Water Boards in 2008 and the ineffective use of debt. This is supported by the high negative correlation between D/A and ROA ($r = -0.74$) and the high positive correlation EM and ROE ($r = 0.74$), which could indicate that both debt and assets are not effectively utilised in 2008. There is once again no financial performance ratio that can be pinpointed as having the greatest impact on EVA. The highest correlation is between EVA and EM ($r = 0.44$). This correlation differs from year to year and can also not conclusively be said to have the strongest relationship with EVA.

4.7 Summary

In chapter 4 the data collected from the income statements and the balance sheets of the fifteen Water Boards are analysed. The eight financial performance ratios and the one value-based management tool are calculated for the fifteen Water Boards over a five year period, from 2004 to 2008.

The nine financial performance measurement tools were compared to the industry average to observe how the performances of the Water Boards compare with similar entities in the private sector. The industrial averages are firstly analysed by making use of bar graphs so as to compare the performance measures to one another over the five years researched. The industry average TATO and CR are all higher than one and OPM and NPM are all above 8 percent for all five years. The D/A remains more or less constant over all five years, but the EM are much higher than D/A increases from 2006 to 2008. This shows that more debt is used to acquire more assets over these three years. The acquisition of assets results in ROA being much lower than ROE over all five years. ROE increases with increasing EM, which could mean that the acquisition of the assets resulted in greater returns overall. The industry average EVA was positive for all five years with the highest EVA in 2007 and the lowest in 2008.

Secondly, the financial performance measurement tools of the fifteen Water Boards were compared to one another using bar graphs. The graphs cover all five years of the research and are used to observe how the different Water

Boards perform in relation to one another and to observe if there are any trends. Over all five years no particular trends could be observed with all the financial performance ratios displaying fluctuations amongst the Water Boards and from year to year. The TATO of the Water Boards were consistently low, which could be an indication of inefficient asset utilisation. This is supported by the generally low ROA and ROE of the Water Boards. The ROA of the Water Boards is consistently lower than ROE over all five years, which could mean that there was an ineffective use of debt in the acquisition of fruitless assets. It does not seem like the Water Boards used much debt over the five years researched yet the assets seems to be much higher than its equity. This could mean that the Water Boards have already acquired these assets prior to this research and therefore are all generally operating with too many assets that are not fully utilised. This is confirmed by the D/A of the Water Boards being consistently much lower than EM over the five years. The CR of the Water Boards is also consistently higher than TATO over the five years, which could contribute to the high total asset value and therefore the lower TATO. The OPM and NPM were positive for most of the Water Boards over the five years researched. Although negative values were obtained for some of the Water Boards where there were negative operating profits and net income, the high positive OPM and NPM obtained could be a testament to the efficient operations of the Water Boards without using its assets optimally. The EVA for all the Water Boards over the five years, except for WB4 in 2007 and WB15 in 2008, were negative. Although OPM, NPM, ROA and ROE were positive for most of the Water Boards over the five years, it has been established that these ratios do not reflect whether value was created or destroyed by the Water Boards. This means that the Water Boards do not adhere to the principles of VBA.

Thirdly, the financial performance measurement tools of the Water Boards are compared to the industry average to observe how the performances of the Water Boards compare to similar industries in the private sector. This is done by making use of percentage bar graphs and line graphs to show how many and which of the Water Boards have values higher and lower than the industry average. The OPM and NPM compares well with the industry

average, which means that the operations of the Water Boards are as efficient as and even more efficient than that of the industry average over the five years. This could indicate that the Water Boards manage its operating costs as well as its financing costs effectively. The lower than industry average TATO for the Water Boards points to the inefficient utilisation of assets or that the Water Boards possess too many assets for its operations. Therefore the competitive OPM and NPM of the Water Boards when compared with that of the industry average could mean that the Water Boards will be able to maintain its performance even if it had fewer assets. The CR of the Water Boards is mostly higher than the industry average over the five years. In appendix 1 it can be seen that the current liabilities are generally not much lower than the current assets for all the Water Boards over the five years and at times even higher. This is an indication that the current assets of the Water Boards are high and supports the finding that the Water Boards have too many assets since the high current asset value of the Water Boards contribute towards a much higher total asset value. The lower than industry average D/A ratio show that the total assets of the Water Boards are much higher than its debt over the five years. This further supports the finding that the Water Boards possess too many assets that are not fully utilised. The lower than industry average EM is somehow contradictory to the aforementioned finding in that it shows that the Water Boards have generally have fewer assets than the industry average relative to its equity. However, it can be seen in figure 4.3 that the industry average has a high EM, which increases year after year. In figure 4.4 the ROE of the industry average increases as more assets are acquired. This means that even though the industry average has more assets than the Water Boards, the assets are more efficiently utilised than that of the Water Boards. The lower than industry average ROA and ROE confirms this finding in that even with less assets than the industry average, the Water Boards still generate lower returns than the industry average.

Fourthly, the Water Boards with the highest and lowest EVA for every year is compared to one another with respect to its financial performance ratios. The ratios are compared over all five years using a table to observe the ratios and

make direct comparisons. The only ratios that showed a trend are CR and D/A. The CR is consistently lower and the D/A consistently higher for the Water Board with the highest EVA/TOC for every year over the five years. Both these ratios indicate the use of fewer assets in the operations of the Water Boards with the highest EVA/TOC in every year. This again supports the finding that the Water Boards have too many assets for its operations and that more value is created if fewer assets are employed in its operations.

Finally, the strengths of the relationships amongst the different financial performance measures were determined by making use of correlation matrices. A correlation matrix for every year of the five years was compiled for the fifteen Water Boards. The relationships amongst the financial performance ratios of the Water Boards point to inefficient use of assets as well as ineffective use of debt. There is also an indication that the Water Boards have efficient operations that are independent of the assets used in the operations. This is supported by the weak relationships between the assets (TATO) and the returns (ROA and ROE), which shows that the returns are not influenced by the assets of the Water Boards. No conclusive relationship could be established between EVA and any of the ratios and therefore none of the ratios could be used to ascertain whether value will be created nor destroyed in a particular year. This is in line with the above mentioned findings.

CHAPTER 5

Conclusions and recommendations

5.1 Introduction

In chapter 4 the financial data of the fifteen Water Boards were analysed by making use of graphs and tables. The analysis was done in an attempt to address the main objective of this research - whether or not the South African Water Boards manage its finances effectively. In chapter 5, the conclusions with respect to the objectives of the research are given followed by some recommendations for future study.

5.2 Conclusions

The operations of the Water Boards are very efficient, which means that there is effective cost management and financing decisions made in generating revenue. This is to be expected since the costs associated with production are mostly fixed costs and because the Water Boards have been in operation for many years there is no learning curve associated with its operations. The efficient operations could also indicate that the Water Boards used its labour force optimally.

The Water Boards do not seem to use its assets optimally and it appears to have too many assets for its operations. This is confirmed by the surpluses made by the Water Boards although the assets are not fully utilised. The assets appear to have been acquired over the many years that the Water Boards have been in operation and could have become redundant. This could mean that some of the assets of the Water Boards could be sold and the money invested in more productive assets or for other socially value adding activities in the area in which it operates.

There is also an indication of the ineffective use of debt by the Water Boards, which means that the debt of the Water Boards are not always used to purchase value creating assets and for value creating activities. Therefore the

cost incurred by the use of debt is not sufficiently covered by whatever was acquired using the debt. This is confirmed by the ROA and ROE of the Water Boards in that ROE does not seem to increase concurrently with an increase in assets.

Therefore the Water Boards do not seem to manage its finances effectively in order to be sustainable and add social value to the communities that it serves. The negative EVA of the Water Boards could mean that the Water Boards do not adhere to the principles of VBM because if the costs of equity were taken into consideration, the Water Boards would be more aware that value is being destroyed instead of created by its operations.

5.3 Recommendations for future research

The following are some recommendations for future research in line with this research:

- More in-depth financial analysis of the financials of the Water Boards.
- The use of more performance measures, both traditional and modern.
- The use of more financial performance ratios with respects to assets and liabilities to assess the use of assets and debt.
- Break down the assets into fixed and current assets to observe which component has the most impact on sustainability.
- Extend the research period to greater than 5 years, maybe 10 years or even 20 years to observe whether any fluctuations can be stabilised.
- Using an industry average from the manufacturing and/or service industries could shed more light on the performance of the Water Boards.
- Conducting a comparative study using financial performance measures of Water Boards internationally to observe how the Water Boards of other countries perform relative to South Africa.

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Appendix 1

WB1

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 2,467,759.00	R 1,417,770.00	R 2,043,460.00	R 1,815,511.00	R 12,096,588.00	R 1,653,848.00	R 1,399,994.00
2005	R 2,520,967.00	R 1,720,315.00	R 816,320.00	R 699,547.00	R 12,163,148.00	R 1,247,094.00	R 769,049.00
2006	R 2,739,766.00	R 1,385,674.00	R 1,375,214.00	R 1,269,010.00	R 12,237,936.00	R 1,448,686.00	R 194,516.00
2007	R 2,928,036.00	R 2,168,380.00	R 759,656.00	R 723,113.00	R 12,669,446.00	R 1,591,069.00	R 877,090.00
2008	R 3,148,115.00	R 2,654,107.00	R 595,649.00	R 601,004.00	R 14,587,381.00	R 1,259,166.00	R 421,217.00

WB2

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 75,371,000.00	R 78,976,000.00	R 4,281,000.00	R 7,380,000.00	R 276,673,000.00	R 37,326,000.00	R 17,067,000.00
2005	R 80,071,000.00	R 84,271,000.00	R 4,651,000.00	R 9,141,000.00	R 276,806,000.00	R 48,165,000.00	R 21,924,000.00
2006	R 88,035,000.00	R 94,711,000.00	R 1,196,000.00	R 5,630,000.00	R 281,516,000.00	R 68,572,000.00	R 44,454,000.00
2007	R 106,625,000.00	R 103,457,000.00	R 3,168,000.00	R 9,258,000.00	R 280,134,000.00	R 75,449,000.00	R 43,647,000.00
2008	R 200,803,000.00	R 198,270,000.00	R 2,533,000.00	R 12,483,000.00	R 297,941,000.00	R 98,072,000.00	R 72,497,000.00

WB3

year	REVENUE	OC	OP	NI	FA	CA	CL
2005	R 146,697,000.00	R 104,074,000.00	R 53,404,000.00	R 18,342,000.00	R 441,768,000.00	R 63,841,000.00	R 41,504,000.00
2006	R 158,604,000.00	R 141,093,000.00	R 32,574,000.00	R 307,000.00	R 707,855,000.00	R 105,674,000.00	R 106,192,000.00
2007	R 180,078,000.00	R 144,925,000.00	R 50,945,000.00	R 26,062,000.00	R 637,396,000.00	R 147,075,000.00	R 58,290,000.00
2008	R 196,796,000.00	R 150,944,000.00	R 50,937,000.00	R 49,067,000.00	R 612,860,000.00	R 229,165,000.00	R 76,041,000.00

WB4

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 87,789,090.00	R 88,544,936.00	R 267,797.00	R 709,428.00	R 9,725,071.00	R 90,261,382.00	R 44,786,204.00
2005	R 93,301,013.00	R 90,254,823.00	R 3,839,806.00	R 4,130,968.00	R 9,278,282.00	R 107,345,535.00	R 57,189,224.00
2006	R 52,517,521.00	R 132,850,733.00	-R 36,704,664.00	-R 36,304,358.00	R 9,376,930.00	R 34,946,449.00	R 78,129,111.00
2007	R 42,373,930.00	R 87,029,651.00	-R 1,649,501.00	-R 841,672.00	R 18,758,515.00	R 29,345,309.00	R 83,406,945.00
2008	R 38,084,249.00	R 97,076,309.00	-R 21,116,239.00	-R 20,569,549.00	R 10,526,875.00	R 35,901,531.00	R 100,647,872.00

WB5

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 33,395,767.00	R 55,052,410.00	R 161,769.00	R 671,540.00	R 40,967,127.00	R 11,166,000.00	R 2,552,687.00
2005	R 37,716,505.00	R 47,515,229.00	-R 9,798,724.00	-R 8,201,926.00	R 34,950,803.00	R 16,245,503.00	R 9,834,660.00
2006	R 44,562,967.00	R 27,593,305.00	R 16,969,662.00	R 19,152,167.00	R 29,247,312.00	R 41,747,458.00	R 8,774,543.00
2007	R 60,264,143.00	R 60,347,838.00	-R 83,695.00	R 1,051,152.00	R 25,641,252.00	R 54,417,668.00	R 15,380,177.00

WB6

year	REVENUE	OC	OP	NI	FA	CA	CL
2003	R 1,264,963.00	R 3,357,699.00	-R 2,092,736.00	-R 31,826.00	R 293,876.00	R 226,072.00	R 378,914.00
2004	R 1,298,805.00	R 3,570,738.00	-R 2,270,179.00	-R 226,572.00	R 309,995.00	R 97,664.00	R 493,197.00
2005	R 1,175,513.00	R 2,999,361.00	-R 1,810,921.00	R 768,887.00	R 114,439.00	R 953,186.00	R 384,276.00
2006	R 1,383,497.00	R 1,458,516.00	R 136,366.00	R 137,025.00	R 64,720.00	R 1,063,201.00	R 307,547.00
2007	R 1,326,045.00	R 1,428,811.00	-R 99,039.00	-R 25,211.00	R 67,609.00	R 991,845.00	R 264,292.00

WB7

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 157,793,640.00	R 92,124,786.00	R 67,631,771.00	R 47,267,759.00	R 578,210,450.00	R 165,836,398.00	R 90,317,513.00
2005	R 159,761,021.00	R 90,203,596.00	R 71,340,879.00	R 64,227,647.00	R 596,691,160.00	R 190,903,274.00	R 109,822,624.00
2006	R 198,287,873.00	R 145,450,723.00	R 52,837,151.00	R 73,941,831.00	R 382,256,428.00	R 268,405,584.00	R 127,433,638.00
2007	R 219,144,728.00	R 136,827,533.00	R 82,317,196.00	R 94,279,887.00	R 378,103,268.00	R 342,290,305.00	R 135,906,568.00
2008	R 203,232,072.00	R 235,879,927.00	-R 11,517,495.00	R 18,421,696.00	R 361,807,527.00	R 379,192,514.00	R 152,128,020.00

WB8

year	REVENUE	OC	OP	NI	FA	CA	CL
2005	R 175,589,000.00	R 236,390,000.00	-R 4,968,000.00	R 1,946,000.00	R 553,343,000.00	R 330,841,000.00	R 64,163,000.00
2006	R 140,108,000.00	R 196,875,000.00	R 23,983,000.00	R 38,090,000.00	R 587,241,000.00	R 324,962,000.00	R 39,976,000.00
2007	R 145,322,000.00	R 234,250,000.00	R 40,085,000.00	R 42,960,000.00	R 635,996,000.00	R 352,666,000.00	R 50,166,000.00
2008	R 158,046,000.00	R 233,155,000.00	R 15,024,000.00	R 48,752,000.00	R 639,427,000.00	R 383,097,000.00	R 71,109,000.00

WB9

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 133,730,000.00	R 106,421,000.00	R 29,351,000.00	R 16,438,000.00	R 250,599,000.00	R 39,297,000.00	R 31,979,000.00
2005	R 143,710,000.00	R 121,948,000.00	R 23,748,000.00	R 12,504,000.00	R 277,390,000.00	R 41,363,000.00	R 38,175,000.00
2006	R 144,412,000.00	R 110,644,000.00	R 34,630,000.00	R 18,687,000.00	R 244,973,000.00	R 117,494,000.00	R 85,807,000.00
2007	R 130,275,000.00	R 97,119,000.00	R 35,601,000.00	R 24,066,000.00	R 275,946,000.00	R 125,117,000.00	R 76,396,000.00
2008	R 135,556,000.00	R 108,263,000.00	R 36,890,000.00	R 28,397,000.00	R 321,294,000.00	R 120,173,000.00	R 82,080,000.00

WB10

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 7,316,421.55	R 7,032,215.45	R 288,504.54	-R 494,847.09	R 94,486,919.58	R 2,799,196.18	R 532,983.51
2005	R 7,484,999.09	R 8,615,330.13	-R 1,125,842.61	-R 1,920,047.35	R 98,004,059.56	R 1,634,729.86	R 4,567,065.16
2006	R 8,981,049.44	R 14,904,485.41	-R 5,918,833.71	-R 7,653,357.26	R 97,033,103.19	R 4,088,901.76	R 4,151,746.58
2007	R 9,620,144.94	R 21,733,327.99	-R 7,707,791.50	R 2,629,433.45	R 96,233,514.00	R 4,921,006.56	R 387,202.62
2008	R 9,639,834.25	R 24,370,389.00	-R 14,672,106.00	-R 17,080,187.81	R 82,919,280.16	R 3,254,125.88	R 2,229,847.95

WB11

year	REVENUE	OC	OP	NI	FA	CA	CL
2005	R 14,123,498.43	R 15,352,833.42	R 194,017.77	R 680,081.44	R 52,808,718.99	R 5,112,535.28	R 2,167,110.38
2006	R 17,016,369.44	R 16,396,891.84	R 3,656,973.22	R 4,312,276.94	R 54,161,964.50	R 8,420,279.13	R 3,344,870.92
2007	R 18,287,059.00	R 16,411,279.00	R 3,115,029.00	R 4,409,886.00	R 56,940,090.00	R 8,760,174.00	R 2,455,957.00
2008	R 18,950,774.00	R 18,851,593.00	R 543,066.00	R 3,311,150.00	R 61,211,046.00	R 7,573,373.00	R 3,202,725.00

WB12

year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 5,882,336.00	R 5,911,492.00	-R 29,156.00	R 3,000.00	R 9,200,757.00	R 1,118,816.00	R 1,784,177.00
2005	R 5,664,497.00	R 5,456,232.00	R 208,265.00	R 267,145.00	R 9,200,757.00	R 1,348,073.00	R 1,746,289.00
2006	R 5,711,235.00	R 5,745,237.00	-R 34,002.00	R 36,955.00	R 9,200,757.00	R 1,482,097.00	R 1,843,358.00
2007	R 7,215,857.00	R 7,778,843.00	-R 562,986.00	-R 466,310.00	R 9,200,757.00	R 1,464,691.00	R 2,292,262.00

WB13

year	REVENUE	OC	OP	NI	FA	CA	CL
2005	R 3,460,099,000.00	R 2,990,992,000.00	R 613,209,000.00	R 494,486,000.00	R 4,225,093,000.00	R 1,480,201,000.00	R 1,582,770,000.00
2006	R 3,672,119,000.00	R 3,087,775,000.00	R 671,838,000.00	R 591,809,000.00	R 4,430,963,000.00	R 955,874,000.00	R 663,784,000.00
2007	R 4,101,080,000.00	R 3,467,171,000.00	R 747,971,000.00	R 747,779,000.00	R 4,729,963,000.00	R 1,523,672,000.00	R 779,186,000.00
2008	R 4,258,538,000.00	R 3,630,632,000.00	R 763,062,000.00	R 802,059,000.00	R 5,169,905,000.00	R 1,844,558,000.00	R 736,466,000.00

WB14							
year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 250,454,000.00	R 244,999,000.00	R 48,849,000.00	R 13,063,000.00	R 471,770,000.00	R 134,805,000.00	R 93,112,000.00
2005	R 274,896,000.00	R 275,664,000.00	R 36,672,000.00	R 1,960,000.00	R 437,104,000.00	R 108,931,000.00	R 76,823,000.00
2006	R 278,388,000.00	R 266,764,000.00	R 43,545,000.00	R 28,267,000.00	R 448,202,000.00	R 120,870,000.00	R 74,477,000.00
2007	R 276,887,000.00	R 271,839,000.00	R 68,425,000.00	R 32,383,000.00	R 724,792,000.00	R 123,753,000.00	R 74,655,000.00
2008	R 305,809,000.00	R 306,299,000.00	R 91,312,000.00	R 56,277,000.00	R 737,361,000.00	R 204,053,000.00	R 118,701,000.00

WB15							
year	REVENUE	OC	OP	NI	FA	CA	CL
2004	R 906,107,000.00	R 473,450,000.00	R 432,657,000.00	-R 38,070,000.00	R 3,623,855,000.00	R 408,620,000.00	R 482,708,000.00
2005	R 1,000,123,000.00	R 605,424,000.00	R 394,699,000.00	R 48,089,000.00	R 2,973,565,000.00	R 1,054,584,000.00	R 1,498,631,000.00
2006	R 1,076,703,000.00	R 679,256,000.00	R 437,663,000.00	R 154,077,000.00	R 2,585,371,000.00	R 405,921,000.00	R 336,922,000.00
2007	R 1,180,260,000.00	R 716,181,000.00	R 470,555,000.00	R 250,752,000.00	R 2,716,816,000.00	R 513,679,000.00	R 416,929,000.00
2008	R 1,280,747,000.00	R 730,944,000.00	R 556,559,000.00	R 391,120,000.00	R 2,975,083,000.00	R 677,817,000.00	R 490,892,000.00

WB1											
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd	
2004	R 3,312,507.00	R 10,437,929.00	0.317352896	1.00	1.32	29.95	8.38	0.759098	0.240902	2.018758	
2005	R 2,272,763.00	R 11,137,479.00	0.204064403	1.00	1.20	53.35	7.57	0.83052	0.16948	1.282961	
2006	R 1,280,134.00	R 12,406,488.00	0.103182625	1.00	1.10	43.29	7.81	0.906468	0.093532	0.730483	
2007	R 1,130,914.00	R 13,129,601.00	0.086134681	1.00	1.09	19.41	8.29	0.920696	0.079304	0.657429	
2008	R 421,217.00	R 15,425,330.00	0.027306839	1.00	1.03	16.20	8.60	0.973419	0.026581	0.228597	
WB2											
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd	
2004	R 35,829,000.00	R 278,170,000.00	0.128802531	1.00	1.13	26.86	8.38	0.885895	0.114105	0.956204	
2005	R 37,660,000.00	R 287,311,000.00	0.131077474	1.00	1.13	50.57	7.57	0.884113	0.115887	0.877267	
2006	R 57,147,000.00	R 292,941,000.00	0.195080238	1.00	1.20	46.24	7.81	0.836764	0.163236	1.274874	
2007	R 53,384,000.00	R 302,199,000.00	0.176651809	1.00	1.18	20.34	8.29	0.849869	0.150131	1.244585	
2008	R 81,331,000.00	R 314,682,000.00	0.258454567	1.00	1.26	17.91	8.60	0.794625	0.205375	1.766221	
WB3											
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd	
2005	R 360,050,000.00	R 145,559,000.00	2.473567419	1.00	3.47	139.64	7.57	0.287888	0.712112	5.390684	
2006	R 362,989,000.00	R 450,540,000.00	0.805675412	1.00	1.81	65.88	7.81	0.553809	0.446191	3.484749	
2007	R 307,582,000.00	R 476,889,000.00	0.644976085	1.00	1.64	25.13	8.29	0.607912	0.392088	3.250413	
2008	R 314,306,000.00	R 527,719,000.00	0.595593488	1.00	1.60	20.41	8.60	0.626726	0.373274	3.210156	
WB4											
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd	
2004	R 44,786,204.00	R 55,200,249.00	0.811340616	1.00	1.81	38.03	8.38	0.552077	0.447923	3.753592	
2005	R 57,189,224.00	R 59,434,593.00	0.962221176	1.00	1.96	82.17	7.57	0.509627	0.490373	3.712127	
2006	R 78,129,111.00	R 33,805,732.00	2.311120227	1.00	3.31	114.30	7.81	0.302013	0.697987	5.451282	
2007	R 83,406,945.00	R 33,649,917.00	2.478667184	1.00	3.48	43.91	8.29	0.287466	0.712534	5.906903	
2008	R 100,647,872.00	R 54,219,466.00	1.856305114	1.00	2.86	29.74	8.60	0.350103	0.649897	5.589117	

WB5										
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
2004	R 3,090,099.00	R 49,043,028.00	0.063007916	1.00	1.06	25.78	8.38	0.940727	0.059273	0.49671
2005	R 10,372,072.00	R 40,824,234.00	0.254066543	1.00	1.25	55.25	7.57	0.797406	0.202594	1.533638
2006	R 11,065,802.00	R 59,928,968.00	0.184648633	1.00	1.18	45.91	7.81	0.844132	0.155868	1.217328
2007	R 19,078,800.00	R 60,980,120.00	0.312869178	1.00	1.31	21.73	8.29	0.761691	0.238309	1.975586
WB6										
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
2003	R 378,914.00	R 141,034.00	2.68668548	1.00	3.69	33.15	9.15	0.271246	0.728754	6.668096
2004	R 493,197.00	R 85,538.00	5.765823377	1.00	6.77	119.14	8.38	0.147802	0.852198	7.141422
2005	R 384,276.00	R 683,349.00	0.562342229	1.00	1.56	66.97	7.57	0.640065	0.359935	2.724711
2006	R 307,547.00	R 820,374.00	0.374886332	1.00	1.37	52.03	7.81	0.727333	0.272667	2.12953
2007	R 264,292.00	R 795,163.00	0.33237462	1.00	1.33	21.93	8.29	0.75054	0.24946	2.068026
WB7										
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
2004	R 400,515,886.00	R 343,530,962.00	1.165880023	1.00	2.17	43.84	8.38	0.461706	0.538294	4.510903
2005	R 398,749,891.00	R 388,844,543.00	1.0254738	1.00	2.03	84.58	7.57	0.493712	0.506288	3.832603
2006	R 185,585,353.00	R 465,076,659.00	0.399042501	1.00	1.40	52.80	7.81	0.714775	0.285225	2.227611
2007	R 179,788,351.00	R 540,605,222.00	0.332568654	1.00	1.33	21.94	8.29	0.75043	0.24957	2.068932
2008	R 198,045,739.00	R 542,954,302.00	0.364755815	1.00	1.36	18.70	8.60	0.732732	0.267268	2.298506
WB8										
year	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
2005	R 96,866,000.00	R 787,318,000.00	0.123032879	1.00	1.12	50.27	7.57	0.890446	0.109554	0.829325
2006	R 86,795,000.00	R 825,408,000.00	0.105154057	1.00	1.11	43.35	7.81	0.904851	0.095149	0.743112
2007	R 85,193,000.00	R 903,469,000.00	0.094295432	1.00	1.09	19.50	8.29	0.91383	0.08617	0.714349
2008	R 71,109,000.00	R 951,415,000.00	0.074740255	1.00	1.07	16.55	8.60	0.930457	0.069543	0.598067

WB9											
year		Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
	2004	R 212,551,000.00	R 77,345,000.00	2.748089728	1.00	3.75	69.74	8.38	0.266803	0.733197	6.144194
	2005	R 203,535,000.00	R 115,218,000.00	1.766520856	1.00	2.77	112.75	7.57	0.361465	0.638535	4.833711
	2006	R 235,861,000.00	R 126,606,000.00	1.862952783	1.00	2.86	99.88	7.81	0.34929	0.65071	5.082047
	2007	R 250,391,000.00	R 150,672,000.00	1.661828342	1.00	2.66	35.55	8.29	0.375682	0.624318	5.175599
	2008	R 262,398,000.00	R 179,069,000.00	1.465345761	1.00	2.47	26.84	8.60	0.405623	0.594377	5.111645
WB10											
year		Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
	2004	R 20,143,433.10	R 77,142,682.66	0.261119168	1.00	1.26	29.02	8.38	0.792946	0.207054	1.735109
	2005	R 24,226,528.94	R 75,412,260.48	0.321254512	1.00	1.32	57.80	7.57	0.756856	0.243144	1.840597
	2006	R 33,146,931.73	R 67,975,073.22	0.48763363	1.00	1.49	55.65	7.81	0.672209	0.327791	2.560051
	2007	R 10,790,252.60	R 90,364,267.96	0.119408399	1.00	1.12	19.75	8.29	0.893329	0.106671	0.884302
	2008	R 12,902,434.73	R 73,270,971.31	0.176092039	1.00	1.18	17.30	8.60	0.850274	0.149726	1.287647
WB11											
year		Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
	2005	R 32,395,310.38	R 25,525,943.89	1.269113123	1.00	2.27	93.84	7.57	0.440701	0.559299	4.233895
	2006	R 32,368,970.92	R 30,213,272.71	1.071349378	1.00	2.07	74.42	7.81	0.482777	0.517223	4.039511
	2007	R 30,275,557.00	R 35,424,707.00	0.854645234	1.00	1.85	27.28	8.29	0.539187	0.460813	3.820142
	2008	R 29,817,425.00	R 38,966,994.00	0.765196951	1.00	1.77	21.66	8.60	0.566509	0.433491	3.728022
WB12											
year		Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
	2004	R 8,384,177.00	R 1,935,396.00	4.332021457	1.00	5.33	95.67	8.38	0.187546	0.812454	6.808363
	2005	R 1,746,289.00	R 8,802,541.00	0.198384648	1.00	1.20	53.13	7.57	0.834457	0.165543	1.253163
	2006	R 1,843,358.00	R 8,839,496.00	0.20853655	1.00	1.21	46.68	7.81	0.827447	0.172553	1.347639
	2007	R 2,292,262.00	R 8,373,186.00	0.273762221	1.00	1.27	21.33	8.29	0.785076	0.214924	1.781721
WB13											
year		Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
	2005	R 2,517,918,000.00	R 3,187,376,000.00	0.78996579	1.00	1.79	75.62	7.57	0.55867	0.44133	3.340869
	2006	R 1,615,081,000.00	R 3,771,756,000.00	0.428203998	1.00	1.43	53.74	7.81	0.70018	0.29982	2.341594
	2007	R 1,744,368,000.00	R 4,509,267,000.00	0.386840699	1.00	1.39	22.49	8.29	0.721063	0.278937	2.312385
	2008	R 1,713,037,000.00	R 5,301,426,000.00	0.323127589	1.00	1.32	18.39	8.60	0.755785	0.244215	2.100249

WB14
year

	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
2004	R 357,197,000.00	R 249,378,000.00	1.432351691	1.00	2.43	48.20	8.38	0.411125	0.588875	4.934775
2005	R 334,095,000.00	R 211,940,000.00	1.576365953	1.00	2.58	105.52	7.57	0.388144	0.611856	4.631753
2006	R 325,115,000.00	R 243,957,000.00	1.332673381	1.00	2.33	82.83	7.81	0.428693	0.571307	4.46191
2007	R 322,377,000.00	R 526,168,000.00	0.612688343	1.00	1.61	24.80	8.29	0.620083	0.379917	3.149515
2008	R 363,811,000.00	R 577,603,000.00	0.629863418	1.00	1.63	20.66	8.60	0.613548	0.386452	3.323484

WB15
year

	Total Liabilities	Equity	D/E	bu	b	rs (%)	rd (%)	We	Wd	Wdrd
2004	R 3,755,741,000.00	R 276,734,000.00	13.57166449	1.00	14.57	246.92	8.38	0.068626	0.931374	7.804911
2005	R 3,719,291,000.00	R 308,858,000.00	12.04207435	1.00	13.04	503.43	7.57	0.076675	0.923325	6.989571
2006	R 2,603,410,000.00	R 387,882,000.00	6.711860824	1.00	7.71	255.82	7.81	0.12967	0.87033	6.797274
2007	R 2,596,740,000.00	R 633,755,000.00	4.097387792	1.00	5.10	60.49	8.29	0.196179	0.803821	6.663677
2008	R 2,634,165,000.00	R 1,018,735,000.00	2.585721508	1.00	3.59	35.13	8.60	0.278884	0.721116	6.201598

WB1					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	22.73124156	24.75	R 12,350,442.00	R 3,056,734.40	-R 1,013,274.40
2005	44.30703912	45.59	R 12,641,193.00	R 5,763,119.89	-R 4,946,799.89
2006	39.23951687	39.97	R 13,492,106.00	R 5,392,794.77	-R 4,017,580.77
2007	17.87257093	18.53	R 13,383,425.00	R 2,479,948.65	-R 1,720,292.65
2008	15.77140344	16.00	R 15,425,330.00	R 2,468,052.80	-R 1,872,403.80

WB2					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	23.79379625	24.75	R 296,932,000.00	R 73,490,670.00	-R 69,209,670.00
2005	44.71273341	45.59	R 303,047,000.00	R 138,159,127.30	-R 133,508,127.30
2006	38.69512605	39.97	R 305,634,000.00	R 122,161,909.80	-R 120,965,909.80
2007	17.28541474	18.53	R 311,936,000.00	R 57,801,740.80	-R 54,633,740.80
2008	14.23377869	16.00	R 323,516,000.00	R 51,762,560.00	-R 49,229,560.00

WB3					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2005	40.1993157	45.59	R 464,105,000.00	R 211,585,469.50	-R 158,181,469.50
2006	36.48525134	39.97	R 707,337,000.00	R 282,722,598.90	-R 250,148,598.90
2007	15.27958694	18.53	R 726,181,000.00	R 134,561,339.30	-R 83,616,339.30
2008	12.78984401	16.00	R 765,984,000.00	R 122,557,440.00	-R 71,620,440.00

WB4					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	20.99640761	24.75	R 55,200,249.00	R 13,662,061.63	-R 13,394,264.63
2005	41.87787295	45.59	R 59,434,593.00	R 27,096,230.95	-R 23,256,424.95
2006	34.51871834	39.97	-R 33,805,732.00	-R 13,512,151.08	-R 23,192,512.92
2007	12.62309662	18.53	-R 35,303,121.00	-R 6,541,668.32	R 4,892,167.32
2008	10.41088282	16.00	-R 54,219,466.00	-R 8,675,114.56	-R 12,441,124.44

WB5

year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	24.2532903	24.75	R 49,580,440.00	R 12,271,158.90	-R 12,109,389.90
2005	44.0563623	45.59	R 41,361,646.00	R 18,856,774.41	-R 28,655,498.41
2006	38.75267211	39.97	R 62,220,227.00	R 24,869,424.73	-R 7,899,762.73
2007	16.55441437	18.53	R 64,678,743.00	R 11,984,971.08	-R 12,068,666.08

WB6

year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2003	8.991904152	15.66	R 141,034.00	R 22,085.92	-R 2,114,821.92
2004	17.608578	24.75	-R 85,538.00	-R 21,170.66	-R 2,249,008.35
2005	42.86528924	45.59	R 683,349.00	R 311,538.81	-R 2,122,459.81
2006	37.84046959	39.97	R 820,374.00	R 327,903.49	-R 191,537.49
2007	16.46197382	18.53	R 795,162.00	R 147,343.52	-R 246,382.52

WB7

year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	20.23909705	24.75	R 653,729,335.00	R 161,798,010.41	-R 94,166,239.41
2005	41.75739715	45.59	R 677,771,810.00	R 308,996,168.18	-R 237,655,289.18
2006	37.74238938	39.97	R 523,228,374.00	R 209,134,381.09	-R 156,297,230.09
2007	16.46106784	18.53	R 584,487,005.00	R 108,305,442.03	-R 25,988,246.03
2008	13.70149357	16.00	R 588,872,021.00	R 94,219,523.36	-R 105,737,018.36

WB8

year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2005	44.76067531	45.59	R 820,021,000.00	R 373,847,573.90	-R 378,815,573.90
2006	39.22688805	39.97	R 872,227,000.00	R 348,629,131.90	-R 324,646,131.90
2007	17.81565074	18.53	R 938,496,000.00	R 173,903,308.80	-R 133,818,308.80
2008	15.40193345	16.00	R 951,415,000.00	R 152,226,400.00	-R 137,202,400.00

WB9					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	18.6058056	24.75	R 257,917,000.00	R 63,834,457.50	-R 34,483,457.50
2005	40.75628879	45.59	R 280,578,000.00	R 127,915,510.20	-R 104,167,510.20
2006	34.88795278	39.97	R 276,660,000.00	R 110,581,002.00	-R 75,951,002.00
2007	13.35440068	18.53	R 324,667,000.00	R 60,160,795.10	-R 24,559,795.10
2008	10.88835451	16.00	R 359,387,000.00	R 57,501,920.00	-R 20,611,920.00

WB10					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	23.01489147	24.75	R 96,753,132.25	R 23,946,400.23	-R 23,657,895.69
2005	43.74940333	45.59	R 95,071,724.26	R 43,343,199.09	-R 44,469,041.70
2006	37.40994854	39.97	R 96,970,258.37	R 38,759,012.27	-R 44,677,845.98
2007	17.64569751	18.53	R 100,767,317.94	R 18,672,184.01	-R 26,379,975.51
2008	14.71235287	16.00	R 83,943,558.09	R 13,430,969.29	-R 28,103,075.29

WB11					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2005	41.35610516	45.59	R 55,754,143.89	R 25,418,314.20	-R 25,224,296.43
2006	35.93048898	39.97	R 59,237,372.71	R 23,677,177.87	-R 20,020,204.65
2007	14.70985755	18.53	R 63,244,307.00	R 11,719,170.09	-R 8,604,141.09
2008	12.2719776	16.00	R 65,581,694.00	R 10,493,071.04	-R 9,950,005.04

WB12					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	17.94163659	24.75	R 8,535,396.00	R 2,112,510.51	-R 2,141,666.51
2005	44.33683659	45.59	R 8,802,541.00	R 4,013,078.44	-R 3,804,813.44
2006	38.62236144	39.97	R 8,839,496.00	R 3,533,146.55	-R 3,567,148.55
2007	16.74827907	18.53	R 8,373,186.00	R 1,551,551.37	-R 2,114,537.37

WB13					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2005	42.24913111	45.59	R 4,122,524,000.00	R 1,879,458,691.60	-R 1,266,249,691.60
2006	37.62840648	39.97	R 4,723,053,000.00	R 1,887,804,284.10	-R 1,215,966,284.10
2007	16.21761517	18.53	R 5,474,449,000.00	R 1,014,415,399.70	-R 266,444,399.70
2008	13.8997511	16.00	R 6,277,997,000.00	R 1,004,479,520.00	-R 241,417,520.00

WB14					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	19.81522547	24.75	R 513,463,000.00	R 127,082,092.50	-R 78,233,092.50
2005	40.95824718	45.59	R 469,212,000.00	R 213,913,750.80	-R 177,241,750.80
2006	35.50808982	39.97	R 494,595,000.00	R 197,689,621.50	-R 154,144,621.50
2007	15.38048485	18.53	R 773,890,000.00	R 143,401,817.00	-R 74,976,817.00
2008	12.67651575	16.00	R 822,713,000.00	R 131,634,080.00	-R 40,322,080.00

WB15					
year	Wers	WACC (%)	TOC	WACC*TOC	EVA
2004	16.94508873	24.75	R 3,549,767,000.00	R 878,567,332.50	-R 445,910,332.50
2005	38.60042914	45.59	R 2,529,518,000.00	R 1,153,207,256.20	-R 758,508,256.20
2006	33.17272575	39.97	R 2,654,370,000.00	R 1,060,951,689.00	-R 623,288,689.00
2007	11.8663232	18.53	R 2,813,566,000.00	R 521,353,779.80	-R 50,798,779.80
2008	9.798401544	16.00	R 3,162,008,000.00	R 505,921,280.00	R 50,637,720.00

Appendix 2

Year: 2004									
Indicator	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)	EVA
Industry Average	37.55	15.18	1.76	1.38	0.65	3.74	26.72	99.89	R 1,643,678.92
WB1	82.81	73.57	0.18	1.18	0.24	1.32	13.20	17.39	-R 1,013,274.40
WB2	5.68	9.79	0.24	2.19	0.11	1.13	2.35	2.65	-R 69,209,670.00
WB3									
WB4	0.31	0.81	0.88	2.02	0.45	1.81	0.71	1.29	-R 13,394,264.63
WB5	0.48	2.01	0.64	4.37	0.06	1.06	1.29	1.37	-R 12,109,389.90
WB6	-174.79	-17.44	3.19	0.20	1.21	4.77	-55.58	-264.88	-R 2,114,821.92
WB7	42.86	29.96	0.21	1.84	0.54	2.17	6.35	13.76	-R 94,166,239.41
WB8									
WB9	21.95	12.29	0.46	1.23	0.73	3.75	5.67	21.25	-R 34,483,457.50
WB10	3.94	-6.76	0.08	5.25	0.21	1.26	-0.51	-0.64	-R 23,657,895.69
WB11									
WB12	-0.50	0.05	0.57	0.63	0.81	5.33	0.03	0.16	-R 2,141,666.51
WB13									
WB14	19.50	5.22	0.41	1.45	0.59	2.43	2.15	5.24	-R 78,233,092.50
WB15	47.75	-4.20	0.22	0.85	0.93	14.57	-0.94	-13.76	-R 445,910,332.50
Lower than Ind. Avg.	8	9	10	5	7	7	11	11	11
Higher than Ind. Avg.	3	2	1	6	4	4	0	0	0

Year: 2005										
Indicator	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)	EVA	
Industry Average	10.61	10.35	1.77	1.44	0.63	3.35	18.34	61.45	R 1,824,897.37	
WB1	32.38	27.75	0.19	1.62	0.17	1.20	5.22	6.28	-R 4,946,799.89	
WB2	5.81	11.42	0.25	2.20	0.12	1.13	2.81	3.18	-R 133,508,127.30	
WB3	36.40	12.50	0.29	1.54	0.71	3.47	3.63	12.60	-R 158,181,469.50	
WB4	4.12	4.43	0.80	1.88	0.49	1.96	3.54	6.95	-R 23,256,424.95	
WB5	-25.98	-21.75	0.74	1.65	0.20	1.25	-16.02	-20.09	-R 28,655,498.41	
WB6	-154.05	65.41	1.10	2.48	0.36	1.56	72.02	112.52	-R 2,122,459.81	
WB7	44.65	40.20	0.20	1.74	0.51	2.03	8.15	16.52	-R 237,655,289.18	
WB8	-2.83	1.11	0.20	5.16	0.11	1.12	0.22	0.25	-R 378,815,573.90	
WB9	16.52	8.70	0.45	1.08	0.64	2.77	3.92	10.85	-R 104,167,510.20	
WB10	-15.04	-25.65	0.08	0.36	0.24	1.32	-1.93	-2.55	-R 44,469,041.70	
WB11	1.37	4.82	0.24	2.36	0.56	2.27	1.17	2.66	-R 25,224,296.43	
WB12	3.68	4.72	0.54	0.77	0.17	1.20	2.53	3.03	-R 3,804,813.44	
WB13	17.72	14.29	0.61	0.94	0.44	1.79	8.67	15.51	-R 1,266,249,691.60	
WB14	13.34	0.71	0.50	1.42	0.61	2.58	0.36	0.92	-R 177,241,750.80	
WB15	39.47	4.81	0.25	0.70	0.92	13.04	0.36	0.92	-R 758,508,256.20	
Lower than Ind. Avg.	8	9	15	6	12	13	14	14	15	
Higher than Ind. Avg.	7	6	0	9	3	2	1	1	0	

Year: 2006									
Indicator	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)	EVA
Industry Average	10.90	7.81	1.64	1.59	0.63	3.40	12.83	43.68	R 2,320,324.00
WB1	50.19	46.32	0.20	7.45	0.09	1.10	9.27	10.23	-R 4,017,580.77
WB2	1.36	6.40	0.25	1.54	0.16	1.20	1.61	1.92	-R 120,965,909.80
WB3	20.54	0.19	0.19	1.00	0.45	1.81	0.04	0.07	-R 250,148,598.90
WB4	-69.89	-69.13	1.18	0.45	1.76	1.31	-81.91	-107.39	-R 23,192,512.92
WB5	38.08	42.98	0.63	4.76	0.16	1.18	26.98	31.96	-R 7,899,762.73
WB6	9.86	9.90	1.23	3.46	0.27	1.37	12.15	16.70	-R 191,537.49
WB7	26.65	37.29	0.30	2.11	0.29	1.40	11.36	15.90	-R 156,297,230.09
WB8	17.12	27.19	0.15	8.13	0.10	1.11	4.18	4.61	-R 324,646,131.90
WB9	23.98	12.94	0.40	1.37	0.65	2.86	5.16	14.76	-R 75,951,002.00
WB10	-65.90	-85.22	0.09	0.98	0.33	1.49	-7.57	-11.26	-R 44,677,845.98
WB11	21.49	25.34	0.27	2.52	0.52	2.07	6.89	14.27	-R 20,020,204.65
WB12	-0.60	0.65	0.53	0.80	0.17	1.21	0.35	0.42	-R 3,567,148.55
WB13	18.30	16.12	0.68	1.44	0.30	1.43	10.99	15.69	-R 1,215,966,284.10
WB14	15.64	10.15	0.49	1.62	0.57	2.33	4.97	11.59	-R 154,144,621.50
WB15	40.65	14.31	0.36	1.20	0.87	7.71	5.15	39.72	-R 623,288,689.00
Lower than Ind. Avg.	5	5	15	8	12	14	14	15	15
Higher than Ind. Avg.	10	10	0	7	3	1	1	0	0

Year: 2007									
Indicator	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)	EVA
Industry Average	11.81	9.60	1.61	1.57	0.60	4.89	15.47	75.73	R 2,776,864.03
WB1	25.94	24.70	0.21	1.81	0.08	1.09	5.07	5.51	-R 1,720,292.65
WB2	2.97	8.68	0.30	1.73	0.15	1.18	2.60	3.06	-R 54,633,740.80
WB3	28.29	14.47	0.23	2.52	0.39	1.64	3.32	5.47	-R 83,616,339.30
WB4	-3.89	-1.99	0.88	0.35	1.73	1.43	-1.75	-2.50	R 4,892,167.32
WB5	-0.14	1.74	0.75	3.54	0.24	1.31	1.31	1.72	-R 12,068,666.08
WB6	-7.47	-1.90	1.25	3.75	0.25	1.33	-2.38	-3.17	-R 246,382.52
WB7	37.56	43.02	0.30	2.52	0.25	1.33	13.09	17.44	-R 25,988,246.03
WB8	27.58	29.56	0.15	7.03	0.09	1.09	4.35	4.76	-R 133,818,308.80
WB9	27.33	18.47	0.32	1.64	0.62	2.66	6.00	15.97	-R 24,559,795.10
WB10	-80.12	27.33	0.10	12.71	0.11	1.12	2.60	2.91	-R 26,379,975.51
WB11	17.03	24.11	0.28	3.57	0.46	1.85	6.71	12.45	-R 8,604,141.09
WB12	-7.80	-6.46	0.68	0.64	0.21	1.27	-4.37	-5.57	-R 2,114,537.37
WB13	18.24	18.23	0.66	1.96	0.28	1.39	11.96	16.58	-R 266,444,399.70
WB14	24.71	11.70	0.33	1.66	0.38	1.61	3.82	6.15	-R 74,976,817.00
WB15	39.87	21.25	0.37	1.23	0.80	5.10	7.76	39.57	-R 50,798,779.80
Lower than Ind. Avg.	6	5	15	3	12	14	15	15	14
Higher than Ind. Avg.	9	10	0	12	3	1	0	0	1

Year: 2008									
Indicator	OPM (%)	NPM (%)	TATO	CR	D/A	EM	ROA (%)	ROE (%)	EVA
Industry Average	14.54	11.51	1.66	1.41	0.61	6.68	19.12	127.83	R 1,327,482.14
WB1	18.92	19.09	0.20	2.99	0.03	1.03	3.79	3.90	-R 1,872,403.80
WB2	1.26	6.22	0.51	1.35	0.21	1.26	3.15	3.97	-R 49,229,560.00
WB3	25.88	24.93	0.23	3.01	0.37	1.60	5.83	9.30	-R 71,620,440.00
WB4	-55.45	-54.01	0.82	0.36	2.17	0.86	-44.30	-37.94	-R 12,441,124.44
WB5									
WB6									
WB7	-5.67	9.06	0.27	2.49	0.27	1.36	2.49	3.39	-R 105,737,018.36
WB8	9.51	30.85	0.15	5.39	0.07	1.07	4.77	5.12	-R 137,202,400.00
WB9	27.21	20.95	0.31	1.46	0.59	2.47	6.43	15.86	-R 20,611,920.00
WB10	-152.20	-177.18	0.11	1.46	0.15	1.18	-19.82	-23.31	-R 28,103,075.29
WB11	2.87	17.47	0.28	2.36	0.43	1.77	4.81	8.50	-R 9,950,005.04
WB12									
WB13	17.92	18.83	0.61	2.50	0.24	1.32	11.43	15.13	-R 241,417,520.00
WB14	29.86	18.40	0.32	1.72	0.39	1.63	5.98	9.74	-R 40,322,080.00
WB15	43.46	30.54	0.35	1.38	0.72	3.59	10.71	38.39	R 50,637,720.00
Lower than Ind. Avg.	6	4	12	3	10	12	12	12	11
Higher than Ind. Avg.	6	8	0	9	2	0	0	0	1

Appendix 3

Industry	Sector	Company Name	JSE Name
Industrials	Building Materials & Fixtures	ABE CONSTRUCTION CHEMICALS LIMITED	ABE
Industrials	Building Materials & Fixtures	ABSOLUTE HOLDINGS LIMITED	ABSOLUTE
Industrials	Building Materials & Fixtures	AFRICAN BRICK CENTRE LIMITED	AFBRICK
Industrials	Building Materials & Fixtures	AFRIMAT LIMITED	AFRIMAT
Industrials	Building Materials & Fixtures	AG INDUSTRIES LIMITED	AGI
Industrials	Building Materials & Fixtures	BRIKOR LIMITED	BRIKOR
Industrials	Building Materials & Fixtures	BUILDMAX LIMITED	BUILDMAX
Industrials	Building Materials & Fixtures	BUILDWORKS GROUP LIMITED	BUILDWORKS
Industrials	Building Materials & Fixtures	CERAMIC INDUSTRIES LIMITED	CERAMIC
Industrials	Building Materials & Fixtures	DISTRIB. AND WAREHOUSING NETWORK LD	DAWN
Industrials	Building Materials & Fixtures	INFRASORS HOLDINGS LIMITED	INFRASORS
Industrials	Building Materials & Fixtures	KAYDAV GROUP LIMITED	KAYDAV
Industrials	Building Materials & Fixtures	Kwikspace Modular Buildings Limited	KWIKSPACE
Industrials	Building Materials & Fixtures	MASONITE (AFRICA) LIMITED	MASNITE
Industrials	Building Materials & Fixtures	O-LINE HOLDINGS LIMITED	O-LINE
Industrials	Building Materials & Fixtures	PRETORIA PORTLAND CEMENT COMPANY LD	PPC
Industrials	Building Materials & Fixtures	Safic Holdings Limited	SAFIC
Industrials	Building Materials & Fixtures	Top Fix Holdings Limited	TOPFIX
Industrials	Building Materials & Fixtures	W G WEARNE LIMITED	WEARNE
Industrials	Building Materials & Fixtures	William Tell Holdings Limited	WILLTELL
Industrials	Heavy Construction	AVENG LTD	AVENG
Industrials	Heavy Construction	B&W INSTRUMENTATION & ELECTRICAL LD	B&W
Industrials	Heavy Construction	BASIL READ HOLDINGS LIMITED	BASREAD
Industrials	Heavy Construction	ELB GROUP LIMITED	ELBGROUP
Industrials	Heavy Construction	ESOR LIMITED	ESOR
Industrials	Heavy Construction	GROUP FIVE LIMITED	GROUP 5
Industrials	Heavy Construction	MURRAY AND ROBERTS HOLDINGS LIMITED	M&R HLD
Industrials	Heavy Construction	PROTECH KHUTHELE HOLDINGS LIMITED	PROTECH
Industrials	Heavy Construction	RACEC GROUP LIMITED	RACEC
Industrials	Heavy Construction	RAUBEX GROUP LIMITED	RAUBEX
Industrials	Heavy Construction	SANYATI HOLDINGS LIMITED	SANYATI
Industrials	Heavy Construction	SEA KAY HOLDINGS LIMITED	SEAKAY
Industrials	Heavy Construction	STEFANUTTI & BRESSAN HOLDINGS LTD	S&B
Industrials	Heavy Construction	WILSON BAYLY HOLMES-OVCON LIMITED	WBHO
Industrials	Electrical Components & Equipment	ALLIED ELECTRONICS CORPORATION LD	ALTRON
Industrials	Electrical Components & Equipment	BICC CAFCA LIMITED	BICAF
Industrials	Electrical Components & Equipment	DELTA ELECTRICAL INDUSTRIES LIMITED	DELTA
Industrials	Electrical Components & Equipment	ELLIES HOLDINGS LIMITED	ELLIES
Industrials	Electrical Components & Equipment	JASCO ELECTRONICS HOLDINGS LIMITED	JASCO
Industrials	Electrical Components & Equipment	REUNERT LIMITED	REUNERT
Industrials	Electrical Components & Equipment	SOUTH OCEAN HOLDINGS LIMITED	S.OCEAN
Industrials	Electrical Components & Equipment	STELLA VISTA TECHNOLOGIES LIMITED	STELLA
Industrials	Electronic Equipment	AMALGAMATED ELECTRONICS CORP LTD	AMECOR
Industrials	Electronic Equipment	Ansys Limited	ANSYS
Industrials	Electronic Equipment	ARB HOLDINGS LIMITED	ARB
Industrials	Electronic Equipment	CONTROL INSTRUMENTS GROUP LIMITED	CONTROL
Industrials	Electronic Equipment	DIGICORE HOLDINGS LIMITED	DIGICOR
Industrials	Electronic Equipment	SETPOINT TECHNOLOGY HOLDINGS LD	SETPOINT
Industrials	Electronic Equipment	ZAPTRONIX LIMITED	ZAPTRONIX
Industrials	Containers & Packaging	ASTRAPAK LIMITED	ASTRAPAK
Industrials	Containers & Packaging	BOWLER METCALF LIMITED	BOWCALF
Industrials	Containers & Packaging	NAMPAK LIMITED	NAMPAK
Industrials	Containers & Packaging	TRANSPACO LIMITED	TRNPACO

Industry	Sector	Company Name	JSE Name
Industrials	Diversified Industrials	ARGENT INDUSTRIAL LIMITED	ARGENT
Industrials	Diversified Industrials	BARLOWORLD LIMITED	BARWORLD
Industrials	Diversified Industrials	KAP INTERNATIONAL HOLDINGS LIMITED	KAP
Industrials	Diversified Industrials	REMGRO LIMITED	REMGRO2
Industrials	Diversified Industrials	SEKUNJALO INVESTMENTS LIMITED	SEKUNJALO
Industrials	Diversified Industrials	UNIVERSAL INDUSTRIES CORP LTD	UNIVERSAL
Industrials	Commercial Vehicles & Trucks	BELL EQUIPMENT LIMITED	BELL
Industrials	Commercial Vehicles & Trucks	JOHN DANIEL HOLDINGS LIMITED	JOHNDAN
Industrials	Commercial Vehicles & Trucks	VENTER LEISURE AND COMM TRAILERS LD	VENTEL
Industrials	Industrial Machinery	CENMAG HOLDINGS LIMITED	CENMAG
Industrials	Industrial Machinery	HOWDEN AFRICA HOLDINGS LIMITED	HOWDEN
Industrials	Industrial Machinery	HUDACO INDUSTRIES LIMITED	HUDACO
Industrials	Industrial Machinery	INVICTA HOLDINGS LIMITED	INVICTA
Industrials	Industrial Machinery	KAIROS INDUSTRIAL HOLDINGS LIMITED	KAIROS
Industrials	Industrial Machinery	PSV HOLDINGS LIMITED	PSV
Industrials	Marine Transportation	GRINDROD LIMITED	GRINDROD
Industrials	Marine Transportation	SANTOVA LOGISTICS LIMITED	SANTOVA
Industrials	Transportation Services	IMPERIAL HOLDINGS LIMITED	IMPERIAL2
Industrials	Transportation Services	MOBILE INDUSTRIES LIMITED	MOBILE
Industrials	Transportation Services	SUPER GROUP LIMITED	SUPRGRP
Industrials	Transportation Services	TRENCOR LIMITED	TRENCOR
Industrials	Transportation Services	VALUE GROUP LIMITED	VALUE
Industrials	Trucking	CARGO CARRIERS LIMITED	CARGO
Industrials	Business Support Services	CIC HOLDINGS LIMITED	CIC
Industrials	Business Support Services	COMMAND HOLDINGS LIMITED	COMMAND
Industrials	Business Support Services	DIALOGUE GROUP HOLDINGS LIMITED	DIALOGUE
Industrials	Business Support Services	EXCELLERATE HOLDINGS LIMITED	EXCELL
Industrials	Business Support Services	LABAT AFRICA LIMITED	LABAT
Industrials	Business Support Services	METROFILE HOLDINGS LIMITED	METROFILE
Industrials	Business Support Services	MICROMEGA HOLDINGS LIMITED	MMG
Industrials	Business Support Services	MVELAPHANDA GROUP LIMITED	MVELA GRP
Industrials	Business Support Services	ONELOGIX GROUP LIMITED	ONELOGIX
Industrials	Business Support Services	SAB&T Ubuntu Holdings Limited	SUHL
Industrials	Business Support Services	TELIMATRIX LIMITED	MATRIX
Industrials	Business Support Services	THE BIDVEST GROUP LIMITED	BIDVEST
Industrials	Business Training & Employment Agency	ADCORP HOLDINGS LIMITED	ADCORP
Industrials	Business Training & Employment Agency	KELLY GROUP LIMITED	KELLY
Industrials	Business Training & Employment Agency	PRIMESERV GROUP LIMITED	PRIMESERV
Industrials	Business Training & Employment Agency	Workforce Holdings Limited	Workforce
Industrials	Industrial Suppliers	AUSTRO GROUP LIMITED	AUSTRO
Industrials	Industrial Suppliers	ILIAD AFRICA LIMITED	ILIAD
Industrials	Industrial Suppliers	MARSHALL MONTEAGLE HLDGS SOC ANON	MONTE
Industrials	Industrial Suppliers	RARE HOLDINGS LIMITED	RARE
Industrials	Industrial Suppliers	S A FRENCH LIMITED	SA FRENCH
Industrials	Industrial Suppliers	WINHOLD LIMITED	WINHOLD
Industrials	Waste & Disposal Services	ENVIROSERV HOLDINGS LIMITED	ENSERV
Industrials	Waste & Disposal Services	INTERWASTE HOLDINGS LIMITED	INTERWASTE