

**Title:**  
**A Review of the Actuaries' Capitalisation Rate from an Economic  
Perspective.**

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requirements for the degree of

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By

JASON TURNER

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## DECLARATION

Except for references specifically indicated in the text, and such help as I have acknowledged, this thesis is wholly my own work and has not been submitted at any other University or College for degree purposes.

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Jason E. Turner MIFM  
Grahamstown

May 2005

## **ABSTRACT**

The purpose of this paper was to evaluate if the macroeconomic change that has occurred in the South African economy since the 1980s has been significant enough to justify a re-examination of the actuaries' capitalisation rate, due to its formulation processes dependence on the macroeconomic situation. The need for the re-examination arises from the use of the capitalisation in the calculation of lump sum awards where even a small change in the rate can have a significant impact on the value of the final award.

In order to address the issue an examination of how Keynesian expectations are formulated and an examination of the Government's macroeconomic policy was conducted to provide the foundation. On this foundation, a trend analysis of the major groups of financial instruments, as well as the current outlooks for the South African economy, was conducted to determine if there was any indication of a significant change in the macroeconomic conditions.

The results of the analysis provided a compelling case for the urgent need for the actuaries' capitalisation rate to be recalculated to account for the changed economic situation.

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DEDICATION

*To My Wife Nickél*

*When times were tough you gave me the determination to push on,  
because this is for our future.*

## CHAPTER ONE

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### 1.1 Introduction

The purpose of the study is to verify that the Actuaries' Capitalisation Rate is still valid, given that twenty years have passed since the current rate of 2.5% was determined. If the current rate is invalid as a result of the changes that have occurred during the past twenty years then in order to ensure accuracy, fairness and justice the rate will have to be re-evaluated and adjusted to incorporate the changes.

### 1.2 The Context of the Research

“In its broadest sense, a capitalization rate is a number used to convert an income stream into a present value” (University Chicago, 2000). Also referred to as a discount rate, these rates are widely used in many different areas of valuation, from real estate to insurance. Of specific interest is “the compensation that is awarded by a court for damage suffered in consequence of wrongful conduct, which give rise to a continuing loss over an extended period of time”(Koch 1993:1).

The specific capitalisation rate that the courts use is commonly referred to as the Actuaries' Capitalisation Rate. The problem with this rate is that it was based on current expectations present in the late 1980s. Since then the political, economic and social conditions have significantly changed. This is confirmed by the courts with higher capitalisation rates being used by the courts as demonstrated in “*Brunt v AA Mutual Insurance* 1990 (W) the court ordered the use of a nominal discount rate of return of 15, 5% per year coupled with a rate of salary escalation of 10, 96% per year, that is to say a net capitalization rate of 4,1% per year” (Koch, 1993: 126).

The expectations that were part of determining the Actuaries' Capitalisation Rate have changed. As a result the implications of current expectations need to be introduced into the capitalisation rate calculation. Largely the old expectations were also a function of the macroeconomic policy at the time, which was determined by the government of the period. Therefore with the major shift from a minority government

to a democratic majority government there has been a significant shift in the focus of macroeconomic policy. This is particularly evident in respect of fiscal policy, monetary policy and the level of economic stability that has been achieved (SARB, 2004a).

An examination of the real rates of return on various financial assets will provide evidence of the supposition that the change in government has resulted in positive changes within the economy. Therefore the capitalisation rate should be linked to financial instruments, since, the financial assets should provide the best signals of expectations, rapidly adjusting to changing expectations and macroeconomic conditions (Pilbeam, 1998:177)? Support for the use of financial instruments appears in “*Todorovic v Waller* (1981) 37 ALR 481 (HC) 488 line 41`the rate should be that produced by reasonably safe investments” (Koch, 1993:126).

### **1.3 The Goals of the Research**

The overall objective of this research will be aimed at the attainment of two specific goals, where each of subsequent goals will build on the previous goal expanding the impact of the findings. The goals will be:

- i A re-examination of the validity of the Actuarial Capitalisation Rate.

Here the aim will be to investigate the Actuarial Capitalisation Rate, with a closer examination of its components, in order to determine its validity in today’s economic climate.

- ii Put forward recommendations based on validity of current Actuaries’ Capitalisation Rate.

At this juncture the aim will be to propose recommendations for future action based on the examination of the capitalisation rate, which better take into account the current macroeconomic outlook and expectations.

## 1.4 Methods, Procedures and Techniques

The research question will be addressed in three steps:

- i Methodological framework.
  - a. The Keynesian supposition that the current economic views determine future expectations.

Analysis of economic expectations will be conducted to show that expectations for a future period will vary dependant on the current economic conditions.

- b. Analysis of various financial instruments.

A comparison of real returns from various financial instruments will be done to determine the trends present in each class.

- c. Analysis of the Outlook for the South African Economy 2003-2017.

Here, the examination of the key sections of the outlook for the South African Economy will be conducted to determine the expected changes in economic conditions.

- ii Data and Sources

It will be necessary to gather both qualitative and quantitative data to substantiate the methodological framework.

a. Qualitative data

Literature review and model analysis

A review of the theoretical basis of the Keynesian and the actuarial view of future returns will have to be conducted so as to highlight their weaknesses and strengths, in order to determine the best approach to address the issue. This data can be easily sourced from the Actuaries Quantum Yearbook, whilst data focusing on the Keynesian perspective can be gathered from government and the vast literature available on this school of economic thought (National Treasury, 1996; Asimakopulos, 1991; Stekler, 1970).

b. Quantitative data

Data, what type, where and how (analysis)

Using the qualitative data as a basis, the research will be able to focus on the type of quantitative data that will need to be gathered, where it is most likely to be gathered and how it will be of use. This data is readily available from the various financial market bodies, such as The Bond Exchange of South Africa (BESA, 2004) and the JSE Securities Exchange (JSE, 2004a) and from the Financial Markets College in tabulated form.

iii Analysis: combining the methodological framework and the data.

Thus by incorporating the data into the theoretical framework it will be possible to analyze if for example, the real rate of return on bonds conforms to the expectations generated by the economy. And if so, does the evidence support the proposition that the capitalisation rate needs to be recalculated and to what level should the capitalisation rate be changed?

## **1.5 Composition of Study**

Chapter two provides a review of the theoretical underpinnings of the paper, starting with Keynesian expectations. The discussion covers how Keynesian expectations are formulated, including the main influences on expectations and the common errors affecting expectations, attention is also given to the two leading methods used to generate forecasts based on Keynesian expectations. The review then moves on to discuss macroeconomic policy.

Within the context of macroeconomic policy, the review focuses on: the basic theory of macroeconomic policy; the focus of macroeconomic policy; the macroeconomic strategies implemented by the South African Government both in terms of fiscal and monetary policy; and the success that the Government has achieved in terms of its macroeconomic policy. Finally the chapter turns its attention to the Actuaries' Capitalisation Rate in South Africa and its relation to the damages awards made by the courts.

Chapter three is essentially an examination of the rates of return on specific financial assets from the various financial markets. Here the analysis examines the trends in the returns for the various financial assets from the period before the political change, the era that the current capitalisation rate was based upon, up until the current period in order to determine if there is significant evidence of a change in economic conditions.

In chapter four the analysis turns to the expectations for the South African Economy, from the present to the year 2017. Within this section, the analysis sets about outlining the Government's desired direction for the national economy and the areas that its policy activities will focus on. The remainder of the chapter involves providing a summary of the expected results in the various key sectors and indicators of the South African Economy as forecast by the private sector. Here the aim is to determine if the forecasts support the findings established in chapter three.

The aim in chapter five will be to provide a summary of the results obtained in chapters three and four, which will then be utilised to determine if in fact there is significant evidence to justify a re-evaluation of the Actuaries' Capitalisation Rate.

Finally chapter six will provide the conclusions reached in the paper and the recommendations as to what, if any action needs to be taken.

Thus the following chapter will provide the theoretical basis for the analysis within the paper, while not extensive, the chapter will provide the theory that it is essential to understand in order to properly address the research question.

## CHAPTER TWO

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### INTRODUCTION TO THE THEORETICAL UNDERPINNINGS

#### **2.1 Introduction**

The focus of the thesis is to examine the appropriateness of the Actuaries' Capitalisation Rate which will require a review of the various theoretical concepts that provide the basis from which the rate is derived. The chapter will start with an examination of what capitalisation rates are and then focus specifically on their use in damages claims, this being the core focus of the thesis.

Once the concept of capitalisation rates has been covered, the discussion will turn to the Keynesian view of the economy with specific attention paid to the formulation of expectations. Within this section the rationale behind the formulation of expectations will be covered, followed by an examination of the leading forecasting methods that constitute economic forecasting, also included is a review of the level of accuracy of the methods.

The final point of focus of the chapter is government economic policy and the tools that governments have at their disposal, with specific attention paid to the South African Economy. Here, a brief description of the various policies that the first democratically elected South African Government has instituted is provided in the order that the policies have been adopted, along with the outcomes achieved.

## **2.2 Capitalisation Rates and Damages**

### 2.2.1 Introduction

Capitalisation rates need account for future economic conditions; therefore they are largely based on the Keynesian view of the economy. And thus need to rely on economic forecasts of the future in their formulation, accordingly taking the significant influence of government policy action on the economy into consideration. But before these aspects of the capitalisation rate can be examined an understanding of the mechanics of the capitalisation rate is required.

### 2.2.2 What are Capitalisation Rates?

“In its broadest sense, a capitalization rate is a number used to convert an income stream into a present value” (University Chicago, 2000). Put another way, a capitalisation rate is a mathematical mechanism that allows for the conversion of an amount that would be received in the future to a amount received today that provides the recipient with the same level of utility as would the larger future amount when it is received in the future (Koch, 1993:65).

### 2.2.3 General Uses of Capitalisation Rates

Capitalisation rates receive the most attention within the fields of business and property valuations where the future income streams from these assets need to be converted into present values in order to determine the value of the assets. With regard to businesses, capitalisation rates are used to convert future expected income of the enterprise into a present value for the formulation of a current value for the business as a going concern. This value is then used for a variety of purposes including the decision to invest or disinvest in the enterprise (University of Chicago, 2000:2).

With regard to the valuation of property, capitalisation rates are utilised to convert the expected future rental income and expenses into a present value. However, with capitalisation rates for property, it is common practise to utilise the sale price of the

property to determine a specific capitalisation rate (Strickland, 1999:20). For example, when using the market extraction method in the calculation of property capitalisation rates, total expected expenses are deducted from gross expected income in order to estimate the net operating income. The net operating income is then divided by the sale price to determine the overall capitalisation rate (Strickland, 1999:21).

A key characteristic, of the use of capitalisation rates in business and property valuation is the frequency at which the process is repeated, which has the effect of reducing the level of uncertainty. That is, with both these uses of capitalisation rates, multiple situations occur that are relatively similar if not identical thus there is a basis for comparison. For example, the resultant capitalisation rate for a four bed roomed house is likely to be the same as that for a similar house in a different region but similar city zone. Therefore it can be seen that it is the uniqueness of the situation that increases the level of uncertainty because of the increased probability of unforeseen events that will reduce the accuracy of the forecasts (Stekler, 1970:8). The focus of this research, however, is the Actuaries' Capitalisation Rate, which is applied in order to determine the monetary amount that is to be awarded as damages. That is, the Actuaries' Capitalisation Rate is utilised in order to determine the value of the lost future income and resultant future expenses at today's prices.

#### 2.2.4 Determination of Capitalisation Rates

“Choosing a capitalization rate is very important. Using an incorrect rate could drastically misrepresent the value because of the leveraging effect these rates have on value. Determining which rate is appropriate takes experience and an understanding of the market” (RSA, Department of Transport, 2002a:591). But the question that arises is, what is an appropriate capitalisation rate? It is the objective of the thesis to provide an up to date answer to this recurring question in the next few chapters, but before this can be done the concept of damages needs to be understood as the concept completes the overall picture.

### 2.2.5 What are damages?

Reviewing the literature available on damages can be a daunting task due to the vast amount available and the prevalence of legal jargon present in most of the literature, fortunately the Legal Information Institute (2005) puts forward the following simple definition:

“Damages, in a legal sense, is the sum of money the law imposes for a breach of some duty or violation of some right. Generally, there are two types of damages: compensatory and punitive. (The term "damages" typically includes both categories, but the term, "actual damages" is synonymous with compensatory damages, and excludes punitive damages.)

Compensatory damages, like the name suggests, are intended to compensate the injured party for his loss or injury. Punitive damages are awarded to punish a wrongdoer. There are other modifying terms placed in front of the word damages like "liquidated damages," (contractually established damages) and "nominal damages" (where the court awards a nominal amount such as one dollar). For certain types of injuries statutes provide that successful parties should receive some multiple of their "actual damages" -- e.g., treble damages.

There are general principles governing what types of damages are awarded. It is generally recognized, for instance, that punitive damages are not available for breaches of contract except when it is proven that the breach was wanton, willful and deliberate”.

The legislation that allows for damages claims is the South African Common Law which the Law of Delict is part of (Neethling, Potgieter and Visser1994:3-17), where delict is defined as “wrongful and blameworthy conduct that causes harm to a person”, with it being the responsibility of the victim whom sustained the certain harm or damage to prove that harm or damage was the result of the wrongful actions of the alleged wrongdoer and that the alleged wrongdoer was at fault or blameworthy, and the damages are the financial value placed on the loss suffered (RSA, Department of Transport, 2002a:105-6). Therefore this aspect of the South African common law provides a means and a basis for the transference of the financial loss suffered by the victim to the party guilty of causing the victim’s suffering.

The South African common law furthermore sets out the framework for which aspects of the victim’s losses will be recognised for damages within the scope of the legislation, “The common law recognises claims in respect of medical expenses

already incurred, anticipated future medical expenses, funeral costs, loss of earnings by reason of injury or incapacity, loss of support by dependants by reason of the death of the breadwinner. Non-pecuniary loss arises from the prejudice to the quality of the life of the road accident victim. Accordingly, claims are made for compensation for pain and suffering endured, emotional shock sustained, loss of amenities, loss of enjoyment of life, shortening of life expectancy and loss of earning capacity” (RSA, Department of Transport, 2002b:106)<sup>1</sup>. The non-pecuniary items, although a significant proportion of the total compensation amount (RSA, Department of Transport, 2002c:160), are present value amounts and therefore do not require discounting at the capitalisation rate. Consequently it is only certain of the pecuniary awards that need to be discounted.

#### 2.2.6 How do Capitalisation Rates Relate to Damages?

Capitalisation rates relate to damages in the sense that a significantly large proportion of each claim is related to future amounts that need to be reduced to present values for the awarding of claims today. The significance of these amounts in damages awards is highlighted in the Road Accident Fund Report (2002c:157-163) where future medical expenses, future loss of earnings and future loss of support accounted for 43.9% of the total damages awards of the Road Accident fund in its 1998/99 financial year, where total compensation was in excess of R1.5 billion. Thus it can be seen that the capitalisation rate used to discount these values can have a significant effect on the final amount of compensation paid. Thus careful attention needs to be paid in order to ensure that the capitalisation rate used provides a final amount that fairly compensates the claimant and places them in a position financially that they would have been in if the incident had not occurred.

#### 2.2.7 The Actuaries’ Capitalisation Rate

Of specific interest to the question being addressed in the study, is the capitalisation rate that allows for the conversion of future expected income and expenses to a value in today’s terms, that is, the Actuaries’ Capitalisation Rate. The Actuaries’

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<sup>1</sup> The quotation is drawn from the Road Accident Fund Commission Report 2002, therefore the reference to the road accident victim; nevertheless it applies to all claimants.

Capitalisation rate formula is simply a modified version<sup>2</sup> of the simple discount formula:

$$d = \frac{1}{(1+r)^n}$$

Where:

**d** = Discount amount

**r** = discount rate

**n** = number of periods

(Source: SAIFM, 2005:2)

The Actuaries' Capitalisation rate, in respect to damages, therefore allows for the stating of an individual's expected earnings over the remainder of their working life, if the incident had not occurred and the expected future expenditure because of the incident, in today's terms. In the calculation of the final award, expected values for future income and expenses have to be adjusted to present values, via the use of a capitalisation rate. Therefore the capitalisation rate will be included in the formula to determine the final amount of compensation awarded, as shown in the following example for a damages claim (Mather, 2004:1):

$$PV_Q = \frac{[EV_{IF} + PV_{OM}]}{(1+r)^n} + \frac{[PV_{PM}]}{(1+r')^n} + M_P + EV_{Ip} + G$$

Where:

**PV<sub>Q</sub>** : Discounted value of total damages.

**EV<sub>IF</sub>** : Expected value of future income.

**PV<sub>OM</sub>**: Present value of future medical expenses not including prosthetics and orthotics.

**PV<sub>PM</sub>**: Present value of prosthetics and orthotics.

**r** : Capitalisation rate applied to future income and medical expenses not including prosthetics and orthotics.

**r'** : Capitalisation rate applied to prosthetics and orthotics.

**n** : Life expectancy of claimant.

**M<sub>P</sub>** : Past medical expenses.

**EV<sub>Ip</sub>** : past loss of income.

**G** : General damages for pain and suffering, loss of amenities of life, disability and disfigurement.

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<sup>2</sup> The simple formula is basically inserted into the claim formula to convert future values into present values. That is, the Actuaries' Capitalisation Rate is inserted in to the discount rate in place of the r term.

Therefore, it can be seen in the above formula that the future values  $EV_{IF}$ ,  $PV_{OM}$  and  $PV_{PM}$ , are discounted by the capitalisation rate, to convert them into present values which in turn allows for the calculation of a present value lump-sum that is then awarded to the claimant. But the terms  $r$  and  $r'$  are the most important with respect to this thesis as these are the capitalisation rates and should reflect the future expectations of the economy. That is to say, that the capitalisation rate should be based on the Keynesian view of expectations, and therefore should incorporate the forecast for the economy and the impacts of the Government's economic policy.

## **2.3 Keynesian Expectations**

### **2.3.1 Introduction**

The next section will discuss the concepts that form the theoretical standpoint of what is Keynesian Expectations. Here the discussion will start with the basis of Keynesian expectations, which is the prospective yield of capital, exactly what expectations are and the role that confidence plays in expectations. Next the discussion will move on to the precariousness of the basis of the formulation of expectations and the convention adopted to deal with the precariousness with the resultant implications for long-term expectations. The final part of this section will deal with the human influences on expectations, that is, the motives for building expectations, human instincts, the results of acting on instincts and the motives for levels of liquidity.

### **2.3.2 The Prospective Yield of Capital**

One of the main concerns of economic individuals is the level of returns that the employment of their resources will generate, where the decision to employ the resources will be dependant on the probability of a positive return from such employment. The problem is the returns from the employment of resources cannot be known precisely until they are in fact employed, thus the need to make predictions about the future. Essentially, the decision to invest resources will be based on expectations of the future (Keynes, 1937:147-164). And according to Keynes (1937:147-8), "The considerations upon which expectations of prospective yields are

based are partly existing facts which we can assume to be known more or less for certain, and partly future events which can only be forecasted with more or less confidence”. Thus the need for a definition of exactly what expectations are from a Keynesian perspective.

### 2.3.3 Definition of Expectations

Expectations are the believed “ Future changes in the type and quantity of the stock of capital-assets and in the tastes of the consumer, the strength of effective demand from time to time during the life of the investment under consideration, and the changes in the wage-unit in terms of money which may occur during its life” (Keynes, 1937:147). Expectations are further differentiated into short-term and long-term expectations, where short-term expectations are those forecasting for the near future where the outcomes have a high probability of occurring. Long-term expectations are those that are for periods further in the future involving far more uncertainty since many factors have the potential for change (Keynes, 1937:147-8; Asimakopulos, 1991:38). The best reflection of long-term expectations comes from the capital markets, i.e. “The prevailing state of long-term expectations in modern capitalistic societies is reflected in the activities of the stock exchange” (Dillard, 1948:146). However, the fact that there are expectations is not enough.

### 2.3.4 Expectations and Confidence

The recognition or acceptance of expectations is dependant on our belief in the expectations becoming a reality, as stated by Keynes (1937: 148) “the state of long-term expectations, upon which our decision are based, does not solely depend, therefore, on the most probable forecast we can make. It also depends on the *confidence* with which we make this forecast --- on how highly we can rate the likelihood of our best forecast turning quite wrong. If we expect large changes but are very uncertain as to what precise form these changes will take, then our confidence will be weak”.

Therefore it is the level of confidence that is of importance and will have major sway on decisions in terms of which expectations will be the most influential or as put by

Keynes (1937:148) “The state of confidence, as they term it, is a matter to which practical men always pay the closest and most anxious attention”. However because of the difficulty of incorporating confidence into existing models *a priori* or clearly defining it and the inability of econometricians to accurately quantify and measure it, the level of confidence has only been discussed in general terms and to a large part been ignored from a theoretical stand point (Walters, 1986:98). The justification for this has been the fact that conclusions about confidence depend upon the observation of the actual event occurring (Walters, 1986:98).

The level of confidence, however, is measured qualitatively in terms of the current economic situation, to give an indication as to the probability of the current situation changing, with most significant economic participants considering the indications (Collins, 2002). In fact Keynes (1937:149) goes on to state “There are not two separate factors affecting the rate of investment, namely, the schedule of the marginal efficiency of capital and the state of confidence. The state of confidence is relevant because it is one of the major factors determining the former, which is the same thing as the investment demand-schedule”. With the factors that affect investment established, the basis on which the factors are determined needs to be examined.

### 2.3.5 Precariousness of the Basis.

The precariousness of the basis refers to the fact that our expectations are formulated from our current level of knowledge of the factors that will govern the performance of the economy as time passes. This knowledge, however, is not complete since we are unable to foresee future events with certainty and our limitations in processing all the information currently available. It is thus very likely that events will occur that there were no predictions of and that will have an extreme impact on economic performance (Keynes, 1937:149). For example, natural disasters, such as The Kobe earthquake in 1997, which a major impact on financial markets and the Asian Tsunami of 2004 which had a relatively small impact considering the damage and loss of life, or it could be as simple as a key economic figure such as the USA Non Farm Payroll Figure being significantly different to what was expected (John, 2005). Therefore in order to account for the occurrence of the unexpected a rule was established, called the Convention.

### 2.3.6 The Convention

The Convention “lies in assuming that the existing state of affairs will continue indefinitely, except in so far as we have specific reasons to expect change” (Keynes, 1937:152). The truism of the convention lies in the fact that when the decision has to be made, it has to be made with the known information at that moment in time, with the hope that it can be adjusted positively when the changes occur. Since changes to the current situation are expected and will occur. This is confirmed by Keynes (1937:152) “We know from extensive experience that this is most unlikely”, his comment on the prospect of conditions remaining the same in the long-term.

Therefore in effect the convention is assuming “that the existing market valuation, however arrived at, is uniquely correct in relation to our existing knowledge of the facts which will influence the yield of the investment, and that it will only change in proportion to changes in this knowledge” (Keynes, 1937:152), which in term forms the governing assumption of long-term expectations and indicates the instability of long-term expectations.

### 2.3.7 The Precariousness of Long-term Expectations

The precariousness of long-term expectations lies in our ignorance of the future and the instability of the basis of what we think the future will hold which we use to formulate our expectations (Dillard, 1948: 145). There are a number of factors that highlight this precariousness.

Firstly there is a decline in the amount of real knowledge about the value of the investment as the gap between ownership of the investment and the running of the investment becomes more widely spread, as is the case with shareholders of a public company. Secondly non-significant and transient fluctuations in the profits of existing investments tend to have an excessive impact on the market. Thirdly a valuation that is a result of the mass psychology of the ignorant is likely to fluctuate violently due to changes that should have no impact on the true value of the investment. Fourthly, where one would expect the actions of the professional investor and speculator to

counter the actions of the masses, it is argued that they instead devote their energies to outguessing the masses. This is in order to generate returns from the volatility created by the masses, where some would argue instead that the professionals remedy each sequence of volatility created by the masses. However, the specific devotion of the professional investor and speculator's energies is still an area of much research and conflicting views (Keynes, 1937:155; Hart, 1947:415-24; Rouwenhorst, 1999:1442-60). Finally, the funds of the speculative investor or speculator are not unlimited and are often restricted by the state of credit, i.e. the institutions willingness to lend money. With respect to the willingness to lend it must be considered that a weakening of either speculative confidence or the state of credit can cause a collapse, but strength in both is required for the market to recover (Keynes, 1937:153-8). Thus it was the precariousness of the basis in the most part that lead Keynes to his statement on investing based on long-term expectations.

#### 2.3.8 Investment on Long-Term Expectations Not Practicable

Because of the precariousness of the basis Keynes went as far as to propose that investments based on long-term expectations were impractical because of the difficulty involved. Believing that the professional attempting to invest based on genuine long-term expectations will face a more laborious and riskier task than the professional whom is just attempting to beat the crowd (Keynes, 1937:156-9). Thus we have reached the point where the need to differentiate between the motives for forecasting.

#### 2.3.9 Speculation Vs Enterprise

Speculation can be defined as the activity of forecasting the mass psychology of the market, while Enterprise can be defined as the activity of forecasting the prospective yield of assets over their whole life (Keynes, 1937:158). Generally speculation dominates enterprise, but not always, its dominance increases as the organisation of the markets increases, but it is also a function of the precariousness of the basis. Keynes sees the dominance of speculation and the goal of earning capital gains rather than income as a serious danger, comparing the financial markets where this occurs to casinos and being detrimental to the general good. Keynes further suggests that it is

the increased liquidity that leads to his casino effect, suggesting that action should be taken to make this type of investment more inaccessible and expensive in the interest of the betterment of society (Keynes, 1937:158-9, Dillard, 1948:148-9). However, Dillard (1948:149) does put forward the alternative position that the major risk faced by speculation is a change in news and views in the near future and that stability is given so long as the convention is maintained. Next the discussion moves on to the key human attribute that adds impetus to both speculation and enterprise.

#### 2.3.10 Animal Spirits

Animal spirits is the human attribute that is referred to as the reason for or the cause “of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities” (Keynes, 1937:161). The animal spirits attribute adds to market volatility and is considered, at least by Keynes, to be an essential element of enterprise, i.e. the belief that the venture would or could be more profitable than the mathematics predicts and therefore worth the risk. Basically, what the concept of animal spirits shows us is “that human decisions about the future cannot depend on strict mathematical expectation, since the basis for making such a calculation does not exist” (Keynes, 1937:162-3). Thus the point is arrived at where the question of what is the implication of animal spirits in terms of the market?

#### 2.3.11 Trends Are Exaggerated

Because of the phenomenon known as animal spirits, it is common to find the situation where the market continues in its current direction even though there are strong indications that the current phase has come to an end. Thus due the level of either pessimism or optimism of the masses the current patterns in the markets will be overstated, passing the point where the change should have occurred as indicated by purely mathematical models (Keynes, 1937:162). However, the exaggeration of market trends does not invalidate long-term expectations.

### 2.3.12 State of Long-term Expectations Steady

Even with the occurrences of animal spirits, speculation and the psychology of the masses, Keynes states that long-term expectations on the whole remain steady as there are other factors that compensate for the effects of these factors and that it is our rational selves choosing between the alternatives as best as we can that drives the wheels of the economy, where we fall back on whim, sentiment or gut feelings to guide our decision making (Keynes, 1937:163). Basically what Keynes is implying is that, because major events that radically change long-term expectations do not occur that often, in general, the basic long-term expectations will remain the same. The utilisation of long-term expectations is however dependant on the agent's level of liquidity.

### 2.3.13 Business and Psychological Motives for Liquidity

Liquidity is the ability to convert wealth into money at short notice at low cost or a fair price (Pilbeam, 1998:19). Keynes (1937:195) puts forward four motives for the holding of a portion of one's wealth in money as opposed to other assets as part of his liquidity preference theory. They are the Income motive, the Business motive, the Precautionary motive and the Speculative motive.

The income motive refers to the amount of money that is held to bridge the interval between earning income and its distribution, the strength of this motive is dependant on the level of income and the delay between earning and receiving the income. The business motive is similar to the income motive, except in this case its purpose is to provide liquidity for the period between the incurring of business costs and the receipt of the proceeds from the sale of the finished goods. The strength of the business motive is mainly dependant on the value of current output and the length of the production cycle (Keynes: 1937:195).

Within the context of the present analysis, it is the final two motives that are of relevance because of their relationship with expectations of the future. The precautionary motive for liquidity is to provide for unforeseen events that require sudden expenditure. The precautionary motive is affected by expectations to a lesser

extent, where expectations of turbulence in the future will lead to a larger amount being held, whilst stable expectations will lead to a lesser amount being held (Keynes, 1937:196).

Finally the speculative motive is addressed, which is the least understood of the motives for holding liquidity. However, the speculative motive is believed to be an important factor in the functioning of open market operations of central banks and is greatly influenced by expectations, especially those about the magnitude and direction of the interest rate (Keynes, 1937:196-9).

The motivation for holding liquidity for this motive is to be able to take advantage of beneficial situations as they arise. The rate of interest here plays a significant role because it is the cost of holding money and is also the benchmark against which the return from any speculative investment is measured. Therefore expectations about the future rate of interest will place inverse pressure on the amount of speculative balances held (Keynes, 1937: 196-9).

#### 2.3.14 Conclusion

Thus with an understanding of how Keynesian Expectations are formulated around the prospective yield of capital and human psychology and a knowledge of the strengths and weaknesses of the theory brought about by imperfect knowledge of the future. This added with an understanding of the Actuaries' Capitalisation Rate, means that the point has been reached where the process of generating economic forecasts can be examined.

## **2.4 Economic Forecasting**

### 2.4.1 Introduction

Having established the importance of expectations as well as the limitations of forecasting, the next step in the process is to understand the mechanics of compiling economic forecasts.

Economic forecasting is considered a relatively new science, with improvements happening all the time, as shown by the steady rate of improvement in both the forecasts and the procedures by which they are generated, “This improvement has been the result, in part, of a shift of emphasis away from techniques which emphasized the performance of leading indicators and lead-lag relationships towards procedures which yield quantitative estimates of key economic variables. Such quantitative forecasts have been generated by both judgemental procedures, which utilize a systematic framework but in which specific relationships are not formulized, and by more formal econometric models” (Stekler, 1970: ix).

#### 2.4.2 Quantitative Economic Forecasts

“A forecast should include several elements. It should give the direction of the movement in economic activity, and if there is an expected reversal in direction, when will it occur. A prediction should also indicate the magnitude of change and perhaps the length of time for which a movement is expected to persist” (Stekler, 1970:3-4). Thus it can be stated that quantitative economic forecasts are predictions that give the direction, magnitude and the timing of expected changes in economic activity. The most popular of the quantitative economic forecasting methods are the judgemental and the econometric methods, which are considered relatively accurate considering our limited knowledge of the future (Stekler, 1970:5).

##### 2.4.2.1 Judgemental Forecasting

Also known as Judgemental Model Building, this is a relatively systematic approach that utilises some type of underlying analytical framework without the use of a formal model and differs in specifics between the individual forecasters. In compiling such a forecast the consistency of the outputs has to be checked, where any inconsistency between the aggregates would indicate an error in either calculation or the judgemental process, indicating the need for the forecast to be recalculated (Stekler, 1970: 5). “It is only after consistency has been assumed that a forecast is considered final” (Stekler, 1970: 5). There are two important characteristics of this technique that a quantitative estimate of each economic variable is obtained, but there is no specific

methodology that ensures that these forecasts are mutually consistent. The second characteristic is that the forecaster has to develop some iterative technique through which the estimates can be revised and made mutually consistent (Stekler, 1970:6).

#### 2.4.2.2 The Econometric Methods

The Econometric Methods approach is simply a different method through which systematic quantitative economic forecasts can be attained by the formulation of an econometric model which represents the economy. Where “An econometric model is merely a system of simultaneous mathematical equations (or Models) in which numbers express the specific interrelationships within the economy” (Stekler, 1970:7). To achieve this, the model should contain a complete explanation of economic behaviour and depict the way in which the individual terms are related, finally giving a resultant forecast in which the estimates for all sectors are by design consistent (Stekler, 1970:8).

#### 2.4.2.3 Comparative Merits of the Two Approaches

Whilst the preference for each of the above mentioned approaches will largely depend on the individual forecasters, there are a number of straight forward merits to each of the approaches that are well expressed in the following extract from Stekler (1970:8)

“One of the obvious advantages of the econometric models is that they eliminate the need for repeated juggling of estimates, since the use of simultaneous equations automatically provides consistency in the various sectoral forecasts. Moreover, the econometric approach uses specific relationships whose forecasts can be replicated, while the procedure of a judgemental forecaster cannot be reproduced. It is consequently easier to evaluate econometric forecasts and to determine the reasons for the forecast errors. Without a log of the factors that a judgemental forecaster took into account, it would be difficult to determine why his predictions were in error. While judgemental approaches are somewhat less rigid because they are not tied to specific functional relationships and historical data, econometric models do permit the introduction of outside information, where the impact of unusual events, such as strikes or wars, can be estimated. Finally, it should be noted that econometric models differ from one another. A model which may produce perfectly satisfactory results for

one group's needs may be unsatisfactory for other purposes" (Stekler, 1970:8).

Stekler (1970:11-13), went further to show by means of an example in which he used the Klein, OBE and Wharton School Models, which are considered to be very similar in what they predict, to show that even very similar econometric models might differ in many respects.

#### 2.4.3 The Accuracy of Forecasts

The techniques used to generate forecasts as well as the actual economic forecast need to be reviewed on a regular basis, to enable the forecaster to identify the sources of errors and make the necessary corrections and make comparisons of the various approaches to identify which is most likely to generate accurate forecasts (Stekler, 1970:74). However, the key characteristic concerning the accuracy of forecasts is that the shorter the gap between the generation of the forecast and the actual period of the forecast, the greater is the accuracy of the forecast (Keynes, 1937:152; Stekler, 1970:76).

#### 2.4.4 What Causes the Errors?

With respect to errors in terms of forecasting, the reference is in fact to situations where the state of the economy is significantly different from that which was expected. The errors that are likely to occur can be classified into four groups:

First, errors in judgement where the impact of one or more of the variables was misinterpreted, which occurs relatively often with the judgemental approaches.

Second because the relationships between economic variables used in the formulation of the forecast fail to hold.

Third the error occurs because of a simple error in the mathematical process used to formulate the forecast.

Finally the leading reason for forecasts being significantly wrong is that unpredictable events occur that have a significant impact on the economy, these are usually what are termed "acts of god" with there being no other

reason for the sudden occurrence of natural disasters, but may also include major industrial accidents or acts of terrorism (Stekler, 1970:82-7), such as the attacks on The United States of America on September the 11<sup>th</sup> 2001.

Thus with the general errors covered, the next step is to compare and contrast the two leading approaches.

#### 2.4.5 Econometric Vs Judgemental Approaches

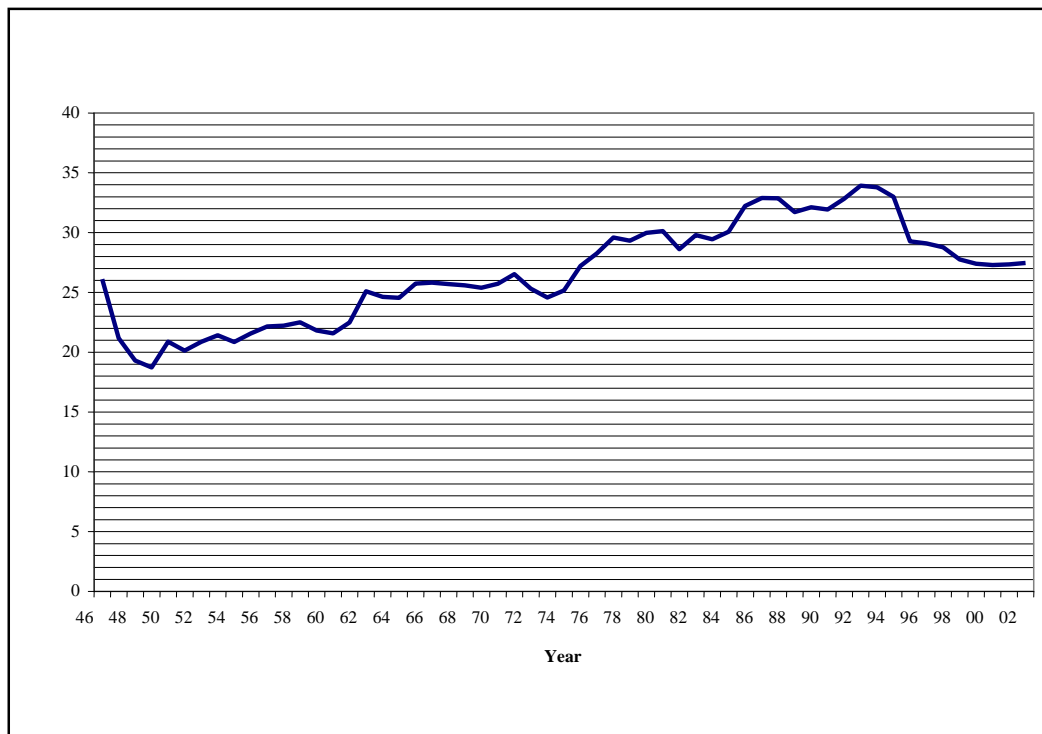
The choice of which of these two approaches to forecasting to use appears to come down to the personal preference of the individual forecaster, with both approaches as likely to produce errors as not. The analysis conducted by Herman Stekler in his book *Economic Forecasting* does point to his favouring of the econometric approaches. Where his analysis makes the statement that the Econometric approaches are better than the judgemental mainly because of their formal structure that allows the areas in the forecast where the errors were made to be more readily identified. But he does not state that a forecaster whom is “in tune” with the economy cannot produce forecasts that are more in line with what actually occurs in the economy using the judgemental approaches than if he were to make use of one of the econometric approaches. Stekler instead advocates that in general, as a group, forecasters who utilise the econometric approaches are more likely to make a closer prediction of the economy than those using the judgemental approaches (Stekler, 1970:92-133).

### **2.5 The Budget as a Forecasting Tool**

The Government is a significant participant in the economy, as indicated by the fact that Government expenditure in South Africa was on average equivalent to 26.6% of household expenditure for the period 1946 to 2002 (Faure,2004a), as can be seen in figure 2.1. This is supported by the Keynesian view that there is a strong role for government in the economy with monetary and fiscal policy being the perfect tools through which the government influence the economy in the desired direction (Froyen, 2002:188).

Therefore, accepting the assumption that the government is a significant player in the domestic economy and that the national budget is the governments planned expenditure within the economy one could extrapolate that the national budget will provide valuable inputs for economic forecasts.

**Figure 2.1:** Government Expenditure as a Percentage of Household Expenditure



Source: SARB (2004c)

Stekler (1970:137) however, points out that studies on the Federal Budget of the United States of America concluded that the information included in the Federal budget, when used to generate forecasts directly, results in forecasts that are inadequate. However, Stekler (1970:137) does state that “the budget contributes important information for six-month forecasts”. Stekler goes on to examine the US Federal government’s budget statement with regard to its stated purchases of goods and services and its actual purchases of goods and services. In his comparison he compares the accuracy of the Federal government’s estimates for six months and eighteen months in advance with their actual purchases over a ten year period. Stekler’s findings validate his statement, showing increased divergence between the actual and expected government purchases when comparing the eighteen month expectations as compared to the six month forecasts (Stekler, 1970:138-145).

In the past thirty five years since Stekler conducted the research for his book there have been significant changes in the way that governments conduct their fiscal and monetary policies, with there being a strong emphasis on discipline in keeping the budget within accepted parameters. The South African Government has gone as far as to also issuing a medium term budget of three to five years. The purpose being an attempt to reduce in part the economic volatility created by Government (RSA, Department of Finance, 1996:6), and forms part of the Government's macroeconomic policy.

## **2.6 Macroeconomic Policy**

"Macroeconomics is the study of the economy as a whole --- including growth in incomes, changes in prices and the rate of unemployment" (Mankiw, 1997:15), therefore macroeconomic policy can be defined as the government's economic actions aimed at influencing the economy as a whole in the desired direction.

"The two major types of macroeconomic policies are fiscal policy and monetary policy. Fiscal policy, which is determined at the national, state, and local levels, concerns government spending and taxation. Monetary policy determines the rate of growth of the nation's money supply and is under the control of a government institution known as the central bank" (Abel and Bernanke, 1999:9). The government uses these two policies to influence the economy from different directions, with the way in which it utilises the policies being dependant on which view of macroeconomic policy it subscribes to. That is Keynesianism, Monetarism, Neo-classicalism and so on, which is also impacted by politics since the Government is a political body.

### 2.6.1 The Role of Politics in Macroeconomic Policy

Essentially there are two views on the way in which politics impacts on macroeconomic policy, the Public-choice view and the Partisan view. The key elements of the Public-choice view are that politicians are rational individuals, and being so they will attempt to maximise their personal benefits and push macroeconomic policy that will gain them votes, even at the expense of larger budget deficits (Froyen, 1999:379-383).

The Partisan theory puts forward the idea that government consists of members whom are the leaders of differing political parties, whom represent different constituencies with differing preferences for macroeconomic outcomes. The Partisan view puts forward the idea of “party cycles” which are the variations in macroeconomic policy as the different political parties gain and then lose power (Froyen, 1999:379-383).

In essence what both these theories indicate is that political factors significantly influence macroeconomic policy, especially the fiscal policy and the need for some form of mechanism to keep the political influence within acceptable limits. Experience in the 1990’s indicated that there were three mechanisms that appeared to reign-in macroeconomic policy fluctuations, or more specifically the excesses seen in fiscal policy, these mechanisms included legislation, voters more informed about the relationship between fiscal policies that lead to large deficits and inflation, and finally regional agreements and goals that call for tighter fiscal policy (Froyen, 1999:379-383).

### 2.6.2 The Focus of Macroeconomic Policy.

The standard objectives of macroeconomic policy include; economic growth, a high and stable level of employment, a stable price level, balance of payments equilibrium, distributional and equity objectives, and development objectives. It is by the results, in terms of these objectives, that the effectiveness of macroeconomic policy is judged (Fourie, 1997:211). Of the objectives economic growth receives the most attention, no matter what the level of development of the economy because of the idea that as long

as there is economic growth there will be an increase in the standard of living of the domestic population (Fourie, 1997:212-222).

The main problem that arises in the conduct of macroeconomic policy is that because of the way in which the economy operates conflicts arise between the objectives, for example, achieving a high and stable level of employment will increase inflationary pressure on the economy. Therefore in the conduct of macroeconomic policy the government is forced into trade-off situations where priority has to be given to one objective at the expense of another (Fourie, 1997:223). From the following table (Table 2.1) it can be seen how the previous South African Government prioritised its top three objectives for the period 1970 to 1994, where the trade-offs can be seen by which objective was given priority over the other two.

From Table 2.1 it can be seen how the previous South African Government changed the priority of its objectives as each one became more pressing and needed to be focused on even at the expense of the others. Since the change in government in 1994, the focus of macroeconomic policy has changed significantly with many of the factors, such as economic sanctions, that influenced the conditions that the policy had to address no longer being present.

**Table 2.1:** Policy Priorities of the South African Government

<b>Priority:</b>	<b>1</b>	<b>2</b>	<b>3</b>
1971	Growth	Price	BoP
1972	BoP	Growth	Price
1973	Growth	Price	BoP
1974	Growth	Price	BoP
1975	Growth	Price	BoP
1976	BoP	Price	Growth
1977	BoP	Price	Growth
1978	Growth	BoP	Price
1979	Growth	Price	BoP
1980	Growth	Price	BoP
1981	BoP	Price	Growth
1982	BoP	Price	Growth
1983	Price	BoP	Growth
1984	BoP	Price	Growth
1985	Price	BoP	Growth
1986	Growth	BoP	Price
1987	Growth	Price	BoP
1988	Price	BoP	Growth
1989	BoP	Price	Growth
1990	BoP	Price	Growth
1991	Growth	BoP	Price
1992	Growth	BoP	Price
1993	Growth	Price	BoP
1994	Growth	Price	BoP

Source: Mohr and Rogers( 1994, in Fourie, 1997:224)

The macroeconomic policy of the new government now had to address the imbalances created by the past policies, whilst at the same time moving the economy forward. It was with this task in mind that the Growth Employment And Redistribution Strategy (GEAR) was formulated and introduced in 1996 (RSA, Department of Finance, 1996).

## **2.7 Economic Reform Strategies.**

### **2.7.1 Introduction**

The current South African Government has implemented a number of policies since it came to power in 1994, with the purpose of addressing the economic and social legacies of the previous regime. The policies that are of specific relevance to the Actuaries' Capitalisation Rate are those that have influenced the economic conditions present within South Africa, that is the macroeconomic and microeconomic policies.

The macroeconomic policy, the Growth Employment and Redistribution (GEAR) Policy was the first to be implemented, which focus the focus on improving the broad economic conditions, at the sector level. Then when it was determined that GEAR had made as much progress as it could given the microeconomic conditions, the Government introduced the Microeconomic Reform Strategy (MERS) aimed at addressing the industry level problems within the economy.

Thus what follows in the rest of this section is a description of the macro and micro economic policies and the levels of progress that each has made and the implications that they have had on the Actuaries' Capitalisation Rate.

### **2.7.2 The Growth Employment and Redistribution Strategy (GEAR)**

The RSA, Department of Finance (1996:1) describes GEAR as "A strategy for rebuilding and restructuring the economy, in keeping with the goals set in the Reconstruction and Development Programme. In the context of this integrated economic strategy, we can successfully confront the related challenges of meeting basic needs, developing human resources, increasing participation in the democratic institutions of civil society and implementing the RDP in all its facets." The South African Government believed that the GEAR strategy would provide an approach to growth and development that would form a bridge between the constrained environment that the new South Africa emerged from in 1994 to the environment consisting of increased international competition that we see today, through sustainable economic expansion (RSA, Department of Finance, 1996:2).

GEAR was meant to provide the framework for moving South Africa back into the global economic arena whilst addressing the economic problems that the country's exclusion had caused; to understand how this was to be done requires an examination of the strategy's core elements. "The core elements of the integrated strategy are:

- a renewed focus on budget reform to strengthen the redistributive thrust of expenditure;
- a faster fiscal deficit reduction programme to contain debt service obligations, counter inflation and free resources for investment;
- an exchange rate policy to keep the real effective rate stable at a competitive level;
- consistent monetary policy to prevent a resurgence of inflation;
- a further step in the gradual relaxation of exchange controls;
- a reduction in tariffs to contain input prices and facilitate industrial restructuring, compensating partially for the exchange rate depreciation;
- tax incentives to stimulate new investment in competitive and labour absorbing projects;
- speed up the restructuring of state assets to optimise investment resources;
- An expansionary infrastructure programme to address service deficiencies and backlogs;
- an appropriately structured flexibility within the collective bargaining system;
- a strengthened levy system to fund training on a scale commensurate with needs;
- an expansion of trade and investment flows in Southern Africa; and
- a commitment to the implementation of stable and coordinated policies."

(RSA, Department of Finance, 1996:2)

Included in GEAR was the introduction of medium term strategies, these medium strategies were seen as a means to install confidence in the Government by informing the economy about the Government's planned actions in advance, the core elements of the initial medium term strategy as stated in the GEAR Strategy Document were:

- "an acceleration of the fiscal reform process, including a tighter short term fiscal stance to counter inflation, an appropriate medium-term deficit target to eliminate government dissaving, further revision of the tax structure, and a range of budgetary restructuring initiatives to sharpen the redistributive thrust of expenditure and contain costs;

- a further step in the gradual relaxation of exchange controls, the maintenance of monetary policies consistent with continued inflation reduction and exchange rate management to stabilise the real effective exchange rate at a competitive level.
- a consolidation of trade and industrial policy reforms, incorporating a further lowering of tariffs to compensate for real depreciation, the introduction of tax incentives for a fixed period to stimulate investment, a campaign to boost small and medium firm development, a strengthening of competition policy and the development of industrial cluster support programmes, amongst other initiatives;
- the implementation of the public sector asset restructuring programme, including guidelines for the governance, regulation and financing of public corporations, and leading off with the sale of non-strategic assets and the creation of public-private partnerships in transport and telecommunications;
- an expansionary public infrastructure investment programme to provide for more adequate and efficient economic infrastructure services in support of industrial and regional development and to address major backlogs in the provision of municipal and rural services;
- a structured flexibility within the collective bargaining system to support a competitive and more labour-intensive growth path, including greater sensitivity in wage determination to varying capital intensity, skills, regional circumstances and firm size; reduced minimum wage schedules for young trainees, reducing indirect wage costs; and increasing the incentives for more shifts, job sharing and greater employment flexibility; and
- a social agreement to facilitate wage and price moderation, underpin accelerated investment and employment and enhance public service delivery”.

(RSA, Department of Finance, 1996:4-5)

The desire was that the elements of the medium term strategy would start the movement of the economy toward greater stability and competitiveness, that is the Government viewed the measures of the medium term strategy as being “ mutually supportive and constitute an integrated strategy to enhance economic growth and employment creation” (RSA, Department of Finance, 1996:5).

With respect to policy coordination the GEAR strategy stated the following:

“As a result of political stability and sound policies, economic growth has revived, bringing to an end the stagnation that characterised the 1980s. Our strategy will build firmly on the foundations established since 1994, leading to accelerated growth, increased job creation and a significantly improved distribution of income and opportunities.

The higher growth path depends in part on attracting foreign direct investment, but also requires a higher domestic saving effort. Greater industrial competitiveness, a tighter fiscal stance, moderation of wage increases, accelerated public investment, efficient service delivery and a major expansion of private investment are integral aspects of the strategy. An exchange rate policy consistent with improved international competitiveness, responsible monetary policies and targeted industrial incentives characterise the new policy environment.

A strong export performance underpins the macroeconomic sustainability of the growth path. Private sector employment creation is reinforced by small business promotion, land reform and emergent farmer support, greater labour market flexibility and labour-based public sector infrastructural development projects.

Accelerated economic growth associated with stronger employment creation is the key to continued progress towards an equitable distribution of income and improved standards of living for all. Employment creation provides a powerful vehicle for redistribution, supported by government housing, water supply and sanitation, health, education, welfare and social security services.

Success in a more open and complex economic environment requires consistent and integrated policies. Timing, sequencing, and packaging of reforms are important, as it is the clear commitment of social partners to an agreed policy framework. World competitiveness nowadays depends as much on comparative advantage in the public policy arena as it relies on technology, human resources and physical capital.

Government has a clear policy coordination role. There are trade-offs amongst policy options and competing claims by different interest groups which need to be nationally resolved. Whilst institutions have been developed to aid this process, and Government is committed to an open and consultative approach, the ultimate responsibility for a credible and coherent policy framework lies with Government. As a first step in this process, Government calls for a clear commitment by both business and labour to the broad principles set out in this document.

Within Government, especially in the fields of monetary, fiscal, trade, industrial and labour policies, there is also a critical need for coordination. Inconsistent approaches in any of these areas have the potential to destabilise the credibility of the overall macroeconomic

framework. Effective coordination of economic policy at cabinet level has accordingly been given the highest priority by Government, together with supporting arrangements within key administrations and between Government, the Reserve Bank, the business sector, organised labour and other key constituencies. The strategy set out in this document seeks to remove uncertainty, give clear direction to the economic course on which South Africa is headed, and invite Government's social partners to join in the building of a competitive fast growing economy".

(RSA, Department of Finance, 1996:22).

With the GEAR document the Government had set its goals, identified the problem areas of the macro economy that needed focused attention and had formulated a strategy to proceed with, in addition the Government had made its intentions public and would therefore be held accountable for its performance.

### 2.7.3 The Performance of GEAR.

Nine years on, the initial performance of Gear can start to be evaluated, performing a comparison between the GEAR scenario predictions of the key economic variables for the period 1996 to 2000 and the achieved results in these variables for the same period a "performance score card" can be created. Table 2.2 shows the predicted variables for the period, whilst Table 2.3 shows the actual variable for the period.

**Table 2.2:** The GEAR Integrated Scenario Predictions for Key Variables, 1996-2000

Percentage	1996	1997	1998	1999	2000	1996-2000 (average)
GDP growth (real)	3.5	2.9	3.8	4.9	6.1	4.2
Inflation (CPI)	8.0	9.7	8.1	7.7	7.6	8.2
Fiscal Deficit	-5.1	-4.0	-3.5	-3.0	-3.0	-3.7
Employment growth	1.3	3.0	2.7	3.5	4.3	2.9
Private sector investment (growth)	9.3	9.1	9.3	13.9	17.0	11.7
Real bank rate	7	5	4	3	3	4.4

Source: (Streak and Van Der Westhuizen, 2004)

**Table 2.3:** Actual Outcomes for Key Economic Indicators Predicted in GEAR

Percentage	1996	1997	1998	1999	2000	1996-2000 (average)
GDP growth (real)	4.2	2.5	0.8	2.1	3.4	2.5
Inflation (CPI)	7.4	8.6	6.9	5.2	5.3	6.6
Fiscal Deficit	-4.6	-3.8	-2.3	-2.0	-2.0	-2.9
Employment growth	-0.6	-1.7	-3.4	-2.0	-2.7	-2.0
Private sector investment (growth)	7.7	4.8	-1.8	-3.3	-6.4	2.7
Real bank rate	7.9	7.4	11.1	8.8	6.1	8.3

Source: (Streak and Van Der Westhuizen, 2004)

From a casual examination of tables 2.2 and 2.3 it can be seen that at no point did the actual values for the key economic variables match those of the GEAR scenario prediction. A detailed comparison showing the difference between actual and predicted values is shown in tables 2.4.

**Table 2.4:** Error in Economic Variable Predictions.

	1996	1997	1998	1999	2000	1996-2000 (average)
GDP growth (real)	-0.7	0.4	3.0	2.8	2.7	1.7
Inflation (CPI)	0.6	1.1	1.2	2.5	2.3	1.6
Fiscal Deficit	-0.5	-0.2	-1.2	-1.0	-1.0	-0.8
Employment growth	1.9	4.7	5.0	5.5	7.0	4.9
Private sector investment (growth)	1.6	4.3	11.1	17.2	10.6	9
Real bank rate	-0.9	-2.4	-7.1	-5.8	-3.1	-3.9

Source: (Streak and Van Der Westhuizen, 2004)

The figures in Table 2.4 show that the Government was unable to achieve its targets for GDP, Employment and Private sector investment growth as well as reducing the real bank rate. But with regards to the Fiscal deficit and inflation the Government was able to perform better than expected. Even though the results were not as expected the direction of change in the key variables was in the desired direction and the poor

performance in most cases can be linked in part to unexpected exogenous forces (RSA, Department of Trade and Industry, 2002:2; Streak and Van Der Westhuizen, 2004). Even though the initial phase of GEAR was not the complete success story as was hoped, it was an important start in the process of reforming the economy and starting to build government credibility and public confidence in the government's macroeconomic policies.

#### 2.7.4 The Microeconomic Reform Strategy.

The greatest success of GEAR was that it brought much needed macroeconomic stability to the South African economy and created the conditions necessary for the introduction of microeconomic reforms. The Microeconomic Reform Strategy (MERS) was put into action in 2002 with the core aim of addressing the microeconomic problems that lead to the lower than expected performance in the macroeconomic objectives of poverty elimination, wealth redistribution and reducing unemployment (RSA, Department of Trade and Industry, 2002:1).

Some of the important lessons that the Government has learned through its policy action up until 2002 and are attempting to implement in the MERS “include:

- Recognising the importance of policy stability and effective regulation for policy certainty and confidence in the economy.
- The need for decisive, coordinated interventions to improve the state's capacity to spend and deliver services.
- The need to strengthen the cluster system in government to promote coordinated implementation.
- The need to acknowledge and communicate the timing of the impact of policies and to recognise that HRD, skills and technology development are medium to long term strategies.
- The need to identify and communicate short-term strategies to kick-start growth and employment creation.
- The need to specifically include a geographical dimension to growth and employment.
- The need to specify the institutional role of the state in achieving Vision 2014.

(RSA, Department of Trade and Industry, 2002:9).

With the above lessons in mind “a country's current and future competitiveness requires that a set of ‘fundamentals’ be in place in the economy. These ‘fundamentals’

include appropriate and efficient economic and social infrastructure, access to finance for productive activities, investment in research and development, innovation and the take-up of new technologies, as well as investment in human capital and an adaptive, flexible workforce” (RSA, Department of Trade and Industry, 2002:10). The Government accepts that it has the central role in the implementation and performance of this policy but also notes that in order for the policy to be a success it will need the active participation of the private sector in raising the levels of the key fundamentals (RSA, Department of Trade and Industry, 2002:10).

An important highlight of the MERS is that it identifies six key performance areas within the strategy that will receive special attention; these areas are growth, competitiveness, employment, small business development, black economic empowerment and geographic spread, with specific sub-strategies the last four of the key areas, which stresses their level of importance to the Government (RSA, Department of Trade and Industry, 2002:13).

The final element of the MERS is Government stating its role, responsibilities and its priority actions. Included in this section is the Government’s undertaking “to ensure that the various products and services, the policy instruments, that it designs and offers to citizens and economic actors are relevant, effective and easily accessible” (RSA, Department of Trade and Industry, 2002:16) and states the “following priority actions:

- Promoting coherent policy across government, i.e., policies that promote growth and employment.
- Ensuring that all legislation and regulations promote growth and employment.
- Narrowing the gap between financial and operational planning with spending and identification of priorities.
- Restructuring government budgets to better reflect and measure this new coordinated approach.
- Managing the mandates of parastatals and public entities in promoting growth and employment.
- Improved knowledge management and information sharing.
- More effective management of intergovernmental relations.
- Improved communications, branding and marketing to build policy certainty and confidence.
- Increasing the capacity of government to spend effectively.”

(RSA, Department of Trade and Industry, 2002:16).

Essentially the MERS is the next logical step in the process of reforming and developing the South African Economy and is another example of the Government's concerted effort to build both its creditability and public confidence levels.

## **2.8 Credibility and Confidence.**

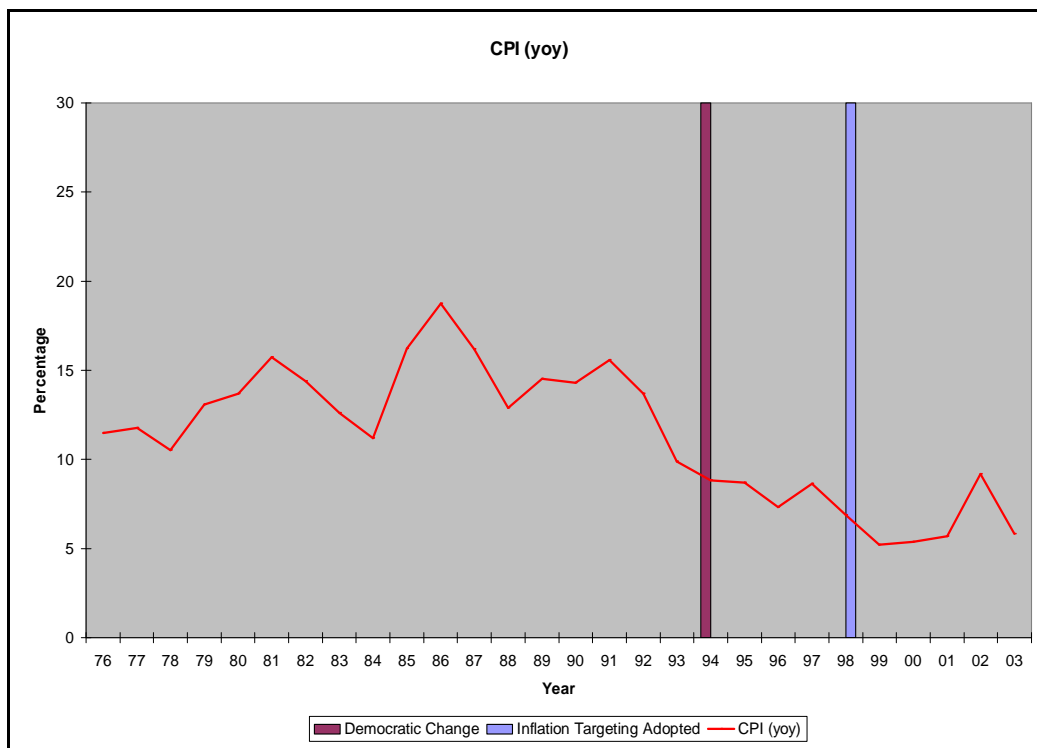
Credibility is defined in the Oxford Dictionary (1994:279) as "quality of being believable" or "quality of being generally accepted and trusted". It is the second definition that is of more relevance to the paper as what is of importance within the context of macroeconomic policy is the credibility of Government policy. "A credible policy is one that the public believes will be kept up and succeed" (Dornbusch and Fischer, 1990:537). "However the credibility is twofold, it is about the wider credibility of the process in terms of acceptance amongst politicians and institutions, but it is also about credibility in its strict economic sense, agents need to believe in the budget process and the budget outputs"(Chaponda, Cole, Schoch, and Gadsden, 2004:8). The level of confidence is related to the credibility of the government's policy, since as the level of government's credibility increases so does the economy's confidence that the government will do as it claims.

As part of Government's efforts to transform the economy as well as gain public confidence and improve the government's credibility, the South African Government need to implement a clear and transparent allocation mechanism which allowed the Government to make trade-offs between competing policy options through the budget process within a medium term perspective (Chaponda et al, 2004:2). The mechanism that was adopted was the Medium Term Expenditure Framework (MTEF), which "links policy, planning and budgeting over a three year period and forces government planners to take a longer term view of their policies as opposed to the previous focus on annual budgets" (Chaponda et al, 2004:2), and since the official implementation of the MTEF in 1997 it has been considered a essential element of South Africa's Macroeconomic policy (Chaponda et al, 2004:6, National Treasury, 2004c:i).

## 2.9 Monetary Policy

Monetary policy deserves a special mention within the context of the South African economy because of the Government's resounding success with this aspect of its macroeconomic policy. The greatest step forward appears to have been the decision to introduce inflation targeting in 1998, shown by the blue bar in figure 2.2, as the leading objective of monetary policy. Essentially with inflation targeting the South African Reserve Bank's conduct of monetary policy was initially focused on reducing the level of inflation and then keeping the level of inflation within the target band of between 3% and 6%. Since the introduction of inflation targeting the level of inflation has been brought down to acceptable levels, with the only divergence back to double digit inflation beginning at the end of 2001, shown by the spike in figure 2.2, due to exogenous factors. The extent and duration of the increase in inflation was limited by the quick actions of the South African Reserve Bank (SARB) and the transparency of the approach of the SARB to monetary policy, with inflation returning to the target band in 2002 (SARB, 2005).

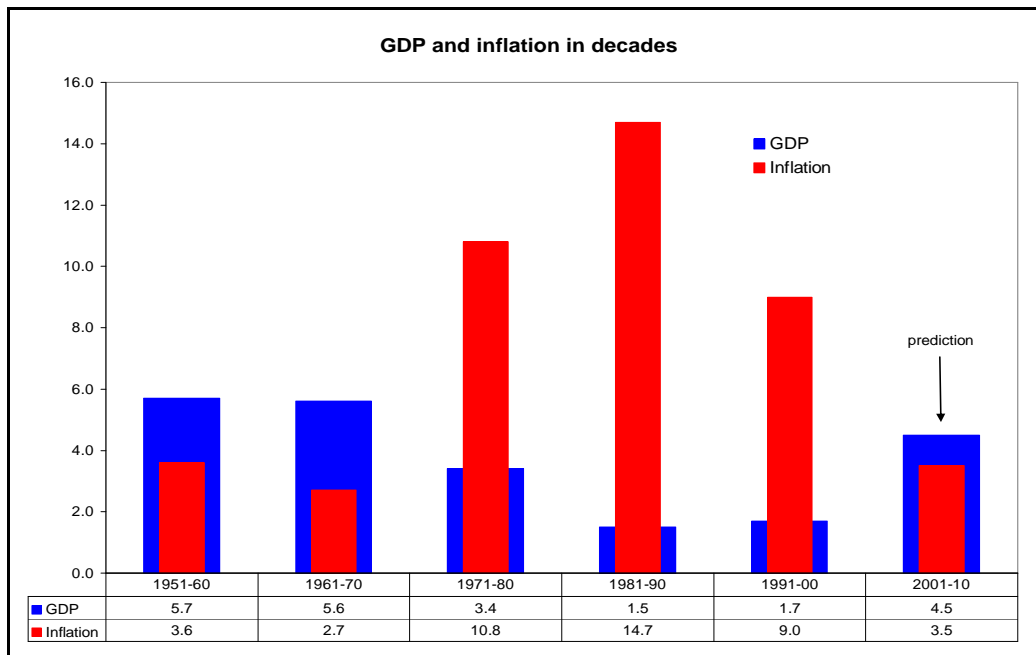
**Figure 2.2:** South African Consumer Price Index Inflation



Source: (Faure, 2004a)

The introduction of the Monetary Policy Committee and their regular meetings on set dates to determine the Repurchase Agreement (REPO) Rate, as required by the level of inflation, has gone a long way to increase the transparency of the process. A product of the increased transparency has been the higher level of public confidence and credibility of the SARB. The result of the well performing monetary policy has been a greater level of stability in the financial sector of the economy that has spilled out to the rest of the economy (SARB, 2005). The spill over into the rest of the economy is indicated at below with the change in the trends of inflation and gross domestic product (GDP), with GDP increasing as inflation decreases. From figure 2.3, it can be seen how the initial trend change occurred in the 1990's with the change in government in 1994, and further improved with the adoption of inflation targeting in 1998, with initial figures for the next decade indicating a return to a growth rate greater than the level of inflation (Faure, 2004a).

**Figure 2.3:** South African GDP and Inflation



Source: (Faure, 2004a)

## **2.10 Conclusion**

Thus the point has now been reached where an introductory understanding of how Keynesian forecasts are compiled has been accomplished. Now it can be clearly understood that forecasts are an indication of the future and that there is no guarantee that what is forecast will come to pass, even though the development of Economic forecasting is progressing at a rapid pace and forecasts are becoming more accurate.

With respect to Government economic policy, the aims, objective and results have been discussed from a broad perspective, giving a clearer picture of what to expect from the Government in the future. The Capitalisation Rate has been described and the role that it plays in the awarding of damages claims by the courts explained.

Therefore equipped with this understanding of the theoretical aspects that the analysis will be based on, the analysis can proceed on to establishing the trends that have occurred in the different financial instruments. Which will be done in order to determine if there has in fact been a significant change in the economic conditions present within the South African Economy and the impact of these changes on the rates of return that can be expected from investments.

## CHAPTER THREE

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### ANALYSIS OF INSTRUMENTS

#### **3.1 Introduction**

The purpose of this chapter to examine the trends in the various groups of instruments of the financial markets, where the instruments will be analysed in order to determine what their average rate of return is and the level of risk associated with each group. The analysis will focus on the changes that have occurred within these groups of financial assets as the country has moved through its social, economic and political transformation, with the emphasis being on determining if there appears to be a significant variation between the current state of affairs and those of the past. The analysis will be conducted with reference to forming a comparison between the results generated in the following chapter and the capitalisation rate for damages as put forward by Robert Koch (1993) in order to determine if there are valid grounds for revaluing the capitalisation rate.

#### **3.2 Rational Individuals.**

Once lump sum awards have been made, the recipient has three basic choices as to how they are going to utilise the funds. They could simply spend the funds straight away frivolously, leaving no funds for the future expenses that the award was meant to cover. Secondly the funds could be used as and when the expenses arise but with this option the funds available will decrease due to both the expenses and inflation. The final choice would be to invest the funds received so as to generate an income stream for living purposes and protect the real value of the initial award. Rational individuals could be expected to choose the third option since the award was made because of the incident that significantly altered how they are to live the rest their lives and is meant to be a means of maintaining their standard of living at the level before the incident.

Therefore, for the purpose of the study it will be assumed that individuals are rational and will invest the funds in order to maintain their real value and attempt to ensure that the award covers all the expense that it is meant to.

Consequently the basis of the analysis will focus on financial instruments, since these are widely available, relatively liquid, regulated by the Government and financial bodies, because of the depth of information available and finally because financial instrument are considered to be the first to reflect changes within the expectations of the economy (Howells and Bain, 2002: 284-413; Keynes, 1937: 152). Each asset class will be analysed in order to determine its real rate of return and the level of risk associated with investments in each class, which are considered to be the two key issues that investors are concerned about in relation to their asset portfolios (Faure, 2004b:7).

### **3.3 Returns on Investments**

#### **3.3.1 Introduction**

The returns on investments are important in determining capitalisation rates because they provide a strong indication of what rate the damages award can be expected to gain in value as time passes and therefore provide a basis for discounting the future value. The return on an investment can be defined as the total gain or loss on an investment over a given period of time (Faure, 2004b:8). “The return on a financial asset may take one or a number of forms. It may take the form of the payment of interest at discrete intervals. This is the case, for example, with a savings deposit. Interest is also paid on bonds, though there is also the possibility with a bond of selling at a profit and making a capital gain. With company shares, the attraction of capital gain for some investors is at least as important as the periodic payments, which are variable because they are ultimately related to the firms’ earnings” (Howells and Bain, 2002:6). Finally there are derivatives where the return can be both in the form of periodical interest payments and capital gains with the variability being dependant on the underlying asset (Skerritt, 2003:8-139).

### 3.3.2 Types of Return

Financial market participants refer to three types of return, namely: holding period or realised rate of return; expected rate of return; required rate of return; and the historical rate of return<sup>3</sup>. The holding period or realised rate of return refers to the return received at the end of the investment. While the expected rate of return refers to the return that an investor expects to receive from the investment and the required rate of return is the minimum rate of return required to compensate for the risk inherent in the investment. And finally the historical rate of return refers to the average past return of the investment. According to Faure (2004b:6-18) it forms the basis for further comparison of the various groups of financial instruments, therefore requiring a more detailed description.

The historical rate of return deals with a summary or average of returns over an extended period with the basis of the return calculation being the Holding Period Return<sup>4</sup>. The holding period return is simply the change in price of the investment over the period that it is owned plus the cash flows received divided by the purchase price, this however is not necessarily an annual amount because the holding period is not necessarily a year. Therefore the annualised holding period return needs to be utilised in the calculation, thus the following formula is used<sup>5</sup>:

$$\mathbf{HPR} = (1 + \{[\mathbf{CF} + \mathbf{P}_1]/\mathbf{P}_0\})^{1/n} - 1$$

Where:

**CF** = Cash Flow received during investment

**P<sub>1</sub>** = Price of investment at start

**P<sub>0</sub>** = Price of investment at end

**n** = Number of years

The above annualised Holding Period Return Formula provides the individual period inputs for the Historical Rate of Return calculation (Faure, 2004b:8-9).

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<sup>3</sup> Financial market participants regard the Historical Rate of Return as an extension of the Holding Period Return with the difference being that it deals with an average of returns over an extended period, thus only three types of return.

<sup>4</sup> For a more detailed explanation of the Holding Period Return refer to appendix A-1

<sup>5</sup> Where P<sub>1</sub> is the price of the investment at the end of the period, P<sub>0</sub> is the price at the start, CF is the dividends or interest received during the investment period and n is the number of years or parts there of.

For calculating the Historical rates of return there are two measures, the arithmetic mean ( $R_A$ ) and the geometric mean ( $R_G$ ), where the arithmetic mean is a simple average of the annual Holding Period Returns and the geometric mean is calculated with the use of the following formula:

$$R_G = [\Pi (\text{return relatives})]^{1/n} - 1$$

Where:

$\Pi$  = Product of return relatives

$n$  = Number of years

Faure (2004b:11) states that while the arithmetic mean is considered to be a good measure over a single period, it is often incorrect in measuring an investment's average performance over a long period; therefore it will not be used in the return calculations that follow<sup>6</sup>, instead the geometric mean will be used because of its greater accuracy. Thus it is because of this discrepancy that the indices and any return calculations that follow are generated with the geometric mean as a basis (BESA, 2000:16-28; and JSE, 2004b:10-18). With a basic knowledge of return one next needs to understand the risk involved by having at least a basic understanding of the risk return relationship.

### **3.4 Risk.**

“Risk in a financial context is usually taken to refer to the probability that outcomes may differ from what was expected” (Howells and Bain, 2002:6). And individuals will have a predisposition toward the level of risk that they will be willing and able accept, where according to the level of risk they are willing to accept, they fall on a continuum between risk seeking and risk averse(Moosa,2004:358). Where they will face a trade off between the associated risk and the level of return of their investment, that is the higher the risk the higher the return.

With respect to damages and the awards made, the recipient will be assumed to be a risk adverse investor, because they will not be in a position where they can afford to

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<sup>6</sup> An example of the flaw in the arithmetic mean can be found in Appendix A-2.

lose any significant portion of the initial award. Therefore in line with the assumed risk aversion, the financial instruments will be analysed in terms of the market performance for each type of security, thus drawing on the assumption that a portfolio that is diversified in such a way as to replicate the market eliminates specific risk so that the portfolio is only subject to market risk<sup>7</sup> (Lintner, 1965:13-37; Markowitz, 1952:77-91; Modigliani 1988:149-58; Tobin, 1958:65-86).

In practice a measure of risk is required; the measure that is most often used in financial markets is Beta (Milgrom and Roberts, 1992:460). The risk involved, or beta, is measured in comparison to the market portfolio and the risk free rate for the market concerned, and is provided by the following formula (after Milgrom and Roberts, 1992:464):

$$\beta = \text{Cov}(\mathbf{R}, \mathbf{R}_M) / \text{Var}(\mathbf{R}_M)$$

Where:

$\mathbf{R}$  = Return on any Asset

$\mathbf{R}_M$  = The Market Portfolio

$\text{Cov}(\mathbf{R}, \mathbf{R}_M)$  = How return varies as market return varies

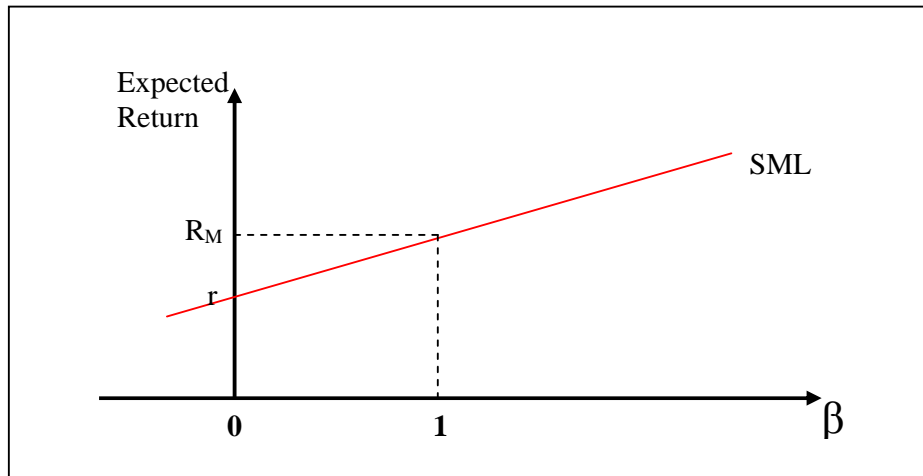
$\text{Var}(\mathbf{R}_M)$  = Variance of the Market Portfolio

The value of beta, as calculated by the above formula, increases as the level of risk increases. Thus the relationship between risk and return can then be shown using the Capital Asset Pricing Model (Milgrom and Roberts, 1992:464), where the Beta value is plotted against the Expected Return to provide the Security Market Line (SML). The SML, shown in Figure 3.1, is upward sloping because higher values of Beta means that the instrument adds risk to the portfolio and so must bring returns above the risk free rate ( $r$ ) to be attractive enough to hold. Additionally the slope of the SML shows the total risk tolerance of investors and the overall variance of the market returns.

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<sup>7</sup> Market risk refers to the risk inherent in the market as a whole that cannot be diversified away, while specific risk refers to the risk inherent in the specific instrument, e.g. a company's shares (Faure, 2004b:41).

**Figure 3.1:** The Security Market Line



Source: (Milgrom and Roberts, 1992:465)

Therefore in terms of the different classes of financial instruments that can be held, the value of beta and therefore the level of risk will increase rightward along the SML line as progressively riskier asset groups are held. That is, money market assets, then Bonds, followed by Equities and finally Derivatives.

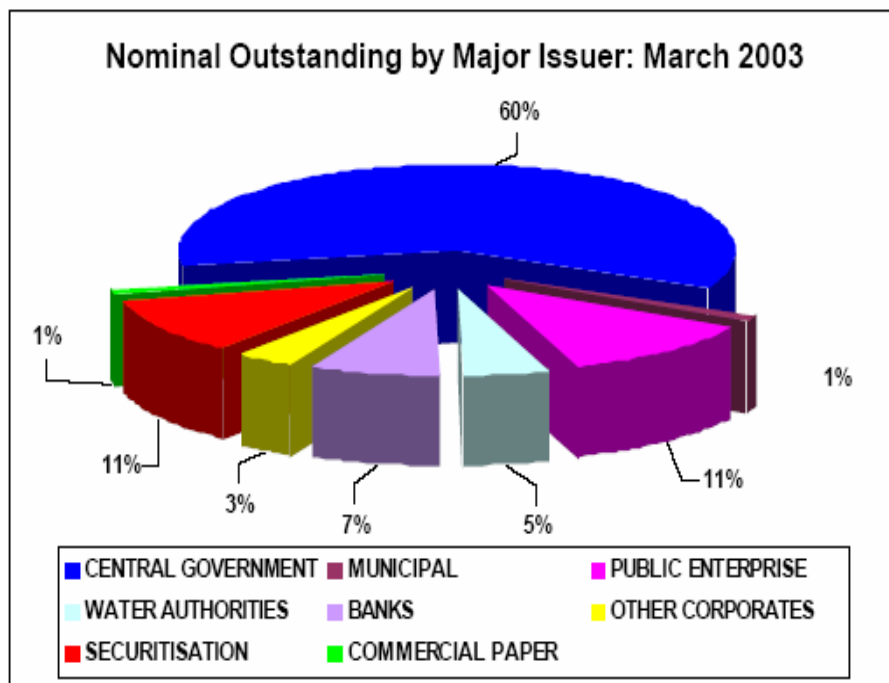
### 3.5 Financial Instruments

There are three broad categories of financial instruments: debt instruments, equity instruments, and derivative instruments. Debt instruments represent a financial obligation and can be further divided into short-term, money market instruments that are due in less than one year, and long-term instruments that constitute the bond market and reach maturity further in the future, e.g. in thirty years time. Equity instruments represent ownership in a company, while derivative instruments are financial instruments whose existence is based on some other financial instrument (Faure, 2004c:35-49; Howells and Bain, 2002: 283-437). Each of these groups of financial instrument will be discussed in more detail with particular attention paid to their rates of return and the general level of risk associated with holding each class of financial instrument.

### 3.6 The Bond Market

“The bond market is the mechanism / conventions that exists for the issue of, investing in, and the trading of, instruments that represent the long-term undertakings (usually of a fixed capital nature) of the issuers” (Faure, 2004d: 18), where the bond market may be seen as the long end of the debt markets, where the established short-term interest rates of the money market are the starting point for the rates on bond market instruments (Faure, 2004d: 11). Additionally it is usually found that the central government is the largest single issuer in the market. In South Africa, as at March 2003, the Government accounted for about 77% of the nominal outstanding long term debt which is commonly referred to as the RSA bonds (BESA, 2003:10). The outstanding debts’ distribution amongst the different government bodies can be seen in Figure 3.2 in addition to that of the private sector.

**Figure 3.2:** Outstanding Long-term Debt by Major Issuer.



Source: (BESA, 2003:10)

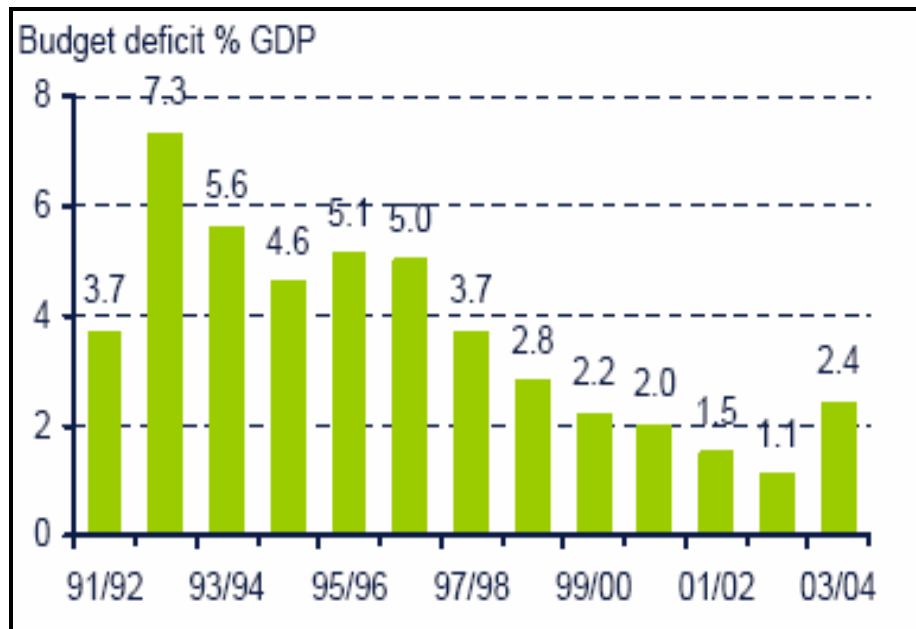
Of the bonds available government bonds are the most attractive because of the fact that there is virtually no default risk involved, this is shown in the risk premium on the assets being amongst the lowest in the financial markets with only short-term

government instruments having a lower interest rate (Howells and Bain, 2002:302-338).

To analyse the performance of the South African bond market, the Total Return Index as compiled by the Bond Exchange of South Africa and the Actuaries Society of South Africa, as well as data compiled by Faure was utilised for the periods 1980 to 2004. The data were compiled into tables and graphs so that the changes can be easily and quickly identified.

The initial cause for the changes in the bond market can be seen when comparing the size of the budget deficit as a percentage of Gross Domestic Product (GDP), as depicted in figure 3.3, which illustrates how by adopting a more disciplined approach to Macroeconomic Policy, the South African Government has been able to reduce the size of the deficit and therefore the economic disturbance caused by large and variable government spending.

**Figure 3.3:** The South African Budget Deficit



Source: (Investec, 2004:3)

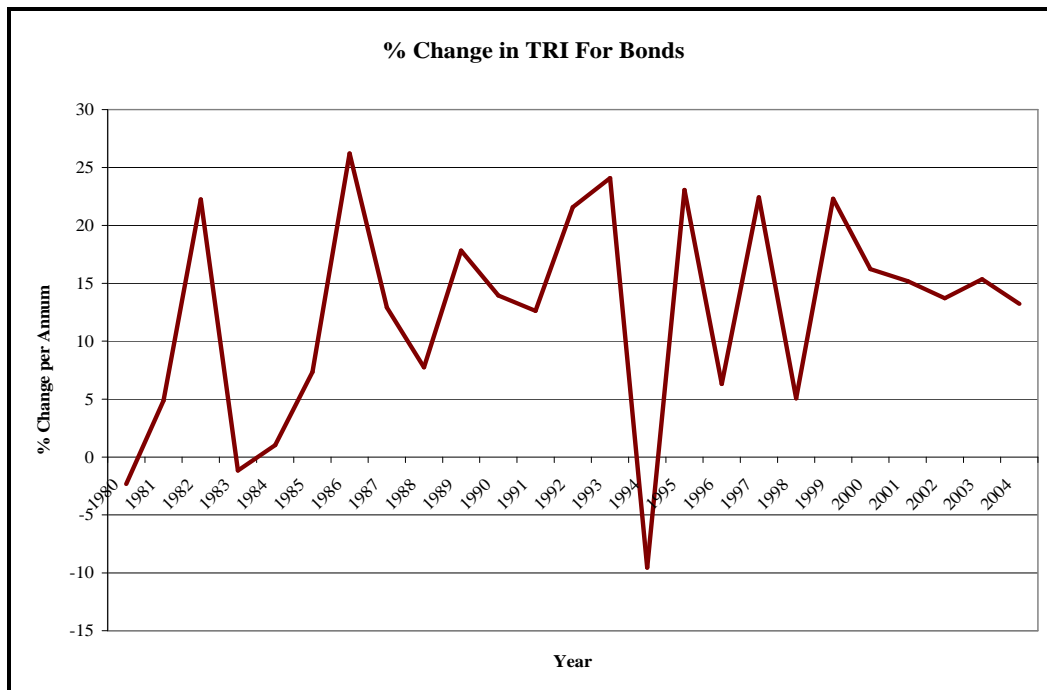
The trend of the fiscal deficit below the 5% level can be expected to continue for at least the medium term, with the Government estimating a deficit of below 4% of GDP

as far as the 2007/2008 budget, implying that the Government intends to keep to its policy of fiscal discipline (National Treasury, 2004d: 10).

Flowing from the Government's keeping the fiscal deficit within limits; the next step is to focus on the total returns that can be earned from the investing in the long-term debt instruments. The initial focus is on the Total Return Index (TRI) which shows the overall returns on all long-term capital debt after which the focus will shift onto the long-term debt instruments of the South African Government, because of the low level of risk associated with these instruments and the fact that they constitute the majority of the market and are responsible for most of the market's liquidity.

The yearly percentage change in the TRI was calculated using the index value at the 31<sup>st</sup> of December of each year and that of the preceding year to calculate the percentage change in the index for that year. These values were then tabulated and converted to graphical format, which is presented in Figure 3.4.

**Figure 3.4:** Changes in the Total Return Index



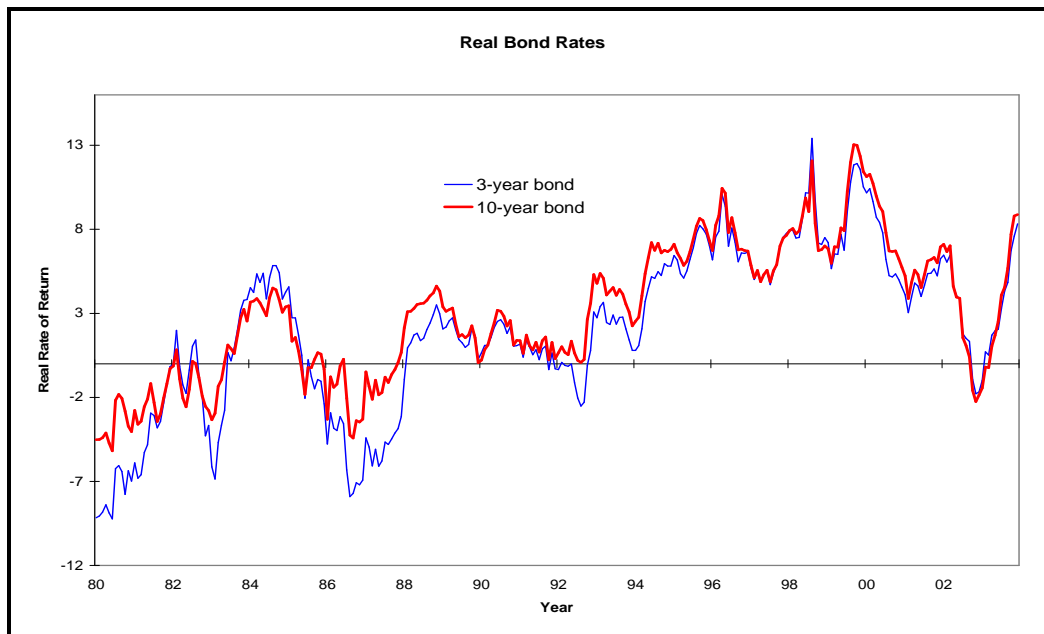
Source: (Ackerman, 2005).

From figure 3.4 it can be seen that since the political change in 1994, the initial instability caused by an unknown government taking over has eased and the market

started to show significant stability with the introduction of the inflation targeting policy by the South African Reserve Bank in 1998 and the reputation that the Government had built up as being committed to fiscal discipline. The reduced volatility in the TRI can clearly be seen in the period 1999 to 2004, which showed the least change in the index over the 25 year period considered. The increased stability in the Bond Market is further highlighted when reviewing the yields on the various government bonds.

In considering the real rates of return on the Government 10 year and 3 year bonds, it was found that before 1994 that the rates of return were either relatively small or that the real rates were negative, but post 1994, the real rate of return has remained positive except for a brief period at the end of 2002 and the beginning of 2003 where the real rate of return was negative. The period of negative return could be related to the sudden depreciation of the Rand at the end of 2001 and therefore be an exogenous shock (SARB, 2001:1-3). However, considering the post 1994 period as a whole the real returns have been positive for both durations of bonds as shown in figure 3.5.

**Figure 3.5:** Real Bond Rates 1980-2003.



Source: (Faure, 2004).

Thus in considering the real rates of return on the Government 3 year and 10 year bonds, the prolonged movement into positive real rates for these two instruments

since the change in government provides another indicator that there is a higher level of stability in the long-term debt market. Therefore as a final point of consideration within the long-term debt market, the annual real yields for government bonds with durations 0-3 years, 3-5 years, 5-10 years and 10 years and longer will be investigated as well as the yields of the Eskom Bonds to provide a comparison between the pure government bonds and those issued by a parastatal.

Table 3.1 presents the historic average annual real yields on a cross-section of the government bonds available in the long-term debt market including the Eskom bonds, which while being a government bond in the broad sense, being a bond issued by a parastatal it is technically a more risky asset than a bond issued by the National Treasury. In addition Eskom's willingness to make a market in its own instrument has contributed greatly to the high level of liquidity for these instruments (Faure, Falkena, Kok, and Raine, 1991:47-52). A careful examination of table 3.1 will show that the real yields on the bonds move in the same general direction with the general upward trend in the yields starting at the time when South Africa's isolation came to an end.

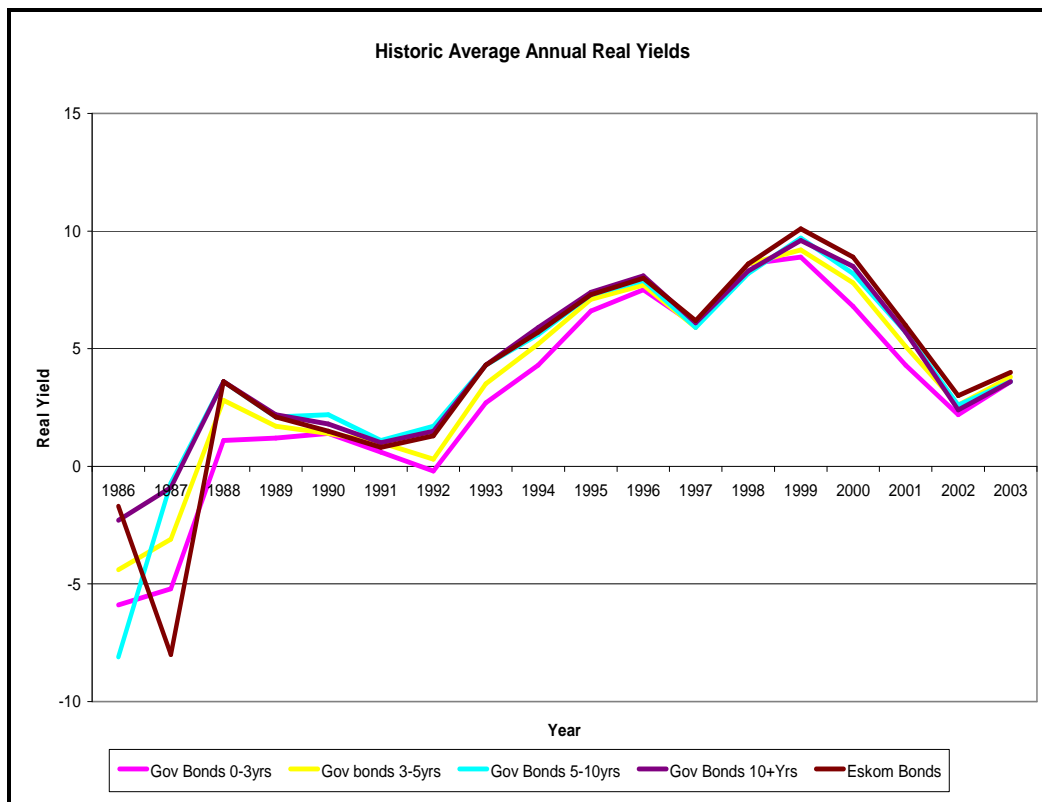
**Table 3.1:** Historic Average Annual Real Yields 1986-2003.

	<b>Gov Bonds 0-3yrs</b>	<b>Gov bonds 3-5yrs</b>	<b>Gov Bonds 5-10yrs</b>	<b>Gov Bonds 10+Yrs</b>	<b>Eskom Bonds</b>
<b>1986</b>	-5.9	-4.4	-8.1	-2.3	-1.7
<b>1987</b>	-5.2	-3.1	-0.7	-0.9	-8.0
<b>1988</b>	1.1	2.8	3.6	3.6	3.6
<b>1989</b>	1.2	1.7	2.1	2.2	2.1
<b>1990</b>	1.4	1.4	2.2	1.8	1.5
<b>1991</b>	0.6	1.0	1.1	1.0	0.8
<b>1992</b>	-0.2	0.3	1.7	1.5	1.3
<b>1993</b>	2.7	3.5	4.3	4.3	4.3
<b>1994</b>	4.3	5.2	5.6	5.9	5.7
<b>1995</b>	6.6	7.1	7.3	7.4	7.3
<b>1996</b>	7.5	7.7	7.9	8.1	8.0
<b>1997</b>	6.0	5.9	5.9	6.1	6.2
<b>1998</b>	8.6	8.6	8.2	8.3	8.6
<b>1999</b>	8.9	9.2	9.7	9.6	10.1
<b>2000</b>	6.8	7.8	8.2	8.5	8.9
<b>2001</b>	4.3	5.1	5.7	5.7	6.0
<b>2002</b>	2.2	2.6	2.6	2.4	3.0
<b>2003</b>	3.6	3.8	3.6	3.6	4.0

Source: (Mather: 2004)

The change in the historic average annual real yields is more clearly visible when the yields are shown graphically in Figure 3.6. It can be seen that the yields start to rise back towards positive territory in 1986 as the political turmoil within the country subsides, with the trend peaking in 1988 and heading back towards negative yields. In 1992 the yields return to positive territory and do not become negative again moving above the 5% level between 1994 and 1995 with the election of the new government. In the rest of the period dips in the real yield are experienced in 1997 with the Asian Crisis and the resulting exit of capital from emerging markets, such as South Africa. And again in 2002 with the sudden depreciation of the Rand where the yield fell below the 5% level but has since turned around, which shows that as far as the Bond Market is concerned, there are expectations of higher yields.

**Figure 3.6:** Historic Average Annual Real Returns 1986-2003.



Source: (Mather, 2004).

Thus what the examination of the Long-term Debt Market has shown is that the changes in Macroeconomic Policy, as well as the political and social change, have resulted in a market that is very different to the one that existed pre1994. With there

being less extreme fluctuations in the returns that are expected and that the market is far more able to weather exogenous shocks such as the Asian Financial Crisis in 1997 and the sudden depreciation of the exchange rate of the Rand in 2001/2002 than it was able to do in the past, returning to normal far more rapidly. Therefore given that long-term bonds and damages awards are similar in their duration, the periodic payments and risk, should it not be expected that they would face similar rates of real return, thus should the Actuaries' Capitalisation Rate not be the same as or at least similar to the real rate of return on long-term bonds?

### **3.7 The Money Market.**

The money market in the broad sense is the part of the debt market that deals in instruments with a duration of one year or less, however, the term “money market” usually refers only to the wholesale part of the short-term debt market that deals in instrument of large denominations, i.e. instruments with nominal values of R1 million or more (Faure, 2004e:25). The most important aspect of this market is the fact that this is the market through which the Government implements its monetary policy, and thus influences interest rates throughout the economy (Howells and Bain, 2002:300). Within the wholesale side of the short-term debt market the analysis will focus on the rate of interest associated with each of the following:

- The REPO Rate<sup>8</sup>
- 91 Day Treasury Bills
- Negotiable Certificates of Deposit (NCDs).
- Fixed Deposit accounts (Retail Market).

In South Africa interest rates are influenced through the REPO Rate, which is the rate at which the South African Reserve Bank (SARB) provides accommodation to the banks that require additional funds in order to meet their cash reserve requirement

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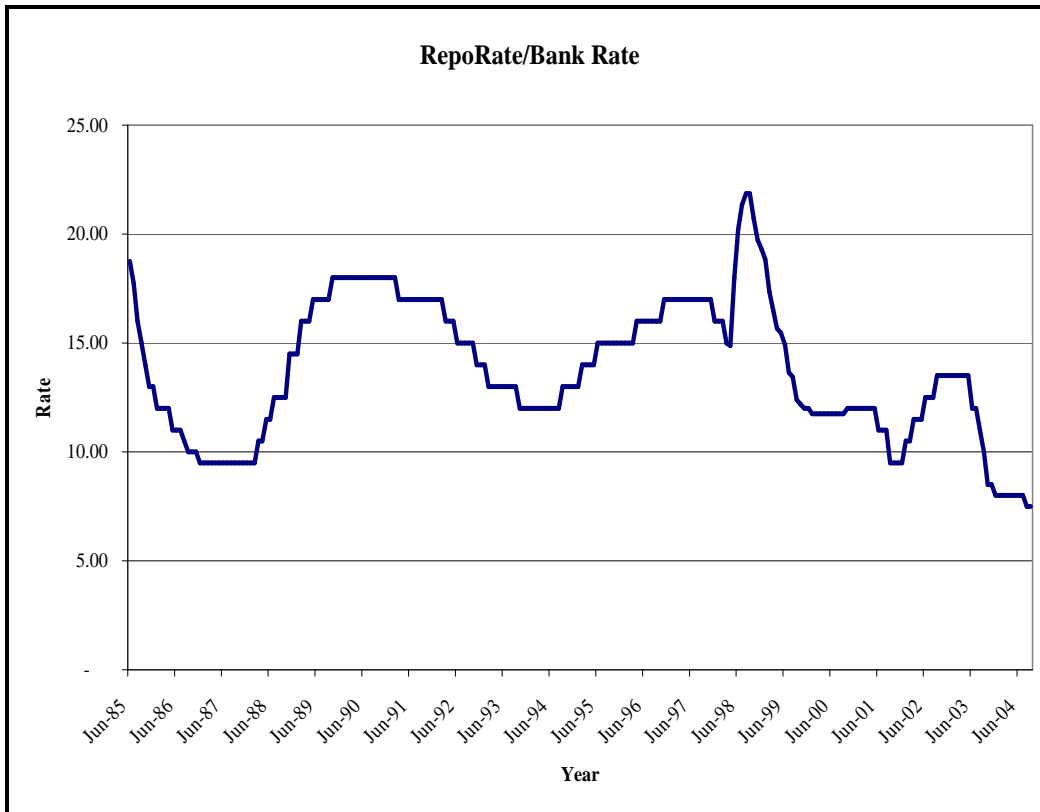
<sup>8</sup> Prior to March 1998 the REPO Rate was referred to as the Bank Rate, the change in name coming about due to the changes in the system of accommodation provided by the South African Reserve Bank. The changes were part of the process of the adoption of the Inflation Targeting Policy in 1998 (SARB, 1998:28).

(SARB, 2005:2-3). However, the REPO Rate is the most costly rate at which Banks borrow money in order to meet their cash reserve requirement, therefore the REPO rate has a significant impact on the rates at which the banks lend money on to others (Walsh, 2003:451;Faure, 2004f:11). Thus because of the REPO rate's impact on rates through out the Money Market and the economy and the fact that it provides signals to the rest of the economy as to the South African Reserve Bank's stance on monetary policy, it is an important indicator of what has happened in the South African economy as well as providing insight into what the conditions are expected to be in the economy over the next one to two years (SARB, 2005:1).

In examining the trend in the REPO rate over the last twenty five years,(Figure 3.7) it can be seen that the trend was for a rate of above 10% for most of the 1980's and 1990's, which is indicative of the high level of inflation over the whole period, the international isolation and the political turmoil of the of the 1980's, and the untried Government and emerging market problems of the 1990's. From 1998 and the introduction of inflation targeting there has been a definite downward trend in the REPO rate which strongly indicates a healthier economy with added stability, with the rate falling below the below the 10% level in 2003 and remaining below this level, approaching the 5% level. However, the current increases in oil prices, and the weakening of the exchange rate of the Rand indicate that the 5% level will not be reached but instead the rate is likely to remain in the 5%-10% range.

91 Day Treasury Bills are the short-term debt instruments of the National Government, and as such are considered to be the financial instruments with the least risk. In terms of the Capital Asset Pricing Model, they are referred to as the "risk free assets" because of their short duration and due to the belief that the Government will never default on its debt (Howells and Bain, 2002:170). The added attraction to these instruments in the South African market is their 'Liquid Asset' status, which means that they can be used by financial institutions to obtain accommodation from the South African Reserve Bank (Faure, 2004e:83).

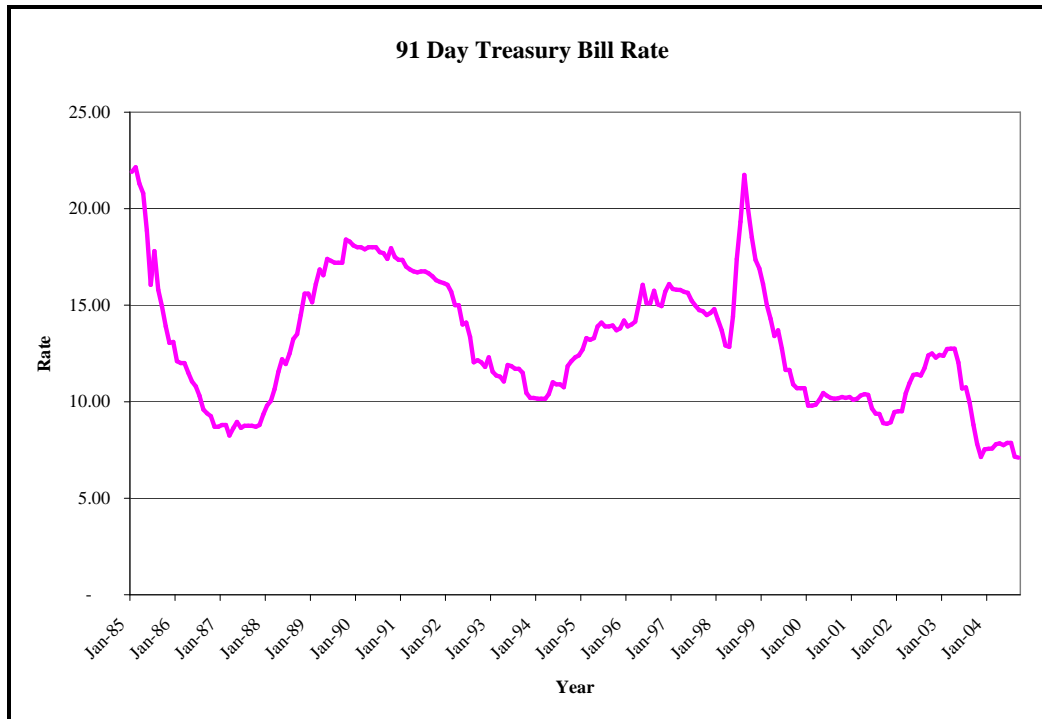
**Figure 3.7:** The REPO Rate 1985 to 2004



Source: (Faure, 2004a)

When considering the trend in the Treasury Bill (TB) rate for the period 1985 to 2004 (Figure 3.8), it can be seen that the rate on TBs has been following a downward trend overall. The greater momentum in the downward trend was experienced post 1994 as the new Government gained credibility and the international isolation came to an end. There have however been two reversals of the downward trend, occurring in 1998 possibly due to the emerging market crisis during the period, and then again at the end of 2001 with the sudden depreciation of the Rand exchange rate. An examination of these two periods shows that the impact on the rate in the second case was less severe than the first, which in itself indicates that the market was more stable and better able to deal with the 'shock' therefore highlighting the proposition that the TB market and thus the money market has achieved greater stability.

**Figure 3.8:** The 91 Day Treasury Bill Rate 1985-2004.



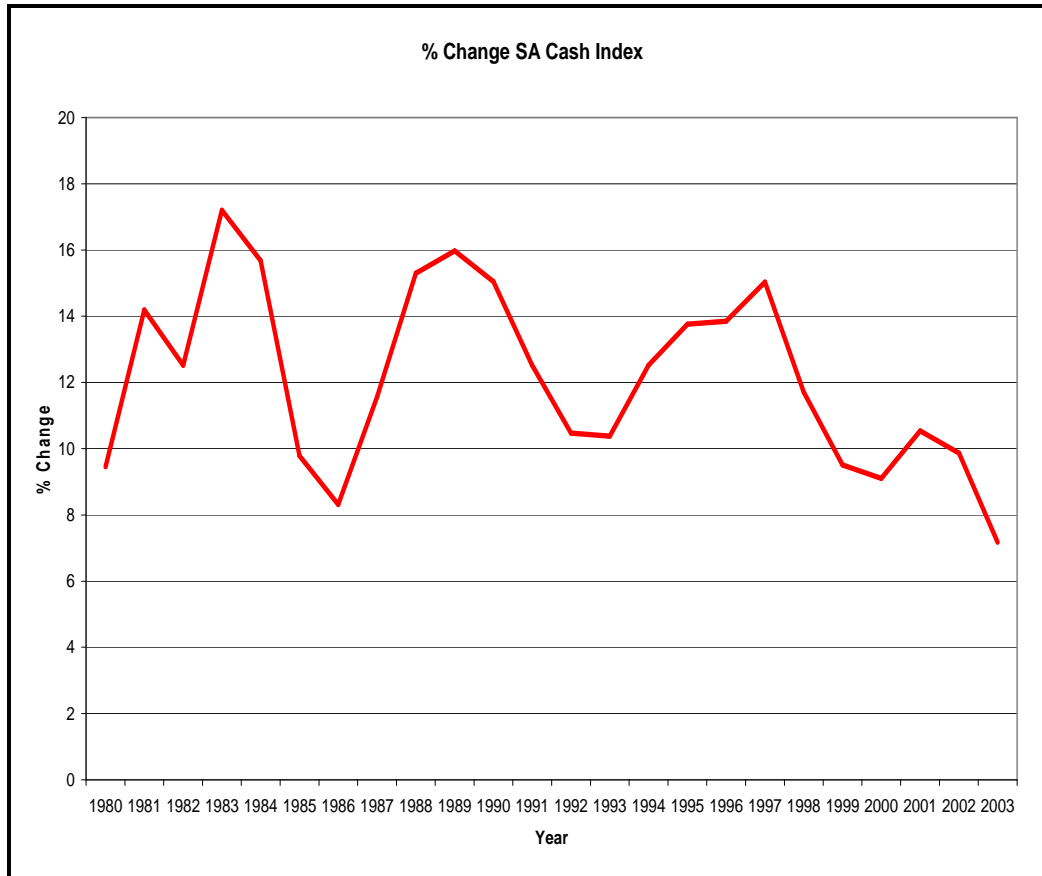
Source: (Faure, 2004a)

Negotiable Certificates of Deposit (NCDs) are fixed deposit receipts issued by a bank that are negotiable in the secondary market for short-term financial instruments (Faure, 2004e:96). For the analysis of the rate of return on NCDs, use was made of the SA Cash Index prepared and used by Citadel Asset Management, which is an Index showing the annualised rate of return on 32 Day NCDs compiled from the published daily returns on the 32 Day NCDs.

When examining the trend in the SA Cash index (figure 3.9) it can be seen that the level of volatility has been decreasing, with a definite downward trend evident from 1998 onwards. In the period before 1998 there was a higher level of volatility firstly due to the international isolation and high rate of inflation, then from 1994 to 1998 due to the uncertainty of a new Government and persistent inflation, ending in the peak in 1998, in which the emerging market crisis was a significant factor. Since 1998, with the success of inflation targeting the level of return has trended downwards in line with the increased stability in both the financial system and the economy as a whole. In this period the sudden depreciation of the Rand at the end of 2002 only caused a minor reversal of the trend, indicative of a market with increased stability and efficiency, giving a strong indication that market participants can expect the level

of return to remain in the single digit levels. In all, the SA Cash index provides further proof that the economy has moved into an era of greater stability and is significantly different to the pre 1994 period.

**Figure 3.9:** The South African Cash Index.



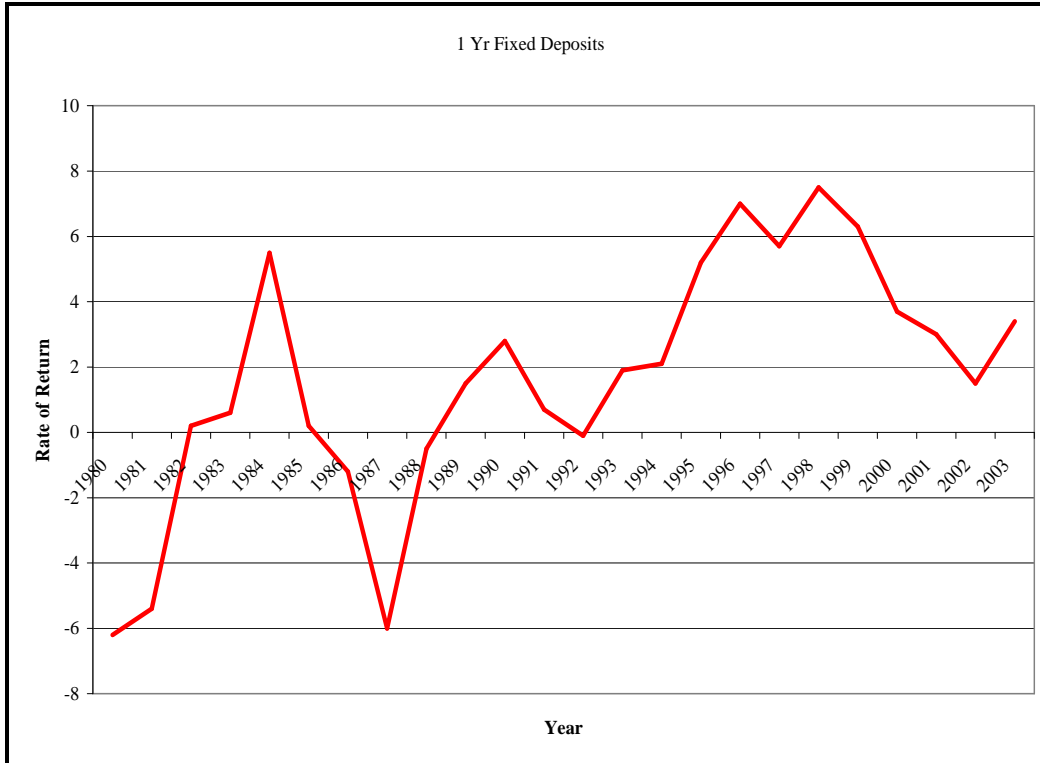
Source: (Ackerman, 2005).

The final area of focus within the broad money market will be the rates of Fixed Deposit Accounts, which are part of the retail side of the money market and are the unevolved form of NCDs, in the sense that fixed deposits are non-negotiable in a secondary market (Faure, 2004e:17 & 48). The analysis will focus specifically on the annualised historic rates for 1 year fixed deposits.

Here again, an examination of the trend in the real rates of return of 1yr Fixed Deposits in Figure 3.10, shows a significant difference between the period before the 1994 elections and the period after the elections. Here the most obvious difference is

the fact that in the post election period the rate of return has remained positive during the entire period.

**Figure 3.10:** Historic Annual Real Rate of Return on 1yr Fixed Deposits.



Source: (Mather : 2004)

The significance of the change that occurred in the South African Economy is further highlighted when the arithmetic mean for the two periods is calculated. The mean real rate of return for the pre-election period was negative 0.43%, while the mean for the post-election period has been 4.54%. The significance of the increase of the average real rate of return of almost 5% lies in the impact it has on the growth of an investment. That is, when considering large amounts, for example, with an initial amount of R1 000 000 there will be a real return of R50 000 in the first year, which will be compounded each year after that and the initial amount will generate a further R50 000 each year. Simply put another way the change in conditions has been that in the first period the initial amount was decreasing whilst in the later period the initial amount is actually growing. Therefore it can be seen that there is even evidence in the retail side of the Money Market that there has been a significant change in the economy.

Thus the analysis of the trends in the rates of return on these selected instruments in the South African Money Market indicates that there has been a significant change in market conditions. Therefore the analysis of the money market adds to the evidence from the analysis of the Bond Market that there has been a significant change in conditions.

The next step in the process is to examine the next sector of the financial markets, the Equity Market to determine if it also provides supporting evidence of the change in economic conditions or if the analysis will provide contradictory evidence.

### **3.8 The Equity Market**

The equity market is essentially the sector of the financial markets where companies raise capital and the ownership of company shares is exchanged. The formal definition according to Goodspeed (2004:10) is the institutional framework through which public limited companies issue new share capital (Primary market) and the ownership of shares can change hands (Secondary market). The focus of the analysis here will be on the secondary market because it is this market that indicates the conditions prevalent in the economy as a whole (Goodspeed, 2004:19). For the purpose of the analysis use will be made of the JSE/FTSE All Africa Index which is representative of the entire population of shares trading in the South African Equity Market with the shares included, weighted according to their proportional market value (Goodspeed, 2004:15). The JSE/FTSE index is essentially a value-weighted index, and as such has the basic value-weighted series calculation as its origin.

Goodspeed (2004:15) describes the calculation as follows “A value-weighted series is calculated as follows:

- (i) Sum the value of the shares in the index where value is current share price multiplied by the number of outstanding shares;
- (ii) Divide the total derived in (i) by a similar sum calculated in a selected base period;

(iii) Multiply the result in (ii) by the index base's beginning value.

Symbolically:"

$$\text{Index}_t = \frac{\sum p_t q_t}{\sum p_b q_b} \times \text{beginning index value}$$

Where:

$p_t$  = ending price of share on day t

$q_t$  = number of outstanding shares on day t

$p_b$  = ending price of share on base day

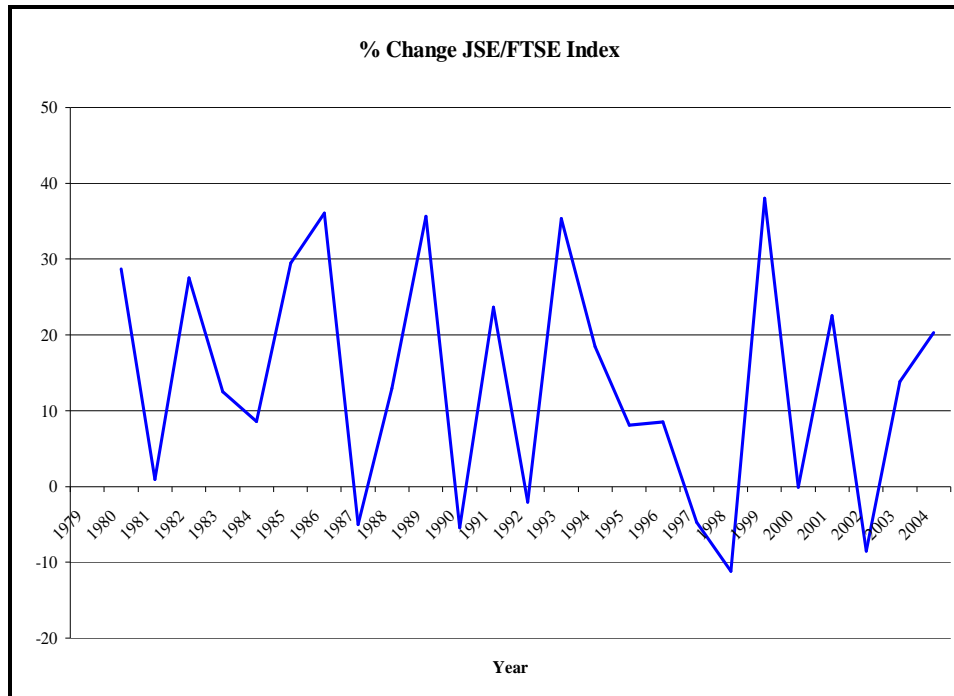
$q_b$  = number of outstanding shares on base day

(Goodspeed, 2004:15).

Thus with the basic value-weighted calculation as its basis, the JSE/FTSE All African Index provides a mechanism by which the equity markets' performance can be measured. Thus providing investors with information whether they should be looking at buying, selling or simply just holding on to their shares.

The paper will make use of the JSE/FTSE All Africa Index in a slightly different way, it will be analysed to see if it justifies the proposition that the South African Economy has changed significantly. An initial trend analysis along the same lines as that used for both the Bond and Money Markets produced the results shown in figure3.11; unfortunately the analysis showed no conclusive evidence of a definite change, instead it showed constant fluctuations in the market.

**Figure 3.11:** Percentage in JSE/FTSE All Africa Index



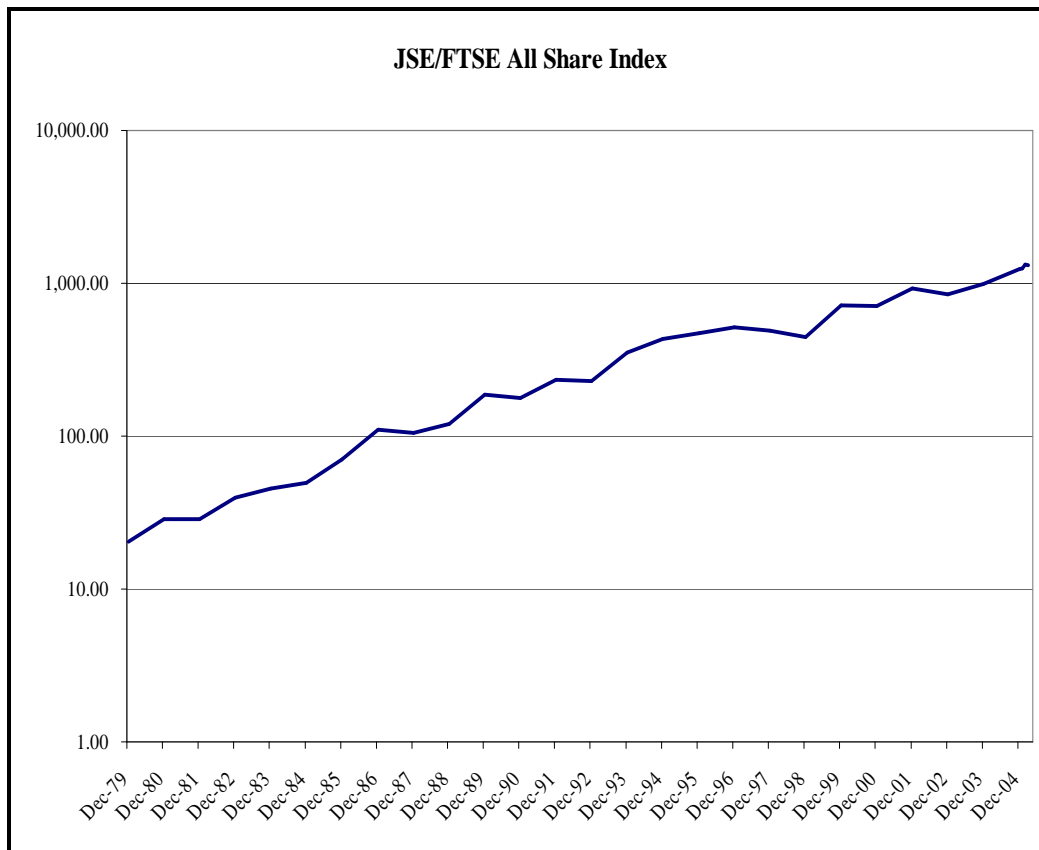
Source: (Ackerman, 2004).

The reasons for the simple analysis not producing the same results as the previous markets could be linked to the fact that there are other major factors that influence the equity market that have little to no significant impact on the other markets. These factors include the dual listing of many of the major shares both here in South Africa and in the United Kingdom, which means that exchange rate fluctuations impact on the index. Then there is the tendency of the lesser markets such as the South African JSE to follow what is happening in the major markets such as The Dow-Jones Industrial in the United States of America and the London Stock Exchange. And there is South Africa's classification as an emerging market, where there is the mentality that causes problems in one of the emerging markets to result in capital outflows in all. These are the leading factors but there are many other less significant factors that have also led to the constant volatility in the equity market. However it must be remembered that it is also this volatility that attracts investors to this market because the higher the volatility the greater the potential returns but also the risk<sup>9</sup>.

<sup>9</sup> For further reading on the factors that influence equity markets consult: Barry, Peavy and Rodriguez (1998:); Goetzmann and Jorion (1999); Rouwenhorst (1999); Shane (1970); Ripley (1973); Eun and Shim (1989); and Poterba (1989).

Conducting the analysis from a different perspective and plotting the JSE/FTSE All Africa index on a logarithmic scale (Figure 3.12) shows that the index has in fact been growing over the entire period. However looking at the period 1998 to 2004, the rate of growth of the index appears to have eased off indicating that the market is entering a more stable period. Thus providing an indication that the market and the economy as a whole, is entering or has entered a phase that is more stable and therefore more predictable.

**Figure 3.12:** The JSE/FTSE All Africa Index



Source: (Ackerman, 2004)

Thus with the analysis of the South African Equity Market adding weight to the proposition that the South African Economy has become more stable and predictable, where a higher capitalisation rate would provide a present value that is a better reflection of the value of lost future income and resultant future expenses. Which leaves the analysis with one final sector of the Financial Sector to analyse. The final sector that the paper turns its attention to is the South African Derivatives Market.

### 3.9 The Derivatives Market

To start, a definition of what a derivative is will be required. In the material for the Registered Persons Examination for the South African Futures Market, Skerritt (2003:11) puts forward the following definition: “A derivative is an instrument which embodies different terms, rights, or obligations, to those prevailing in the “underlying”, “cash”, or “physical” market to which the instrument relates.” Broadly speaking derivatives can be split into five general categories:

- Futures
- Forwards
- Options
- Swaps
- Others

“The term future or futures contract refers to an exchange-listed contract to buy or sell a precise quantity of a certain underlying instrument or commodity at a precise price, place, and time in the future” (Skerritt, 2003:51). Thus to explain futures simply, they are contracts to transact at future time and place and price where the contract takes place on a registered exchange. In South Africa the registered exchange is the South African Futures Exchange (SAFEX), which is now part of the JSE Securities Exchange and is split into the SAFEX Financial Derivatives Division and SAFEX Agricultural Derivatives Division (Skerritt, 2003:22)<sup>10</sup>.

Forwards are the less formal form of futures, with the key difference being that forwards are traded on an Over-The-Counter market, i.e. there is no central exchange and trades take place at the participants offices. In addition the “fundamental mathematics and economics of futures and forwards are identical; it is simply the form and terminology that differ. This can, however, produce legitimate price differences between these instruments<sup>11</sup>” (Skerritt, 2003:37).

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<sup>10</sup> Further information on SAFEX can be obtained from the JSE Securities Exchange website at [www.jse.co.za](http://www.jse.co.za).

<sup>11</sup> See Martin (2001) for an excellent explanation of these differences.

Options are considered the most complex of the derivative instruments, their differentiating characteristic being that they confer a right and not an obligation onto the buyer of the option to either purchase or sell a certain quantity of an asset at some point in the future at an agreed price (Skerritt, 2003:76). Options contracts can either be exchange traded or traded over-the-counter, however the key attraction is that options operate on margins, i.e. the full amount only has to be paid if the option is exercised (Skerritt, 2003:77). But as nice as options appear they have actually caused some of the most spectacular derivative trading disasters, for example the collapse of Long Term Capital Management (LTCM) in the USA, and the collapse of United Kingdom based Bearings Bank due to the actions of Nick Leeson<sup>12</sup>.

Essentially a Swap is a contract to exchange cash flows from assets at a predetermined rate for an agreed upon time period between two parties (Skerritt, 2003:60). The two most common forms of swaps are interest rate swaps and currency swaps, with the usage of swaps in other sectors of the financial markets increasing with the improvements in the development of the swap market (Skerritt, 2003:60).

Under the grouping of other derivatives, are found the more specialised derivatives that have developed over the past thirty or so years, where the derivative is based on the price of some variable other than one of the traditional underlying assets. The types of derivatives that form this category are:

- Products of securitisation
- Credit derivatives
- Weather derivatives
- Insurance derivatives
- Electricity derivatives

The above derivatives are however only found in the more developed markets (Faure, 2004g: 143).

The next step in the process is to examine the uses of derivatives. According to Skerritt (2003:101-113) there are seven basic uses of derivatives, these include:

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<sup>12</sup> Further information on these two spectacular collapses can be found in Edwards 1999 and Leeson 1996 respectively.

- Hedging
- Speculation
- Arbitrage
- Alternative Investing
- The Creation of ‘Synthetic’ Financial Instruments
- Reducing Cost
- Employee Share Options

Of the above uses of derivatives hedging was the use that essentially gave rise to derivatives and is the leading reason for their use, with hedging being the process of transferring risk from one party, whom is unwilling to bear the risk, to another party whom is willing to bear the risk in return for the potential profit (Skerritt, 2003:101). Associated with hedging is the second main use of derivatives, Speculating, which is taking a view that certain changes will occur in the market, and based on that belief being willing to enter into derivatives contracts to take advantage of the changes they believe will occur (Skerritt, 2003:105). Related to speculating is arbitration, which involves identifying pricing mismatches between the derivative market and the underlying asset market, where the identifying of a pricing mismatch and trading on it enables ‘risk-free’ profits to be made. However, as the sophistication of the markets increases the opportunities for arbitration are becoming fewer (Skerritt, 2003:109).

The remaining uses, while not as prevalent as the three mentioned in the previous paragraph are still significant and their use is increasing, for example, in the USA in 1999 the value of employee share options was equivalent to 13.2% of the total market capitalisation (Skerritt, 2003:112).

Although derivatives are utilised to limit risk exposure through hedging, they also increase exposure to risk through the process of speculation. Accordingly the derivative market is considered an inherently risky market in which to invest as shown by the spectacular financial collapses that have occurred in the course of investment actions within the market.

However, as can be inferred from the uses of derivatives, the derivatives market does not provide clear information as to the stability of the markets, but does show to some extent that different participants within the economy have different expectations as to what will happen. Therefore the derivatives sector of the financial markets does not add or distract from the proposition that there is an increased level of stability in the South African Economy. But the sector does provide proof that individual expectations differ by its very existence and adds weight to Keynes' supposition of the precariousness of the basis.

### **3.10 Conclusion**

The analysis of the trends in the rates of real returns in the financial markets has shown that both the Bond Market and the Money Market provide strong evidence that conditions have changed significantly since the 1980's. The results from the analysis of the Equity Market however do not provide as clear an indication that there has been a significant increase in stability since the 1980's when using the same means of analysis as for the previous two markets. Yet when the analysis was changed to examine the rate of growth of the equity market, there was clear evidence that the market had been growing at a fair rate, with an indication that in recent times the rate of growth had appeared to be levelling off at a rate that could be expected from a market exhibiting greater stability. The last of the financial sectors, the Derivative Market, due to its nature was not a viable source of evidence as previously explained.

Thus overall the analysis of the financial markets has provided evidence of significant change in the market conditions, therefore indicating that the conditions in the Economy in general have changed. Thus leading the analysis to the point where the expected conditions for the Economy in the future need to be analysed in order to determine if the current trends within the markets are expected to continue, thus indicating that the recalculated capitalisation rate will be an acceptable basis for discounting awards over the next ten to fifteen year period.

## CHAPTER FOUR

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### **THE ECONOMIC OUTLOOK , THE ACTUARIES' CAPITALISATION RATE AND RECOMMENDATIONS.**

#### **4.1 Introduction.**

The purpose of this chapter is to examine the expected direction of the South African Economy, as expressed by the National Government and the forecasts for the economy produced by the financial institutions. The intention is to provide a view as to the future performance and conditions that are likely to be present within the economy.

Therefore the first stage of the process will be to review the Government's Strategic Plan for the economy and the implication that this strategic plan will have for the Actuaries' Capitalisation Rate.

#### **4.2 The National Government's Desired Economic Direction.**

The South African Government's desired direction for the economy in the medium term can be ascertained from The National Treasury document, "National Treasury Strategic Plan 2004-2007", which is supplemented by the forecasts prepared by the South African Reserve Bank. Therefore making use of these two sources of information the desired future economic conditions for South Africa can be identified.

The significant section of the National Treasury Strategic Plan is the section that focuses on Economic Planning and Budget Management, as it is this unit that provides the minister of finance with advice and support on economic and fiscal policy, therefore having significant influence on the direction of the economy (National Treasury, 2004a:25). The main objectives of the Economic Planning and Budget Management Division are "to promote growth, social development and poverty reduction through sound economic, fiscal and financial policies, efficient

revenue measures and effective, efficient and appropriate allocation of public funds” (National Treasury, 2004a:25). To achieve the objectives more efficiently the division is divided into four subdivisions that focus on specific aspects (National Treasury, 2004a:25-42):

- The Budget Office. The main output of the Budget office is the annual budget and more importantly, with respect to this paper the Medium Term Expenditure Framework (MTEF). The MTEF is focused on because it sets out the Government’s planned expenditure and expected revenue for the next few years, which provides a good indication of how the Government’s actions will impact on the economy.
- The Public Finance Office. Here the main purpose is to provide a link with the other branches of Government because better budgeting at national level requires better understanding and cooperation at lower levels. Thus the reason for the Public Finance Office is to promote efficiency and ensure that the objectives of all spheres of Government are in line which will provide the basis for more effective policy action that will only add to the level of stability of the economy.
- The Intergovernmental Relations Office: is responsible for the coordination of fiscal relations between the three levels of government, i.e. Local, Provincial and National. The importance of the division is growing with the increasing amounts of transfers to lower levels of government, in the 2004 Budget these transfers accounted for over 60% of the non-interest allocations, with the amounts set to increase in the MTEF (National Treasury, 2004a:29). In addition the office is also responsible for ensuring adequate financial planning, reporting and management at the lower levels of government, which adds to the level of economic stability.
- The Economic Policy and International Financial Relations Office: “undertakes policy analysis and engages in consultation and collaborative work in the areas of: macroeconomic policy, international economic policy and relations with multilateral institutions, tax policy and financial policy and regulation” (National Treasury, 2004a:31). Thus the office has the strongest influence on future economic policy as it is responsible for determining how policy is to be implemented in order to achieve the desired results.

Of the above offices the two of most importance in terms of the research are the Budget Office and the Economic Policy and International Financial Relations Office. Therefore, from these two offices we can derive the following about future

Government expenditure and policy and the resultant impact on the economy  
(National Treasury, 2004:25-35):

- The focus will be on the key issues of sustainable growth, employment creation, skills development, improved productivity, economic competitiveness and empowerment due to the view that improvement within these areas will result in a healthier economy that will have all the necessary resources for further development and growth.
- In line with the previous point is the expanded infrastructure expenditure over the next few years as it is felt that having the necessary infrastructure in place will facilitate the achievement of the above key policy goals.
- That there will be further steps to strengthen the Inflation Targeting Framework, including the adoption of the view that inflation targeting is not the sole responsibility of Monetary Policy but that it also needs to be addressed by Fiscal Policy and aided by legislation. Thus increased inflation stability and therefore a greater level of stability in the economy can be expected.
- Action will be taken to promote both private and commercial saving, the rationale being that increased savings provides the financial resources necessary to fuel investment. The first step in the process has been the current drive to make banking services available to the low income group.
- The further broadening of the tax base, to ease individual tax burdens especially for the low and middle income groups. However with the reductions in tax burdens already made there is not much room for further reductions in the medium term.
- An expansion in the number of Private Public Partnerships, with a standardisation of the process. These partnerships provide a means for the Government to locate specific developments in identified areas, where the partnership with the private sector reduces the costs for both parties and increases the feasibility of the project.

Thus with regards to the actions of the Government in the future, the impact on the economy can be considered to be beneficial. The next step in the process will therefore be to examine the general economic conditions expected.

### 4.3 An Overview of the South African Economy.

Much of the overview of the South African Economy and the outlooks for the selected sectors is based on the ABSA publication “Long-term Prospects for the South African Economy 2003-2017”. Here a summary of the ABSA (2003:2-4) overview of the South African Economy is presented.

In general the South African Economy faces the following conditions (ABSA 2003:2-4):

- “Greater exposure to competitive pressures and international trade opportunities”. As South Africa is further integrated into the global market and the protection that was afforded local industries is removed they have been forced to become more efficient and competitive. Those that have not been able to restructure and adjust to the new environment have ceased to exist, but those industries that have restructured have been able to take advantage of new trade opportunities. Thus industry in South Africa that has been able to adapt has flourished and can be expected to continue to do so and those that are still holding on to the past will either change or fall away as the domestic economy continues to open up.
- “Improved government financial position”. The Government has managed to move away from the Debt Trap that it was heading for with debt levels at almost 50% of GDP and set a deficit target of 3% of GDP. The Government’s success with maintaining fiscal discipline has allowed it to reduce the levels of debt, with the continued reduction in the level of debt starting to free resources for capital expenditure. The increased capital expenditure will put the pieces in place for a greater level of sustainable growth and add to the government’s capacity for service delivery.
- “Declining inflationary pressures”. The rate of inflation has been reduced partly due to the opening up of the economy increasing competition and reducing the pricing power of producers and because of the conservative monetary policy of the South African Reserve Bank. The Bank’s effectiveness in controlling inflation was further increased with the adoption of inflation targeting policy in 1998. Thus with the reduced level of inflation, the real value of money is no longer being eroded as rapidly with single digit inflation, thus less effort has to be spent on protecting the value of money and more can be spent on the generation of new income.
- “High real interest rates but moving towards a lower interest rate environment”. Related to the lower levels of inflation and the reduction in the government’s borrowing requirement, there has also been a downward trend in the real interest rate. The lower real interest rate is positive for capital investment as it means that borrowing is now cheaper, thus providing a key growth ‘ingredient’.

- “A savings deficiency, moderate rates of fixed capital formation and thus limited growth in potential output”. A savings constrain still exist in South Africa, with the Government being the main offender with an extended period of dissaving starting in 1982. The situation has improved somewhat but still needs attention, with a concerted effort being required to reduce the country’s reliance on foreign capital especially the portfolio type with its associated volatility. Thus if the level of domestic savings can be increased, a key driver of higher economic growth rates will be put in place, provided the investment is in productive capital formation.
- “Constraints on the balance of payments”. The country still faces many constraints with regard to its current account, especially its reliance on foreign capital flows in the capital account, but the core problem appears to be the investor uncertainty regarding the long-term future of the country. The possible reasons for the uncertainty are: the unequal skills distribution; labour market inflexibility; ‘Afro-pessimism’; income distribution disparity and high levels of poverty; high levels of crime and corruption; troublesome neighbouring states; Government’s incoherent policy outside monetary, fiscal and trade policy; and finally the country’s classification as an emerging market. These factors are expected to have a negative impact on the economy in the future, to a certain extent limiting the progress that may be achieved through the restructuring of other areas of the economy.

Overall the predictions are that the economy will continue to improve over the next ten to fifteen years, with there being room for greater improvement if the negative influences are aggressively addressed. Therefore with improvements in the economy as a whole being widely expected attention can now be turned to those areas of the economy that will have significant influence over real rates of return.

#### **4.4 Areas of Specific Relevance to Future Real Rates of Return.**

##### **4.4.1 Introduction**

Here the analysis will focus on those areas of the economy that are expected to have significant influence over future real rates of return. Again, extensive use will be made of the ABSA economic outlook, where the focus will be on the base scenario as it is the base scenario that takes the middle ground on future prospects and is not overly conservative or optimistic. The publication defines the base scenario as the scenario that is “regarded as a realistic view of the economic prospects for the next 15

years. Relatively sound economic policies on the part of both the Government and the monetary authorities, an inflation rate of around 5.6% pa on average and relatively stable labour market conditions underlie this scenario. Economic growth is projected to average 2.7% pa” (ABSA, 2003: i). Therefore the base scenarios for the following areas will be examined in more detail: the International Economy; Structural Factors underlying Growth Potential; Economic Growth Components; Balance of Payments; Household income and expenditure; the Corporate Sector; Government Financing and Debt; the Monetary Sector; and the Banking sector.

#### 4.4.2 The International Outlook.

South Africa is part of the global economy and thus is influenced by the same forces that affect the global economy, therefore the need to examine the global picture. The international outlook over the next 15 years as presented by Global Insight (ABSA, 2003:10) is that real economic growth will average 2.6% in the developed countries with no drawn out recessions forecast; that countries with lower per capita income will grow at a faster rate than those with higher per capita income; world population growth is expected to average 1.1% pa with Africa and the Middle East exhibiting the highest growth rates although at lower levels than the previous two decades; and finally there is the view that further strengthening of the trade blocks is going to be seen, to the point where they are tightly closed and antagonistic.

#### 4.4.3 Structural Factors Underlying Growth Potential.

“The growth potential of the economy (assuming full utilisation of the factors of production) is determined by both the rate at which production factors expand, as well as the efficiency of utilisation (productivity) of these production factors” (ABSA, 2003:14). The key factors that lead to building growth potential are productivity, capital and labour and the predictions for these factors are now discussed.

With regard to capital financing and fixed capital formation, expectations are that because of The Government reducing its level of dissaving and the gradual increases in the level of gross domestic savings that the average fixed capital formation to GDP ratio is expected to increase over the forecast period. Thus indicating that there is a

good probability of achieving a reasonable rate of economic growth over the forecast period.

In terms of labour, the market is still unbalanced with a shortage of skilled labour and an over supply of unskilled labour and will remain so for at least the short to medium term. Here the expectation is that the supply of skilled labour will increase over time at the same rate as it has been in the past.

Finally the analysis turns to the outlook for productivity. In the past labour productivity results have been unsatisfactory, even when productivity increased as it increased at the expense of employment opportunities. In addition there has been a movement toward more capital intensive processes due to the rise in unit labour costs, which were mostly due to the factors that caused the unsatisfactory labour productivity results, which has lead to declining capital productivity in the long-term. However in terms of total productivity, the forecasts are that it will remain constant or show slight improvement.

The detailed figures for the above statements on the economy's outlook for future growth capacity are represented in Table 4.1. Thus in summation it can be said that the structural factors necessary for economic growth potential are starting to trend toward the required levels necessary to add momentum to economic growth in South Africa .

**Table 4.1:** Economic Growth and Determining Factors

		1992-1996	1997-2002	2003-2007			2008-2017		
				Cons	Base	Opt	Cons	Base	Opt
Potential real GDP growth	y/y%	2,1	1,8	2,1	2,8	3,4	1,3	2,8	4,3
Actual real GDP growth	y/y%	2,8	2,4	1,9	2,8	3,5	1,3	2,8	4,3
Gross domestic saving	% of GDP	16,4	15,2	16,2	16,5	16,8	16,2	16,6	17,7
Foreign capital flows	% of GDP	0,1	2,4	1,1	1,9	2,0	0,9	1,8	2,1
Gross domestic fixed capital formation	% of GDP	15,1	16,4	17,5	17,8	17,9	17,4	18,2	18,9
Real fixed capital stock	y/y%	1,0	1,1	1,6	1,9	2,2	0,6	1,7	2,9
Highly skilled labour/total employment ratio	%	14,5	17,5	19,3	19,3	19,3	22,2	22,2	22,2
Capital employed per worker	R'000	157,0	178,1	190,9	188,8	186,8	197,4	190,0	183,0
Capital/labour ratio <sup>1</sup>	y/y%	0,5	2,6	0,6	0,2	-0,2	0,5	0,1	-0,3
Output per worker	R'000	70,2	85,4	96,7	96,8	96,9	103,6	104,1	104,9
Output/labour ratio <sup>2</sup>	y/y%	2,5	4,1	0,9	1,0	1,1	1,1	1,1	1,2

<sup>1</sup> Real capital stock/labour force  
<sup>2</sup> Real GDP/labour force

Source: ABSA (2003:14).

#### 4.4.4 Economic Growth Components.

The measurement of economic performance here was done using demand components, which means that a Keynesian approach was utilised i.e. the simplified Keynesian income function shown below (ABSA, 2003:16):

$$Y = C + G + I + (X - M)$$

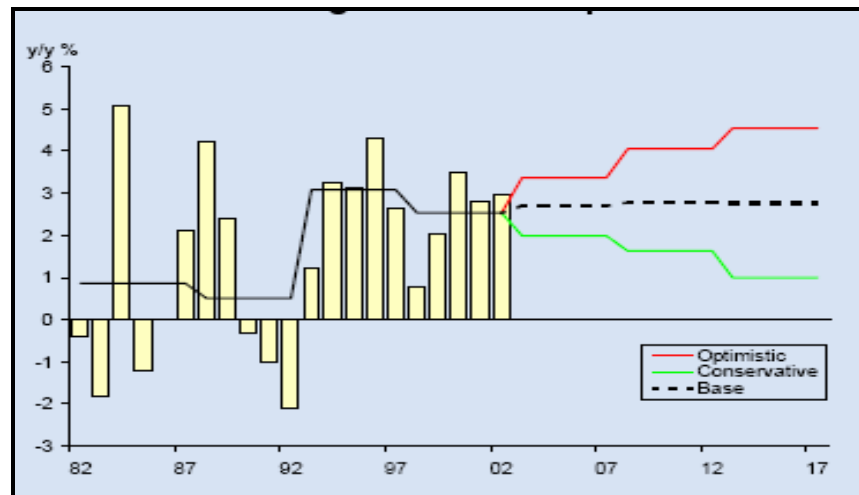
**Where:**

- Y** = Gross domestic product
- C** = Final consumption expenditure by households
- G** = Final consumption expenditure by general government
- I** = Fixed capital formation (including inventory investment)
- M** = Imports
- X** = Exports

The predictions for the individual components are shown in Table 4.2. Overall the components point to positive economic growth for the forecast period, as measured in terms of the rate of growth in GDP. The rate of real growth in GDP is displayed

graphically in figure 4.1. Thus it can be seen that the South African Economy is expected to grow at a rate that is slightly higher than that predicted for the developed nations of the world, but at a stable rate that is characteristic of a healthy emerging market.

**Figure 4.1:** Real Gross Domestic Product.



Source: ABSA (2003:17).

**Table 4.2:** Expenditure on Gross Domestic Product.

		1992-1996	1997-2002	2003-2007			2008-2017		
				Cons	Base	Opt	Cons	Base	Opt
Final consumption expenditure by households	R billion	328,4	390,8	447,2	454,6	458,9	507,7	558,9	608,3
	y/y%	4,2	2,6	2,1	2,8	3,3	1,4	2,7	4,1
	% of GDP	61,4	63,2	63,7	63,6	63,1	64,3	63,6	62,2
Final consumption expenditure by general government	R billion	104,5	108,1	126,3	125,6	127,0	144,5	154,2	166,7
	y/y%	-0,6	1,8	2,6	2,6	3,0	1,3	2,8	4,3
	% of GDP	19,6	17,5	18,0	17,6	17,5	18,3	17,6	17,0
Gross domestic fixed capital formation	R billion	81,3	101,1	123,0	127,1	130,3	137,6	160,4	185,5
	y/y%	7,3	0,6	2,6	4,1	5,3	1,1	3,0	4,7
	% of GDP	15,1	16,4	17,5	17,8	17,9	17,4	18,2	18,9
Change in inventories	R billion	5,1	3,3	3,8	6,8	9,4	-0,9	7,3	18,2
	% of GDP	0,9	0,3	0,5	0,7	0,8	0,1	0,5	0,9
Gross domestic expenditure	R billion	522,4	600,4	696,5	710,2	721,8	785,1	877,0	974,8
	y/y%	4,0	2,0	2,1	3,0	3,7	1,2	2,8	4,4
	% of GDP	97,6	97,2	99,2	99,3	99,3	99,4	99,8	99,6
Exports of goods and services	R billion	78,5	112,4	122,0	126,4	131,0	132,6	157,0	191,1
	y/y%	10,2	4,1	1,3	2,8	4,7	1,3	3,4	5,7
	% of GDP	22,0	25,4	23,6	23,9	24,3	22,9	23,9	25,5
Imports of goods and services	R billion	105,5	139,0	160,0	166,0	171,3	175,9	208,5	246,7
	y/y%	13,2	0,7	2,1	3,6	5,1	1,1	3,2	5,3
	% of GDP	19,6	22,5	22,8	23,2	23,5	22,3	23,7	25,1
Expenditure on gross domestic product	R billion	481,6	551,5	624,2	635,7	646,3	702,1	780,8	870,1
	y/y%	2,8	2,4	1,9	2,8	3,5	1,3	2,8	4,3
Real GDP per capita	Rand	12 942	13 277	14 015	14 274	14 511	15 648	17 403	19 392
	y/y%	0,9	0,8	1,3	2,1	2,8	1,4	3,0	4,5

Source: ABSA (2003:16).

#### 4.4.5 Balance of Payments.

There is a need in South Africa for trade policy to focus on enhancing international competitiveness and on the expansion of the export sector, i.e. a move away from demand-side interventions to supply-side measures designed to lower cost per unit produced. Thus based on the need for a change of policy focus and steps to increase the level of Foreign Direct Investment (FDI), the predictions for the forecast period are: that the current account will average at a deficit of 1.3% of GDP; net FDI is expected to increase; the Rand will depreciate to reach an exchange rate of about R15 to the US\$1; and the level of exports is expected to show a steady rate of growth of about 10% year on year. Therefore the overall prediction for the next 15 years shows a healthy and relatively stable balance of payments situation with the forecast depreciation of the Rand adding to the competitiveness of exports and making imports more expensive thus reducing the demand for imported goods and services. In all the forecast for the balance of payments adds credibility to the prediction of economic growth (ABSA, 2003:18-19).

#### 4.4.6 Household Income and Expenditure

The predictions for the household section of the economy are fairly constant with little change expected over the forecast period. The current situation of low savings and a relatively high household debt is expected to continue, although it is believed that households will be cautious in raising their levels of debt after the returns to high interest rates in 1998 and 2002. With regard to the tax burden of households on their disposable income, the burden is considered high with little room left for any increases and that there is a need for Government to keep the burden at relatively high levels to generate much-needed revenue.

#### 4.4.7 The Corporate Sector

The outlook for the corporate sector is that:

- Further increases in foreign trade relative to GDP are expected.

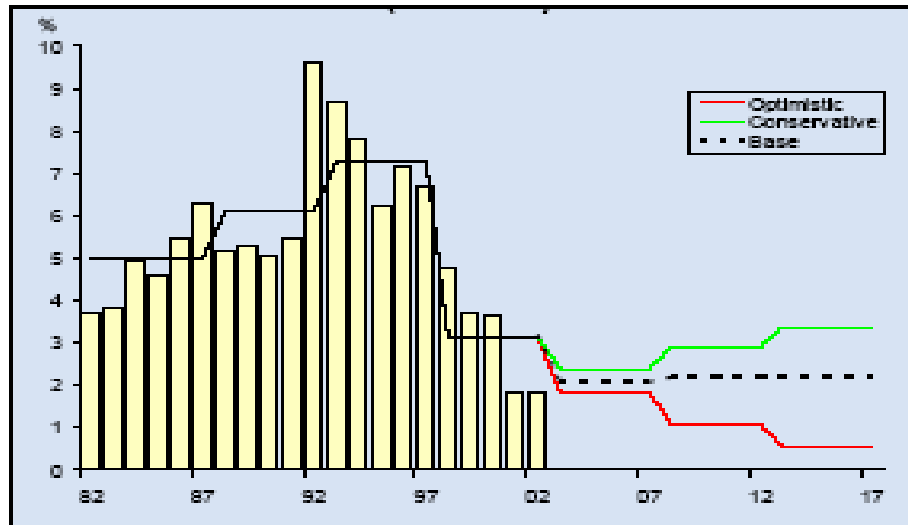
- Difficult adjustments still need to be made in some sectors in order to compete head on with international competitors.
- The sensitivity to the international business cycle will continue.
- Businesses will move away from basing their competitiveness entirely on a depreciating currency.
- Further reductions on the dependency on commodity exports, with expected increases in the level of exports of manufactured goods.
- Increases in the level of competition and the economy's exposure to the global market increases and more legislation aimed at promoting competition is implemented.
- Finally the economy will remain dependant on corporate saving as the largest provider of investment capital.

Thus overall the corporate sector is expected to contribute significantly to economic growth and stability, with expectations for the sector forecasting stable rates of increase in all aspects of the sector and real rates of profit after tax of about 4%.

#### 4.4.8 Government Financing and Debt

The first aspect that will be analysed will be the outlook for Government financing followed by the outlook for Government debt. In terms of its financing the South African Government has made significant progress avoiding the 'debt trap' that it was heading for and through its commitment to fiscal discipline has managed to reduce the level of debt, keeping the deficit below 3% of GDP. The forecast scenario is that the Government has reduced the level of debt as far as it is able to given the current conditions and the need to increase the level of service delivery and further develop the infrastructure within the country. It is expected that the Government will focus on maintaining the level of fiscal discipline that has been achieved, keeping the deficit below the 3% of GDP level, but that funds will be used to boost service delivery and expand infrastructure rather than reducing debt.

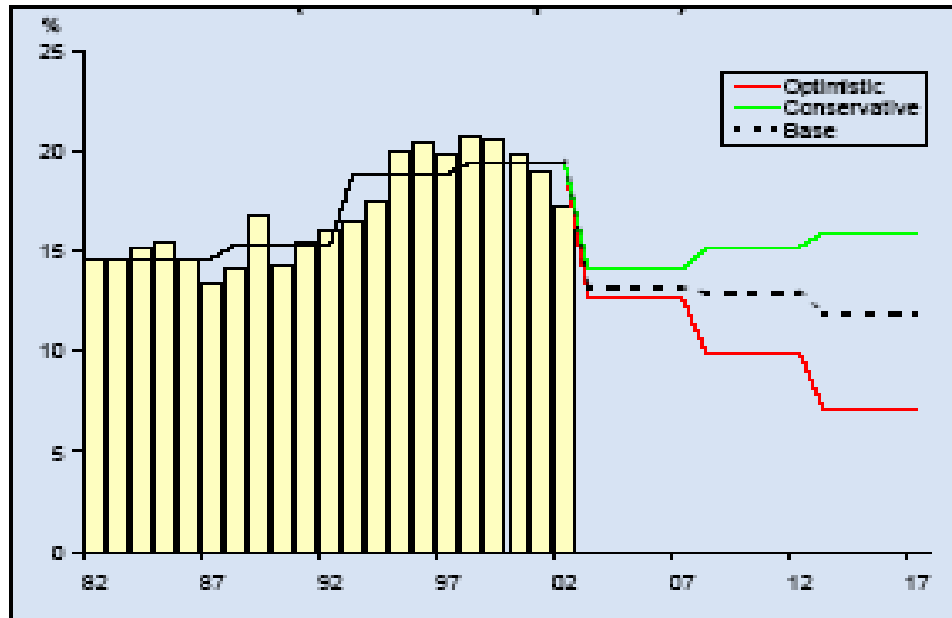
**Figure 4.2:** General Government Deficit (% of GDP).



Source: ABSA (2003:25)

An additional impact of the reduction in Government debt has been that the level of real interest rates has been able to fall from its high levels and that the effectiveness of monetary policy in controlling inflation has increased. Thus the outlook in terms of Government Financing is that the level of debt as a percentage of GDP will continue to decrease (Figure 4.2) as the increased service delivery and infrastructure expenditure contribute to economic growth providing additional revenue. In line with the lower levels of debt, the component of current expenditure for interest payments is also expected to show further reductions (Figure 4.3), and the level of Government dissaving is also expected to decline to less than 1%. Consequently the disruptions to the economy caused by the Government financing in the past are expected to disappear indicating a greater level of economic stability.

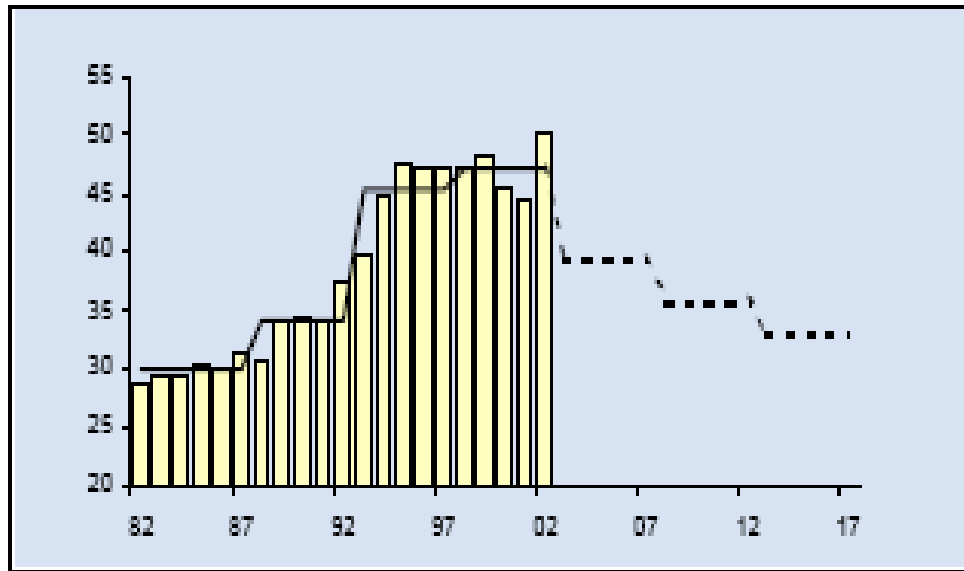
**Figure 4.3:** Government Interest Payments (% of Current Expenditure)



Source: ABSA (2003: 25)

Many of the world’s developing countries suffer from high levels of government debt and South Africa is one of them. However in the case of South Africa the Government is making a concerted effort to reduce the level of Government debt, which peaked in 1999 at above 50% (ABSA, 2003:26). The Government has seen some success in its efforts to reduce the levels of debt, having pulled the level of debt back below the 50% of GDP level. The forecasts for the next 15 years show that the level of success in reigning in the debt will continue. This will be assisted by the proceeds of privatisation, although at a more modest pace, as can be seen in figure 4.4 which shows the debt as a percentage of GDP and in figure 4.3 which shows the interest payments on Government debt as a percentage of current expenditure. Thus the improvements made and expected in the Government debt level indicate movement towards healthier economic conditions with an increase in the level of economic stability.

**Figure 4.4:** Government Debt as a Percentage of GDP

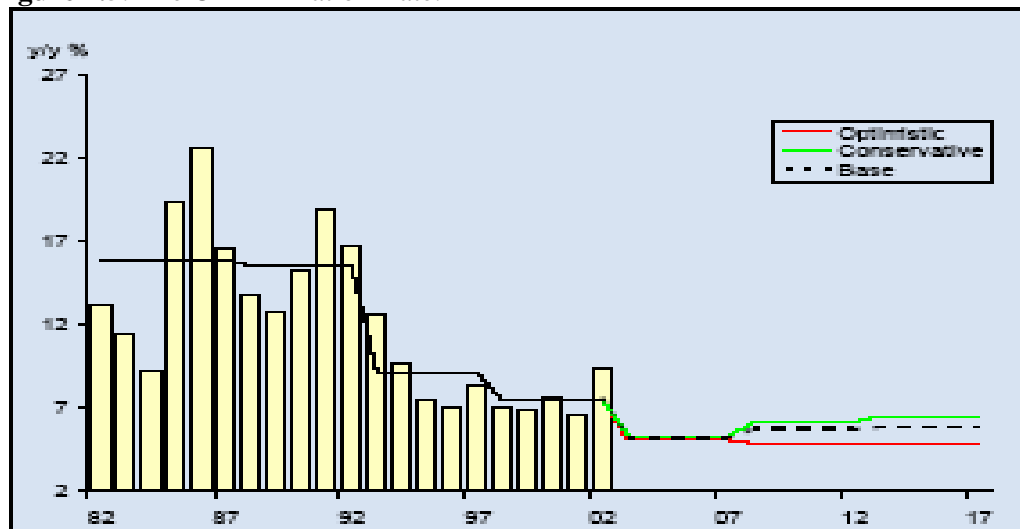


Source: ABSA (2003:27)

#### 4.4.9 The Monetary Sector.

In respect of the monetary sector, the areas of focus will be the rate of inflation, the long-term Government bond yield, the real prime interest rate and the exchange rate. These areas were selected because they have a significant influence over the rest of the market and the economy in general. The rate of inflation is the first point of focus because it has significant influence over the others.

**Figure 4.5:** The CPIX Inflation Rate.

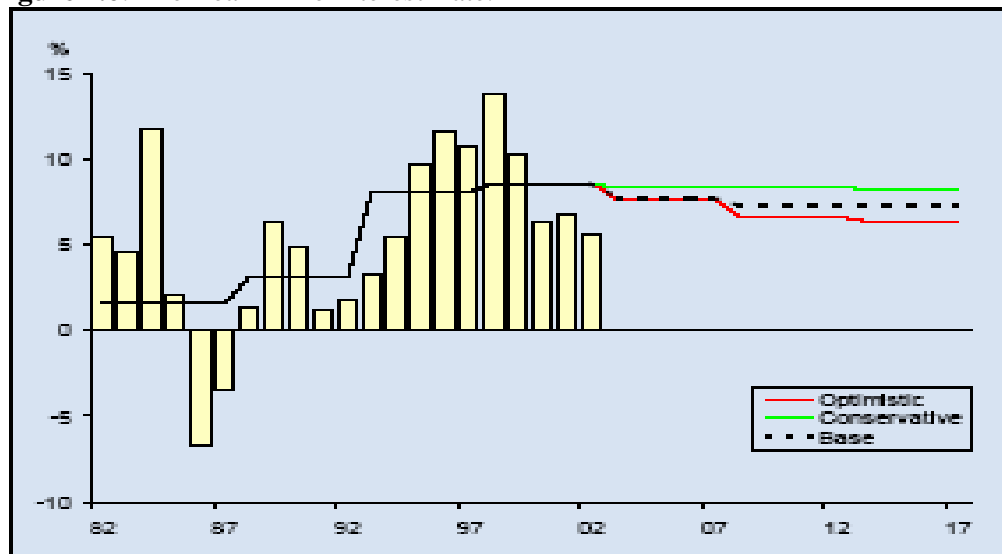


Source: ABSA (2003:33)

The inflation rate has been showing a downward trend over the last twenty years, which gained momentum with the political change in the 1990s with further gains being made with the adoption of the inflation targeting framework in 1998. Thus the economy is found in the position where single digit inflation has been the norm and the indications are that the target level of inflation, of between 3% to 6% will be maintained throughout the forecast period (figure 4.5). Therefore indicating that inflationary pressures will not be a major concern during the forecast period, which adds to the level of economic stability.

Therefore using the expected level of inflation as the starting point, the real prime interest rate and the real long-term Government bond yield can be forecast. The prime interest rate is expected to average at about 13.5% over the forecast period, which equates to a real prime interest rate of about 7.75%, with a slight downward trend over the forecast period (Figure 4.6). The expected prime rate level is the lowest yet to be reached and means that borrowing for capital expenditure will be cheaper than before, which should add momentum to the level of economic growth.

**Figure 4.6:** The Real Prime Interest Rate.

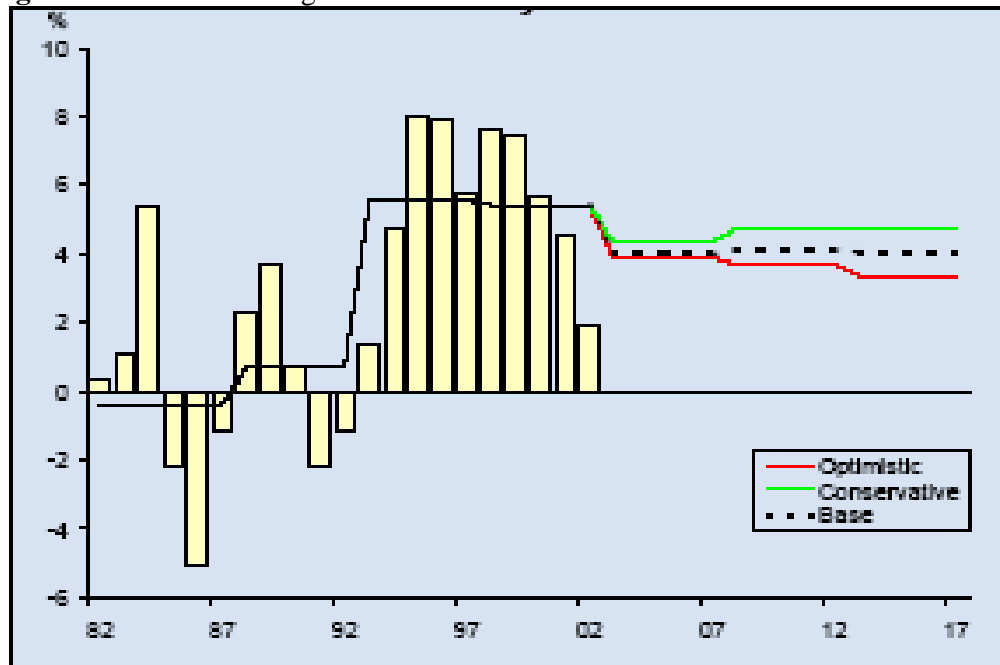


Source: ABSA (2003:33)

The yield on long-term Government bonds, when inflation has been accounted for is expected to remain around the 4% level. Thus indicating that the return on the financial markets' lowest risk asset (Figure 4.7) and that real returns in excess of 4%

are expected from the other classes of financial assets. But the most notable is the fairly stable level of the expected yield which is indicative of a stable market and implies a higher level of stability for the economy in general.

**Figure 4.7:** The Real Long-term Government Bond Yield



Source: ABSA (2003:33)

Finally our attention is turned to the \$/R exchange rate, which has been depreciating and is expected to continue doing so for the forecast period, although at a slower rate. The expected depreciation of the Rand is ‘good news’ as implies added competitiveness of South African exports and increased pressure on imports as they become more expensive. Thus the forecast indicates continued economic growth through increased exports and also indicates a decrease in the rate of depreciation of the domestic currency, which will contribute to general stability in the economy.

Thus the predictions for the monetary sector of the economy add to the evidence pointing towards greater stability in the economy in general and to the potential for further economic growth in the South African economy. The final sector of focus will be the banking sector because of the role that it plays within the economy.

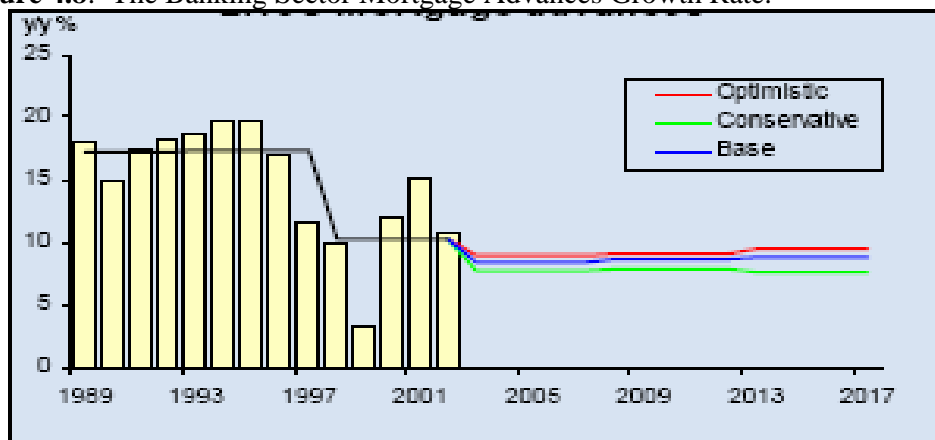
#### 4.4.10 The Banking Sector

The significance of the banking sector is highlighted by the fact that in 2002, the total assets of the banks amounted to over 100% of GDP (ABSA, 2003:34). The banking sector also plays the vital role of intermediating between those that have excess financial resources and those that are short, thus it can be said that the banking sector channels financial resources to where they can be most effectively utilised.

The expectations are that consolidation within the sector will continue, resulting in greater competition within the market as the banks are faced with fewer opportunities to grow through mergers and acquisition and will be forced to lower their margins in order to attract a greater proportion of the limited savings. Which can be seen through the convergence in the prime interest rate and the REPO rate. Legislation and market forces are also forcing the banking sector to venture into the lower income markets in order to raise their deposit levels. Thus the Banking sector is expected to add to the level of savings through their entry into the previously ‘unbanked’ markets and to further increase the efficiency of the financial system through technological developments such as the National Payments System (NPS).

In general, the expectations are for a stable but lower level of growth in banking assets, which is indicative of a stable financial sector and the broader economy. The stability can be seen in figure 4.8, shows the growth rate in mortgage advances, a key economic indicator.

**Figure 4.8:** The Banking Sector Mortgage Advances Growth Rate.



(ABSA, 2003:35)

#### 4.4.11 The Labour Market

The labour market is considered briefly, as the area of interest is the unemployment rate forecast and not the reasons for the level of unemployment as such. The debate is still continuing as to whether or not the labour market is too rigid, with the unions arguing that it is not, whilst business taking the view that it is, with no end in sight.

Turning to the broad outlook for the market, expectations are that the level of unemployment will move downward coupled with an increase in the level of productivity in the long-term. It must be noted however, that part of the decrease in the level of unemployment is due to the prediction that the total population will start to decrease, with the HIV/aids pandemic being the likely culprit (ABSA, 2003:30).

#### 4.4.12 Conclusion

The outlook for the South African Economy in general is positive with all forecast scenarios showing expected improvement in economic conditions and performance. Thus the base outlook for the economy adds weight to the notion that the Actuaries' Capitalisation Rate needs to be updated, which becomes more evident after the examination of the conditions present at the time that the capitalisation rate was formulated.

### **4.5 Implications for the Actuaries' Capitalisation Rate.**

#### 4.5.1 Introduction

Having examined the trends present in the economy in chapter three and the expectations of both the Government and the private sector in the first part of this chapter, the discussion now turns its attention to their implications for the Actuaries' Capitalisation Rate. However, first the discussion needs to examine the economic conditions that were present at the time when the current Actuaries' Capitalisation rate was generated.

#### 4.5.2 Conditions Present at Actuaries' Capitalisation Rate Calculation

The Actuaries' Capitalisation Rate was calculated on the basis of future expectations present in 1985 where the South African Economy faced the following conditions:

- Apartheid was still in full force; therefore the economy was facing international isolation and sanctions which had a significant negative impact on economic performance.
- The rate of inflation was significantly higher than the rate of growth of GDP.
- Thus partly due to the high level of inflation, the interest rate level was in double digits, making investment expensive.
- In addition the real rate of return for bonds was negative due to the high inflation level.

Thus overall it can be seen that there was a high level of instability at the time the capitalisation rate was calculated, thus the need for a larger amount to be paid initially.

#### 4.5.3 The Overall Trend in Financial Instrument Returns.

The analysis in chapter three has shown that the overall trend has been toward lower but more stable real rates of return. The trends in both the Money Market and Bond Market are clearly showing the real rate of return stabilising around the 4% level, with lower levels of volatility in both markets. The Equity market does not provide as clear a picture of returns stabilising at the 4% level, mainly due to factors such as the increased level of risk associated with these assets, the dual listings of many of the top equity shares and the resultant impact of fluctuations in the exchange rate. However when the analysis was changed to focus on the rate of growth of the South African Equity Market, there was clear evidence that the rate was slowing down and indicating an increased level of stability in the market. The derivatives market whilst being an important financial market, was not analysed because by its nature, it would simply replicate the trends in the underlying asset markets.

Thus the trends in the financial instrument markets clearly show that the economic conditions present in the South African Economy have significantly changed from those that were present in the 1980s and early 1990s, indicating greater levels of stability and real return rates relatively stable around the 4% mark. Therefore with the historical real rates of return pointing to increased stability, is the stability expected to continue.

#### 4.5.4 The South African Economic Outlook

The first part of this chapter provided a detailed outlook for the South African Economy, where the expectations of both the private and public sector were examined. The result of which clearly points to expected further improvements in the South African Economy. The Government plans on increased investment on infrastructure and service delivery, while at the same time maintaining the gains that have been made in terms of reducing the debt burden and maintaining fiscal discipline in order to keep the annual deficit within the 3% of GDP limit that it has set for itself. Thus the plans put forward by the Government indicate that its actions over the next 15 years, should if anything add to the current level of stability.

The private sector long-term expectations for the South African Economy add support to those of the Government, overall forecasting a continued gradual improvement in economic conditions and indicators over the forecast period. Specifically the Base scenario forecasts consistently indicate that the current level of stability is expected to continue for the entire forecast period.

Thus the forecasts for the South African Economy, by both the public and the private sectors indicated that the trends that appeared in the analysis of the financial instruments' real rates of return can be expected to continue.

#### 4.5.5 Conclusion

Thus it can be clearly seen that the economic conditions have changed significantly since the Actuaries' Capitalisation Rate was generated in 1985 with the trends in real rates of return plainly showing that conditions have changed. In addition the forecasts for the economy also indicate the changed conditions and the expectation that the current conditions are expected to persist. Therefore it can be stated with confidence that conditions have changed and that the Actuaries' Capitalisation Rate needs to be adjusted to take the current conditions into account.

#### 4.6 Recommendations

Having examined the theoretical basis for the generation of capitalisation rates, which strongly pointed to current conditions and expectations of the future being the main inputs in the formulation of the capitalisation rate, there is a clear need for a systematic approach to the generation of capitalisation rates to be implemented. This systematic approach to capitalisation rate generation needs to go beyond simply building a model that generates a capitalisation rate and put in place mechanisms that can identify when economic conditions have significantly changed and thus require a reformulation of the rate. That is, the aim must be to ensure that the capitalisation rate is always appropriate given the level of return that is required of the damages award.

Thus there needs to be a concerted effort to ensure that all components used in the generation of the Actuaries' Capitalisation Rate truly reflect the conditions present and expected in the economy.

With respect to the total damages award, having a capitalisation rate that is truly reflective of economic conditions is not enough on its own. There is also a need to ensure that the amount that the capitalisation rate is applied to is a true reflection of lost future income and resultant future expenses. That is, it must also be ensured that

the inputs into the calculation of the amount to be discounted, such as the Life Tables<sup>13</sup>, are up-to-date.

In addition to ensuring that the various components of the process are relevant given current and expected conditions, there is also a need for research into the impact that the individual's socio-economic background should have on their expected future income and whether or not the socio-economic background should also play a part in the determination of the capitalisation rate that should be applied in each individual's case. This is because the level of education, standard of living, etc should have a significant impact on the level of wealth that an individual would be able to accumulate over the course of their life.

Thus based on the findings of this thesis there is an urgent need for more resources to be devoted to further research in order to ensure that the damages awarded are fair to all parties and truly reflective, in economic terms, of the loss that has been incurred.

#### **4.7 Conclusion**

The Government wants and is attempting to build a stable economy with a healthy level of economic growth and employment creation. With inflation and the level of Government debt under control the focus of future policy will be to maintain the level of control over these two factors while putting forward a concerted effort towards fostering employment creation and increased service delivery.

From the examination of the outlook for the South African Economy, it can be seen that the stage is set for the achievement of the Government's objectives. Thus the prediction prepared by the private sector add weight to the Government's plans, with the forecasts of economic growth, acceptable inflation and an increased level of stability in the macro economy.

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<sup>13</sup> Life Tables are used to determine expected duration of the individual's life and therefore the expected future income of the individual, given their age and race.

Thus the forecast for the next 20 years add weight to the proposition the South African Economy has significantly changed and that the changed conditions are expected to prevail and improve. Therefore with clear evidence that the economic conditions have changed the next step in the process is to determine what the implications of the changes are for the Actuaries' Capitalisation Rate.

Thus based on the results of the thesis showing that economic conditions have changed significantly since the generation of the current Actuaries' Capitalisation Rate there is a clear need for the rate to be revised in order to account for the change in conditions and a concerted effort needs to be made to ensure that the final damages award is just and truly reflective of the loss suffered.

## CHAPTER FIVE

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### CONCLUSION

The objectives of this study were to firstly examine the current Actuaries' Capitalisation Rate with respect to its components to determine if the current rate is valid in today's social and economic climate present within South Africa. Secondly to propose recommendations as to how to proceed given the result of the examination of the current Actuaries' Capitalisation Rate, where there were strong initial indications that an overhaul was required.

Basically the analysis was conducted in three steps, firstly a literature survey of the relevant economic and legal theory, followed by a trend analysis of what had actually occurred within the South African Economy and finally, an examination and summary of the expectations for the South African economy over the next 10 to 15 years and the impact of these expectations on the Actuaries' Capitalisation Rate.

With regard to the first step in the process, attention was firstly turned to defining the Actuaries' Capitalisation Rate and describing the Law of Damages and how the two are related through the awarding of damages by the courts. This was followed by an extensive examination of the economic theory that is Keynesian Expectations because of the heavy reliance of the capitalisation rate on this branch of economic theory. Thus with an understanding of how Keynesian Expectations are formulated and a knowledge of the strengths and weaknesses of the theory, together with an understanding of the Actuaries' Capitalisation Rate, the point was reached where the process of generating the actual economic forecasts could be examined. Thus one could now see the influence that economic forecasts have on the present and the resultant implications for the capitalisation rate. After which the discussion turned to Government policy and the factors that influence it.

Within the context of Government policy special attention was paid to firstly, to the Government's macroeconomic policy, the Growth Employment and Redistribution policy (GEAR), which was not as successful as planned but did make great progress

in improving domestic economic conditions. Then with GEAR not performing as well as expected it was determined that the policy had gone as far as could be expected given the microeconomic conditions within the economy. Therefore, the Government introduced the Micro Economic Reform Strategy (MERS) aimed at improving conditions at the microeconomic level and adding to the increases in credibility and public confidence levels that it had achieved with the GEAR policy. Essentially the MERS was the next logical step in the process of reforming and developing the South African Economy. Finally the focus shifted to the Government's Monetary Policy, where the focus was specifically on the adoption of Inflation Targeting as the leading policy objective because of the success that has been achieved in significantly lowering the rate of inflation and the resultant implications for the Actuaries' Capitalisation Rate.

Thus the point was reached where the Capitalisation Rate has been described and the role that it plays in the awarding of damages claims by the courts explained, an introductory understanding of how Keynesian forecasts are compiled had been accomplished. Now it can be clearly understood that forecasts are an indication of the future and that there is no guarantee that what is forecast will come to pass, even though the development of Economic forecasting is progressing at a rapid pace and forecasts are becoming more accurate. With respect to Government economic policy, the aims, objective and results have been discussed from a broad perspective, giving a clearer picture of what to expect from the Government in the future.

Therefore equipped with this understanding of the theoretical aspects that the analysis was based upon and the role that the government has played, the analysis could proceed on to establishing the trends that have occurred in the different financial instruments to determine if there had in fact been a significant change in the economic conditions present within the South African Economy.

Thus the second stage of the analysis is entered, where attention is turned to the performance of the financial markets within South Africa in order to determine what changes had occurred in the rates of return in the various financial markets. The three leading markets, the Bond Market, the Money Market and the Equity Market were thus examined.

The examination of the Long-term Debt Market has shown that the changes in Macroeconomic Policy, as well as the political and social change, has resulted in a market that is very different to the one that existed pre1994, with there being less extreme fluctuations in the returns that are expected and that the market is far more able to weather exogenous shocks such as the Asian Financial Crisis in 1997 and the sudden devaluation of the exchange rate of the Rand in 2001/2002 than it was able to do in the past, returning to normal far more rapidly. Therefore given that long-term bonds and damages awards are similar in their duration, the periodic payments and risk, it should be expected that they would face similar rates of real return, thus the Actuaries' Capitalisation Rate should be the same as or at least similar to the real rate of return on long-term bonds.

The analysis of the trends in the rates of return on the selected instruments in the South African Money Market indicated that there has been a significant change in market conditions. Therefore the analysis of the money market adds to the evidence from the analysis of the Bond Market that there has been a significant change in conditions.

The analysis of the South African Equity Market added weight to the proposition that the South African Economy has become more stable and predictable, where a higher capitalisation rate would provide a present value that is a better reflection of the value of lost future income and resultant future expenses.

The final sector of the Financial Markets that the thesis turned its attention to was the South African Derivatives Market. However, it was reasoned from the uses of derivatives, that the derivatives market would not provide clear information as to the stability of the markets and thus the economy, but does show to some extent that different participants within the economy have different expectations as to what will happen. Therefore the derivatives sector of the financial markets does not add or distract from the proposition that there is an increased level of stability in the South African Economy. But the sector does provide proof that individual expectations differ by its very existence and adds weight to Keynes' supposition of the precariousness of the basis.

Thus the analysis of the trends in the rates of real returns in the financial markets has shown that both the Bond Market and the Money Market provide strong evidence that conditions have changed significantly since the 1980's. The results from the analysis of the Equity Market however did not provide as clear an indication that there has been a significant increase in stability since the 1980's when using the same means of analysis as for the previous two markets. Yet when the analysis was changed to examine the rate of growth of the equity market, there was clear evidence that the market had been growing at a fair rate, with an indication that in recent times the rate of growth had appeared to be levelling off at a rate that could be expected from a market exhibiting greater stability. The last of the financial sectors, the Derivative Market, due to its nature was not a viable source of evidence as previously explained. Therefore the analysis of the financial markets provided evidence of significant change in the market conditions, indicating that the conditions in the Economy in general have changed leading the analysis to the point where the expected conditions for the Economy in the future need to be analysed in order to determine if the current trends within the markets can be expected to continue, indicating that the recalculated capitalisation rate will be an acceptable basis for discounting awards over the next ten to fifteen year period.

Therefore having examined the trends in the rates of return in the financial markets and finding conclusive evidence that there have been significant changes in the conditions present in the South African economy the second stage of the analysis is complete. So attention is turned to the third stage of the analysis, that of the future expectations for the South African economy.

With regard to the actions of the Government in the future, the impact on the economy can be considered as being beneficial, with the Government's actions only adding to the economy in terms of both growth and greater stability. The next step in the process is therefore to examine the general economic conditions expected.

Overall the predictions are that the economy will continue to improve over the next ten to fifteen years, with there being room for greater improvement if the negative influences are aggressively addressed. Therefore with improvements in the economy

as a whole being widely expected attention can be turned to those areas of the economy that will have significant influence over real rates of return. The outlook for the South African Economy in general is positive with all the forecast scenarios predicting improvement in economic conditions and performance. Therefore the outlook for the economy added weight to the notion that the Actuaries' Capitalisation Rate needs to be updated, which became more evident after the examination of the conditions present at the time that the capitalisation rate was formulated.

It can be clearly seen that the economic conditions have changed significantly since the Actuaries' Capitalisation Rate was generated in 1985 with the trends in real rates of return clearly showing that conditions have changed. In addition the forecasts for the economy also indicate the changed conditions and the expectation that the current conditions are expected to persist. Therefore it can be stated with confidence that conditions have changed and that the Actuaries' Capitalisation Rate needs to be adjusted to take the current conditions into account.

The Government intends to and is attempting to build a stable economy with a healthy level of economic growth and employment creation. Inflation and the level of Government debt is under control and the focus of future policy will be to maintain the level of control over these two factors while putting forward a concerted effort towards fostering employment creation and increased service delivery. From the examination of the outlook, it can be seen that the stage is set for the achievement of the Government's objectives. Therefore the prediction prepared by the private sector added weight to the Government's plans, with the forecasts of economic growth, acceptable inflation and an increased level of stability in the macro economy.

Thus the forecast for the next 20 years adds weight to the proposition that the South African Economy has significantly changed and that the changed conditions are expected to prevail and improve. Therefore with clear evidence that the economic conditions have changed the next step in the process is to determine what the implications of the changes are for the Actuaries' Capitalisation Rate.

Therefore the thesis provides clear evidence that economic conditions have significantly changed since the current Actuaries' Capitalisation rate was calculated, meaning that the current capitalisation rate is no longer valid.

Thus the main recommendation of this study is that the Courts should cease making use of the current Actuaries' capitalisation rate in the awarding of damages claims and urgent steps need to be taken to recalculate a capitalisation rate that is valid for the new South Africa.

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**Personal Communications:**

- JOHN, R., 2005. Government Bond Trader, **Investec Limited**, Johannesburg, South Africa.

## APPENDICIES

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### A-1 The Holding Period Return (Faure, 2004b)

The following is an extract from “Getting to Grips with Portfolio Management”:

Holding period return (realised rate of return)

Investments can deliver *two types of return* and *one type of loss*:

- Returns: capital gain + cash flow (dividends)
- Loss: capital loss

The holding period return (HPR) is the actual return achieved at the end of the investment period, ie the security was sold, cash flow was received, and the money is in the bank. The HPR on an investment may be written as follows:

$$\begin{aligned}\text{HPR} &= (P_1 - P_0 / P_0) + (CF / P_0) \\ &= [(P_1 - P_0) + CF] / P_0\end{aligned}$$

where

$P_0$  = price of investment at start of period  
 $P_1$  = price of investment at end of period  
CF = dividends and/or interest (cash flow) received during the investment period (we assume the end of the period for the sake of simplicity)

*Example* ( $P_0 = R55$ ;  $P_1 = R65$ ;  $CF = R5$ ):

$$\begin{aligned}\text{HPR} &= [(R65 - R55) + R5] / R55 \\ &= (R10 + R5) / R55 \\ &= 0.2727 \\ &= 27.27\%\end{aligned}$$

Note that the percentage number was not followed by *per annum*. This was because the holding period return realised is not necessarily over a year. In the case of the annualised HPR, the formula is:

$$\text{Annualised HPR} = (1 + \text{HPR})^{1/n} - 1$$

where n = number of years or fractions of years of holding period

*Example 1 (HPR on shares over 5 years = 425%):*

$$\begin{aligned}\text{Annualised HPR} &= (1 + 4.25)^{1/5} - 1 \\ &= 0.39326 \\ &= 39.33\% \text{ pa}\end{aligned}$$

*Example 2 (HPR on shares over 4 months = 4.50%):*

$$\begin{aligned}\text{Annualised HPR} &= (1 + 0.045)^{1/(4/12)} - 1 \\ &= (1.045)^3 - 1 \\ &= 0.1412 \\ &= 14.12\% \text{ pa}\end{aligned}$$

*Example 3 (HPR on shares over 60 days = 2.50%):*

$$\begin{aligned}\text{Annualised HPR} &= (1 + 0.025)^{1/(60/365)} - 1 \\ &= (1.025)^{6.0833} - 1 \\ &= 0.1621 \\ &= 16.21\% \text{ pa}\end{aligned}$$

The term “1 + HPR” is termed the “return relative”. This is equal to:

$$\text{Return relative} = (\text{CF} + P_1) / P_0$$

Using the earlier example ( $P_0 = R55$ ;  $P_1 = R65$ ;  $\text{CF} = R5$ ):

$$\begin{aligned}\text{Return relative} &= (R5 + R65) / R55 \\ &= 1.2727\end{aligned}$$

The annualised HPR can thus be written as:

$$\text{Annualised HPR} = (1 + \text{return relative})^{1/n} - 1$$

The annualised HPR is a useful measure for the calculation of annual rates of return from investments that are held for long periods, in order that comparisons may be made over a common time period (a year).

## A- 2 The Flaw with the Arithmetic Mean (Faure, 2004b).

The following extract from “Getting to Grips with Portfolio Management” is part of the section on historical rates of return and provides an explanation with examples of the problem that can arise when using the mathematical mean to calculate the historical rate of return.

The historical rate of return is also a HPR (or *realised rate of return*), but here we deal with averages (or summary of returns) over extended periods. Thus, the annual rates of return are “given” for a period of years and we calculate the average rate of return for the period. There are two measures of historical rate or return:

- Arithmetic mean ( $R_A$ )
- Geometric mean ( $R_G$ )

**The reason there are these two measures is because the former measure can be misleading in measuring the average return on investments. This will become clearer later. Examples are used here to demonstrate the calculation of the two measures:<sup>14</sup>**

SHARE PRICES OF AND DIVIDENDS PAID BY GREAT COMPANY LIMITED					
Year	Closing share price (R)	Dividends paid	Annual HPR (decimal)	Annual HPR (%)	Return relative
1998	13.47				
1999	19.22	0.12	0.436	43.6	1.436
2000	23.22	0.13	0.215	21.5	1.215
2002	32.88	0.14	0.422	42.2	1.422
2003	34.35	0.14	0.049	4.90	1.049

The *arithmetic mean* is calculated according to the formula:

$$R_A = \Sigma \text{HPR} / n$$

In words, the arithmetic mean is the sum of the annual HPRs divided by the number of periods. Using the numbers from the table:

$$\begin{aligned} R_A &= \Sigma \text{HPR} / n \\ &= (43.6 + 21.5 + 42.2 + 4.9) / 4 \\ &= 28.05\% \text{ pa} \end{aligned}$$

The *geometric mean* is calculated according to the formula:

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<sup>14</sup> Example adapted from Reilly, FK and Norton, EA (2003, pp. 30 – 33).

$$R_G = [\Pi (\text{return relatives})]^{1/n} - 1$$

In words, the geometric mean is the  $n^{\text{th}}$  root of the product ( $\Pi$ ) of the return relatives for  $n$  years. Using the numbers from the table:

$$\begin{aligned} R_G &= [\Pi (\text{return relatives})]^{1/n} - 1 \\ &= [(1.436)(1.215)(1.422)(1.049)]^{1/n} - 1 \\ &= [(2.6026)^{1/4} - 1] \\ &= 0.2701 \\ &= 27.01\% \end{aligned}$$

When compared to the  $R_A$  it will be noted that it differs. The  $R_A$  is a good measure over a single period, but it is often incorrect in measuring a security's average performance over a long period. In order demonstrate this, we need a ridiculous example:

SHARE PRICES OF AND DIVIDENDS PAID BY GREAT COMPANY LIMITED					
Year	Start value (R)	End value (R)	Annual HPR (decimal)	Annual HPR (%)	Return relative
1	10	20	1.00	100.00	2.00
2	20	10	-0.50	-50.00	0.50

$$\begin{aligned} R_A &= \Sigma \text{HPR} / n \\ &= [(100.00) + (-50.00)] / 2 \\ &= 50.00 / 2 \\ &= 25.0\% \text{ pa} \end{aligned}$$

$$\begin{aligned} R_G &= [\Pi (\text{return relatives})]^{1/n} - 1 \\ &= [(2.00)(0.50)]^{1/2} - 1 \\ &= [(1)^{0.5} - 1] \\ &= 1 - 1 \\ &= 0.00\% \text{ pa} \end{aligned}$$

There was no increase in the value of the investment, which is measured incorrectly by the  $R_A$  and correctly by the  $R_G$ . It should be apparent that when rate of return are the same for each year of the investment,  $R_A = R_G$ , and when they differ for each year, the  $R_G$  will always be lower than the  $R_A$ . Volatility affects the difference, i.e. there is a *positive relationship between volatility and the differential*.