

The
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Number 39 – Winter 1994

Die
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Tydskrif

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Measuring the impact of futures and options on investment portfolios: a South African perspective

This document summarises the key issues and sets out a proposal for standards of reporting for the South African industry. Further guidance is needed on an appropriate standard for performance measurement.

Finance Research in South Africa

This paper presents the results of a study undertaken using a database of all locally published research in the field of finance. The research productivity of finance researchers is discussed. The data is tested against theoretical bibliometric distributions. Finally an analysis of the subject matter of all published papers in the finance area is carried out.

Public holiday share price behaviour on the Johannesburg Stock Exchange

This investigation evaluates the impact of the public holiday effect on the share returns of companies listed on the JSE during the period 1975-1990. On the trading day prior to holidays shares advance with disproportionate frequency and show mean returns averaging five times the mean returns for the remaining days of the year. Over one-fifth of the total return accruing to the market portfolio over the 1975-1990 period was earned on the nine trading days which fall each year before holiday market closings. The empirical evidence suggests that the pre-holiday return may, in part, be due to the simultaneous movements from "bid" to the "ask" price. The holiday effect appears to be related to the human tendency to bid up share prices prior to market closings for weekends and holidays.

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Inhoud

Aandeleopbrengste en Reële Ekonomiese Aktiwiteit – Die Suid-Afrikaanse Ondervinding

This article investigates the relationships between real economic activity and share returns. A turning point analysis shows that returns consistently lead the business cycle, although with leads that substantially vary between turning points. Upswings appear to be easier to forecast than downswings, using share value indices. Causality tests show very little evidence of causality between returns and production growth. Also on the level of seasonal patterns in production growth and share returns, there is little evidence that the stock exchange leads real activity.

Window dressing by institutional investors on the Johannesburg Stock Exchange: an empirical analysis

The purpose of this paper is to investigate the widely held belief that institutional portfolio managers “window dress” or adjust their share portfolios before the release of their quarterly reports. In this study, block trading on the JSE covering the period 1983 – 1990 is examined to determine if there is abnormal end-of-period trading activity. The empirical evidence clearly rejects the null hypothesis of no abnormal end-of-period trading activity. While the company data yield less clear results, there are indications that institutional window dressing is more likely in the securities of companies that have performed poorly during the current quarter or the recent past. Although the behaviour of institutional portfolio managers cannot be generalized to other types of corporate activity, they suggest that reporting requirements do affect managerial behaviour.

Cash Flow Statements: The importance of cash from operating activities – Investment Basics XXIX

The objective of the Cash Flow Statement is to provide users of financial statements with details of cash generated or utilized by operations, investing activities and financing activities. The traditional income statement and balance sheet provide limited information regarding the timing and extent of cash flows of an enterprise. Cash flow statements therefore enable users to form a better assessment of the cash performance.

The cash flow from operating activities is usually considered the most important type of cash flow. A company which consistently fails to generate positive cash from operating activities is likely to land up in financial difficulties. In the long term a satisfactory return on assets, a healthy capital structure, high dividends and hopefully a reasonable rating in the market result from a positive cash flow from operating activities.

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The Investment Analysts Journal

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The general election held in April and the inauguration of the Government of National Unity on 9 May have opened the way for a paradigm shift in South African society. It is not simply that three hundred and forty-two years of white minority rule has now come to an end. All of a sudden the whole direction of society is set to change. It was always going to be the case that the day after the election was going to be very much the same as the day before. Like the traveller who, over a long journey, has reached a particular point and has now decided to turn around and face another way, nothing in his immediate surroundings alters on his doing so. The river in the valley beside him is still there and so are the hills that rise from its banks to the height of the surrounding escarpment. But the fact that he has now turned around means that gradually, as he proceeds on foot, the topography, the landscape, indeed all the views of earth and heaven, will begin to change as he moves on, and in time will become unrecognisable from the scene that currently surrounds him. As we write, it is only a matter of weeks since the election and the inauguration of the new government. Already, however, there are more than 100 000 South Africans who have been born and who, therefore, have never lived under apartheid. By the end of the year, their number will have grown to over a million and within the short span of fifteen years, perhaps a bit more, they will constitute the majority of the population of the country. None of these people will ever know the shame it was for Africans to have their existence defined in terms of serving Europeans, to be denied entry to post offices and toilets because of the colour of their skin, or to be restricted by law as to what work you could do, whom you could marry or where you could reside. Apartheid was a comprehensive system of subjugation and control that bureaucratized blacks in all spheres of life into positions of inferiority and hardship. Hardship there will continue to be in the new South Africa, but it will not be the hardship of discrimination imposed by law and self-serving authority. Rather it will be the hardship that exists everywhere there is poverty and underdevelopment.

It is worth reflecting for a moment how the new South Africa differs from the old from a policy formulation point of view. Because of White hegemony, the old South Africa was a society which saw itself as an extension of Europe in Africa. In all ways, it was a society which modelled itself on European society. From its legal system to its cultural and social habits, from its governmental institutions to its religions, it was a transplant from Holland and Britain, from Portugal, Greece, Italy, Germany and France, and a host of other countries. Membership of this society was dependent on race and so it excluded indigenous Africans. If you were dark skinned, but nonetheless not African, you got excluded anyway from the ultimate criterion of membership – the franchise.

For policy formulation, the existence of mass unemployment has always been a problem. In Europe and North America, during the 1930s, governments found themselves compelled to act to create jobs even though much of the policy wisdom of the time laid the cause of the problem at the doorstep of a deficiency of savings. To begin with, raising interest rates and trying to address the collapse of investment from the savings end only made matters worse. Keynes was to show why this thinking was wrong. But the governments of the day could not wait for the publication in 1936 of his famous book *The*

Die Beleggings-ontleders Tydskrif

Nege-en-dertigste uitgawe – Winter 1994

Die algemene verkiesing wat gedurende April plaasgevind het en die inhuldiging van die Regering van Nasionale Eenheid op 9 Mei het die deure geopen vir 'n paradigmatiese verskuiwing in die Suid-Afrikaanse gemeenskap. Dit is nie eenvoudig net driehonderd twee-en-veertig jaar se wit minderheidsbewind wat nou tot 'n einde gekom het nie. Skielik is die hele rigting van die gemeenskap blootgestel aan verandering. Dit is altyd verstaan dat die dag na die verkiesing baie dieselfde sou wees as die voorafgaande dag. Soos die reisiger wat na 'n lang reis 'n bepaalde punt bereik het en nou besluit om terug te kyk in die teenoorgestelde rigting, verander niks in sy onmiddellike omgewing as gevolg van hierdie optrede nie. Die rivier in die vallei langs hom is steeds daar en so ook die heuwels wat oprys vanaf die rivierbanke tot by die spits van die omliggende eskarp. Maar die feit dat hy omgedraai het, beteken dat geleidelik, soos hy te voet voortgaan, die topografie, die landskap, inderdaad al sy uitsigte op die aarde en hemel, sal begin verander soos hy voortbeweeg en mettertyd sal dit onherkenbaar wees van die toneel wat hom op daardie tydstep omring. Tans is dit slegs 'n kwessie van weke sedert die verkiesing en die inhuldiging van die nuwe regering. Daar is egter reeds meer as 100 000 Suid-Afrikaners wat sedertdien gebore is en wat nog nooit onder apartheid geleef het nie. Teen die einde van die jaar sal hierdie getal aangroei tot meer as 'n miljoen en binne die kort bestek van vyftien jaar, of miskien 'n bietjie meer, sal hul die meerderheid van die Suid-Afrikaanse bevolking uitmaak. Nie een van hierdie mense sal ooit die skande ken wat dit vir Swartes ingehou het om hulle bestaan gedefinieerd te hê in terme van diens aan blankes nie, om ingang tot poskantore en toilette geweier te wees op grond van hul velkleur, of deur die wet beperk te wees in terme van die werk wat hul kon verrig, met wie hul kon trou of waar hulle mag woon nie. Apartheid was 'n omvattende stelsel van onderwerping en kontrole wat swartes geburokratiseer het in alle sferes van lewe, in posisies van minderwaardigheid en swaarkry. In die nuwe Suid-Afrika sal daar steeds swaarkry wees, maar dit sal nie die swaarkry van diskriminasie wees wat deur die wet en deur 'n selfdienende owerheid ingestel is nie. Dit sal die swaarkry wees wat jy oral vind waar daar armoede en onderontwikkeling is.

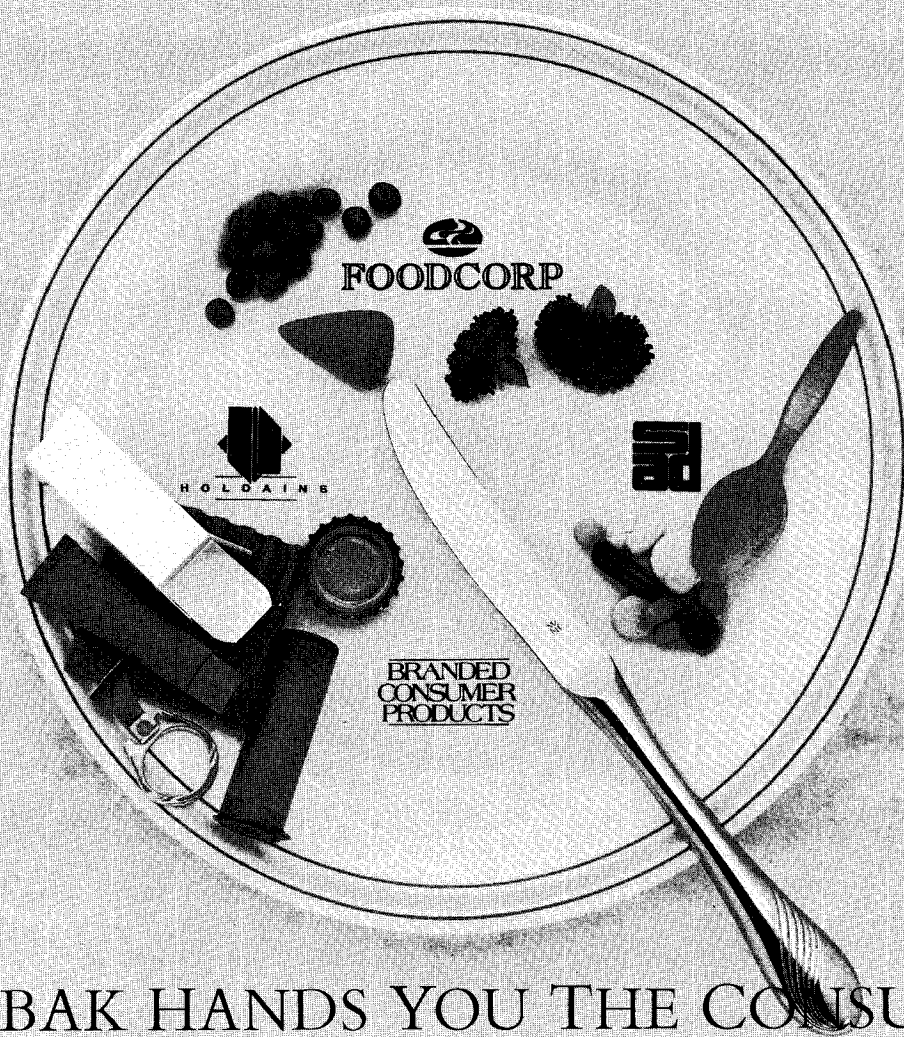
Dit is die moeite werd om vir 'n oomblik na te dink oor hoe die nuwe Suid-Afrika van die oue verskil uit 'n beleidsformuleringsoogpunt. As gevolg van wit heerskappy was die ou Suid-Afrika 'n gemeenskap wat sigself gesien het as 'n verlengstuk van Europa in Afrika. Op alle gebiede was die gemeenskap gemodelleer op die Europese model. Vanaf die regstelsel tot kulturele en sosiale gewoontes, vanaf die regeringsinstellings tot die geloofslewe, was dit 'n oorplanting van Holland en Engeland, van Portugal, Griekeland, Italië, Duitsland en Frankryk en nog vele ander lande. Lidmaatskap van hierdie gemeenskap was afhanklik van ras en het inheemse Swartes uitgesluit. As jy donkervellig was, alhoewel nie noodwendig 'n Afrikaan nie, is jy uitgesluit van die finale kriterium van lidmaatskap-stemreg.

Die bestaan van massale werkloosheid was altyd 'n probleem uit die oogpunt van beleidsformulering. In Europa en Noord-Amerika, gedurende die 1930's, is regerings genoopt om op te tree om werk te skep ten spyte van die feit dat die konvensionele wysheid die oorsaak van die probleem aan die deur van onvoldoende besparings gelê het. Ten aanvang het die

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General Theory of Employment Interest and Money. Well before then, Franklin Delano Roosevelt had instituted the New Deal in the United States and Hitler had started building his autobahns.

In the old South Africa, the mass unemployment of Africans did not matter in the way it would have in a democratic society. Because Africans did not vote, successive governments could ignore the problem although to begin with it tended to be hidden by the fact that most Africans were resident in the rural areas and their unemployment or underemployment was largely out of sight. However, even after decades of industrialisation and African urbanisation had changed the situation, the mass unemployment of Africans continued to be a neglected issue. White, ie European, governments could safely ignore it because it did not directly affect their position of power. If they were concerned about it at all, it was because it could pose a threat to social stability. This was the policy background of mass black unemployment in the whole of the post-war period in South Africa, even in the 1980s.

With the coming of the new South Africa, all this changes at the stroke of a pen. When the mass unemployed are enfranchised, the government, no matter what the party, will have to take note of them. For the foreseeable future, mass unemployment is going to be the first item on the policy agenda of all South African governments. This gives a special but realistic perspective to what the ANC has labelled reconstruction and development. It is not something, however, the investment community should lament. In tackling the problem of mass unemployment, South Africa is going to discover new, interesting and exciting opportunities for entrepreneurship and profit. And the point will be quickly reached when with a general voice business will proclaim 'Thank God for the change that was forced upon us!'

verhoging van rentekoerse en pogings om die ineenstorting van investering van besparingskant te beëindig, sake slegs vererger. Keynes het gewys waarom hierdie denkwyses verkeerd was. Maar die regerings van die dag kon nie wag vir die publikasie van sy beroemde boek *The General Theory of Employment, Interest and Money* in 1936 nie. Reeds voor daardie tyd het Franklin Delano Roosevelt sy "New Deal" plan tot uitvoering gebring en het Hitler begin om snelweë te bou.

In die ou Suid-Afrika het die massale werkloosheid van Swartes nie die gewig gedra wat dit in 'n demokratiese gemeenskap behoort te dra nie. Omdat Swartes nie gestem het nie, kon opeenvolgende regerings die probleem ignoreer, alhoewel die probleem verskuil is deur die feit dat die meeste Swartes in landelike gebiede gebly het en dat hulle werkloosheid of onderindiensname sodoende grootliks buite sig was. Na dekades van industrialisasie en swart verstedeliking die situasie verander het, het die massale werkloosheid van Swartes nog steeds 'n vergete saak gebly. Blanke regerings kon dit veilig ignoreer omdat dit nie direk 'n invloed op hulle posisie van mag uitgeoefen het nie. Indien hul daarvoor besorgd was, was dit omdat dit 'n bedreiging vir sosiale stabiliteit kon inhou. Dit was die agtergrond waarteen, in die totale na-oorlogse periode in Suid-Afrika, selfs in die 1980's beleid gevoer is rakende massale swart werkloosheid.

Met die koms van die nuwe Suid-Afrika verander dit met 'n penstreep. Wanneer die massa werkloos stemgeregtig word, sal die regering, dit maak nie saak van watter party nie, van hulle kennis moet neem. In die onmiddellike toekoms sal grootskaalse werkloosheid die eerste item op die beleidsagenda van alle Suid-Afrikaanse regerings wees. Dit gee 'n spesiale, maar realistiese, perspektief op wat die ANC rekonstruksie en ontwikkeling noem. Dit is egter nie 'n saak waaroor die beleggingsgemeenskap trane behoort te stort nie. In die aanpak van die probleem van grootskaalse werkloosheid sal Suid-Afrika nuwe interessante en opwindende geleenthede vir entrepreneurskap en wins ontdek. En die punt sal gou bereik word wanneer die sakesektor sal uitroep: "Dank die Here vir die verandering wat op ons afforseer is."

Measuring the impact of futures and options on investment portfolios: a South African perspective

1. INTRODUCTION

In May 1990 a consultative document entitled "The Reporting and Performance Measurement of Futures and Options" was published in Britain under the auspices of the London International Financial Futures Exchange and the London Traded Options Market. The initial document, prepared with the advice of members of the actuarial profession, raised a number of points of contention in the areas of reporting and performance measurement. Portfolio managers and performance measurement professionals were asked to comment.

In January 1992 the final recommendations were published, laying down standards for reporting and performance measurement of futures and options. These standards are endorsed by the National Association of Pension Funds and the two largest performance measurers in Britain, namely Combined Actuarial Performance Services Limited (CAPS) and the World Markets Company plc (WM). The recommendations were prepared in conjunction with two firms of actuaries and consultants, namely Bacon & Woodrow and William M Mercer Fraser.

Work began in South Africa in 1991 to determine whether the same concerns were relevant here. It was found that a number of reporting and performance measurement formats were generally in use and that these were causing confusion amongst trustees. The need for consistency was strongly expressed by the trustees of those funds actively using the instruments. It was found that the South African situation is unique in some respects as the instruments traded differ from those in other markets. A uniquely local solution, bearing in mind the trends in other markets is thus needed.

Adriaan Ryder and Heather McLeod of Old Mutual presented a suggested solution to the November 1991 conference of the South African Financial Instruments Association. Much helpful comment was obtained from the derivatives professionals attending that meeting and in separate discussions and submissions thereafter. A revised set of recommendations was presented to the members of the Investment Analysts Society in both Johannesburg and Cape Town in mid 1992.

Discussions have been held with the parties responsible for the Consulting Actuaries Survey, particularly with regard to the implications for performance measurement. The issues of reporting and performance measurement are also of concern to the Financial Services Board and the unit trust industry and a useful sharing of ideas has occurred with regulators and portfolio managers.

This document summarises the key issues and sets out a proposal for standards of reporting for the South African industry. Further guidance is needed on an appropriate standard for performance measurement.

2. THE TRUSTEE PERSPECTIVE

In order to understand the difficulties encountered in devising reporting and performance measurement standards, it is helpful to review the salient properties of the various instruments that may be used in a retirement fund portfolio. The trustees' responsibility in setting investment policy and the need for standards is also considered.

2.1 THE NATURE OF DERIVATIVE INSTRUMENTS

There remains a perception amongst some trustees and ad-

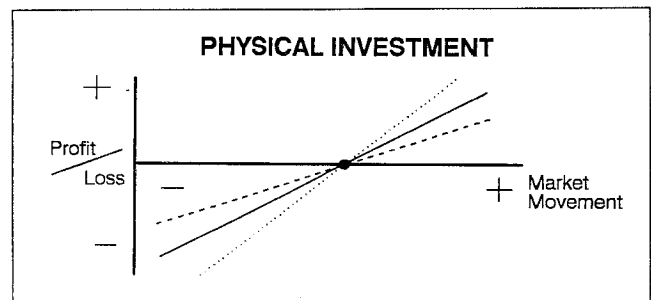
visors that futures and options are excessively "risky" instruments and therefore have no place in retirement fund portfolios. It is our contention that this perception ignores the risks inherent in holding physical instruments (equity, property, bonds and cash) and the important role that derivative instruments (futures and options) play in modifying that risk profile.

There are a number of different approaches to the measurement of "risk". The traditional approach, much favoured by practitioners in the USA, is to define risk as the variability of historic returns, measured as the standard deviation of historic returns. Another school of thought suggests that risk is forward-looking rather than backward-looking. Risk is obtained from the probability of all adverse occurrences and the consequences of those occurrences for the portfolio.

For illustrative purposes in this document we focus on the sensitivity of assets to market movements. This enables us to understand the role that derivative instruments play in modifying sensitivity.

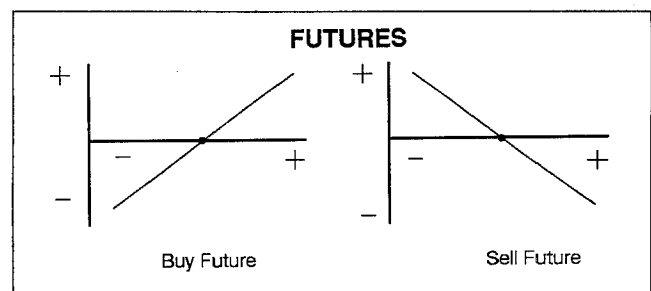
A portfolio of physical equity behaves in the manner shown in Figure 1. When markets rise from current levels, profit is made and when markets fall, a loss is made. The exact sensitivity will depend on the composition of the portfolio but lies broadly between the dotted lines as shown. Physical bonds will show a similar profile with shorter dated bonds being less sensitive to interest rate movements than longer dated bonds. Cash has an almost horizontal profile. Property is of a similar nature to equity in this analysis.

FIGURE 1



Buying an equity index future gives a symmetrical profile similar to the holding of physical equity. Selling a future gives a mirror image profile that enables the portfolio manager to access the upper left quadrant or in other words, to make a profit when markets fall. Figure 2 shows this graphically.

FIGURE 2



The key to understanding the role options play in the portfolio is their non-symmetrical nature. The four categories of option

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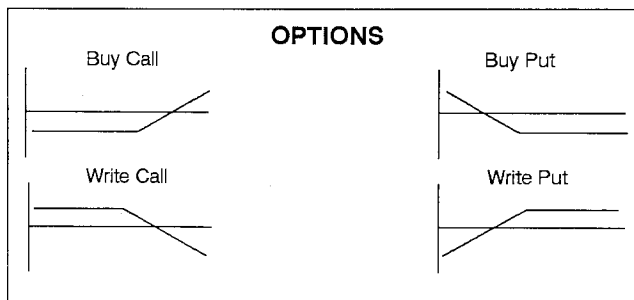
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are illustrated in Figure 3. Buyers of options face limited loss (limited to the premium paid) and potential unlimited gain. Writers of options have limited gain (limited to the premium received) and potential unlimited loss.

The non-symmetrical nature of options makes their reporting a particularly thorny issue. Options values are affected by, amongst other things, the direction and extent of market movements. It is thus not possible to understand the impact of options on a portfolio without considering the different behaviour if the market moves up from the behaviour when the market moves down. Traditional market value reporting assumes no market movement.

FIGURE 3

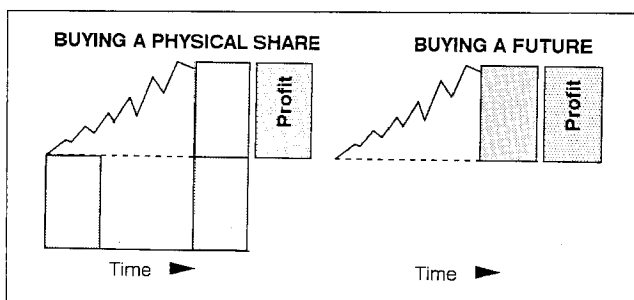


ELFI (Equity Linked Fixed Interest) instruments are issued by Transnet in Bull and Bear tranches. These bonds pay a fixed coupon but the capital value is linked to the equity market indices. These instruments thus behave more like equity than bonds and need to be categorised as equity. The sensitivity of the Bull tranche is similar to that of buying a future while the Bear is similar to selling a future. These instruments are unique to the South African markets.

A further property of derivatives needs to be clarified to understand the complications in reporting. All physical instruments, options and ELFI's have a market value at which they are bought or sold. In order to buy the instrument, the full market value must be paid. The price then fluctuates and the profit (or loss) is determined by comparing the end value to the starting value as shown in the first part of Figure 4.

A future is traded at a particular price in the market but has no market value in the traditional sense. No money is put down in order to participate in the market movement. The margin deposited (which may be of the order of 10% of the price) is simply a good-faith deposit and is paid equally by buyers and sellers.

FIGURE 4



The margin is reflected in the portfolio as a deposit held with SAFEX, the futures exchange, and is thus shown as cash. Interest is earned on this deposit at a rate slightly less than that earned on other cash instruments. Daily adjustments are made to the margin depending on the profitability of the futures position. All profits and losses are translated overnight to an ef-

fect on the cash position of the portfolio. It is as if a new futures contract, at no value, is entered into each morning.

The effect on the portfolio of futures positions can be substantial. The reporting mechanism devised must thus concentrate on the effect on the portfolio and not simply market value as has been sufficient in the past.

2.2 SETTING INVESTMENT POLICY

We believe the trustees have a responsibility to set broad parameters for the investment of the assets of a retirement fund. The involvement of the actuary, the trustees and the portfolio managers is needed to ensure that the asset portfolio is suitable for the particular circumstances of the fund. Investment policy is, we believe, best summarised in the form of a written policy document containing agreed benchmarks for performance measurement.

An issue that trustees will need to address is the use of options and futures by portfolio managers. It is our opinion that, except in exceptional circumstances, the trustees should not restrict the use of these instruments by portfolio managers. A statement to the effect that "The use of options and futures in the portfolio is at the discretion of the portfolio managers" is generally sufficient.

Limits to the exposure achieved through futures and options are not currently regulated in the Investment Regulations. The unit trust industry is preparing regulations in this regard. The calculation of exposure is not straight-forward and regulators in other parts of the world have generally opted for leaving investment in these instruments at the discretion of the portfolio managers.

Trustees may legitimately place restrictions on the credit quality of over-the-counter options purchased by restricting the list of acceptable counter-parties. This is not applicable for exchange-listed options.

2.3 THE CASE FOR STANDARDS

The use of derivative instruments by portfolio managers in the armoury of assets available to them clearly changes the characteristics of portfolios. There has been an increasing use of derivative instruments, driven both from the expansion of the market and the range of instruments available.

The perspective adopted in the paper is that of the trustees needs. Indeed if one looks at the trustees, they are most in need of assistance and least able to control the process. It is in the interests of the investment industry to ensure that trustees understand and appreciate the role and impact of derivative instruments. If we do not do so, trustees will legitimately restrict the use of these instruments, to the possible detriment of portfolios.

The needs of trustees with regard to reporting and performance measurement are seen to be as follows:

Simplicity:

The 'public face' of reporting should be clear, simple, understandable and logically appealing. From an industry perspective it is very tempting to look for a 100% technically correct methodology but this is not appropriate: we need to focus on what trustees need to know to carry out their duties and responsibilities and ensure that the end result is clear.

Consistency:

In the current situation there are a wide variety of methodologies in use by portfolio managers both in reporting and performance measurement. There is a need both for a consistency of treatment and of consistent application of methodologies

by all players in the industry. At present trustees have little appreciation of the levels of investment exposure to asset classes which the portfolio managers have undertaken nor of the impact of these actions on the fund and its performance.

Comparability:

The trustees need to be able to compare like with like in the execution of their duties. Consistency will allow full comparability of portfolios, both internally in a split-funded situation and externally against the peer group.

Comfort:

Trustees need to understand the impact of the use of derivative instruments – the 'what if' scenarios. In the case of 'physical' assets this is usually clearly understood – in the case of derivative instruments they need to be represented and reported on in a way that facilitates this process.

Control:

One of the major responsibilities of trustees is in the setting and monitoring of the investment policy of the fund (discussed in 2.2 above). Key to this process is the incorporation of financial derivatives into the analysis; the impact they will have on the parameters and the controls or restrictions that need to be placed on them. One example is to restrict the use of derivatives so that the equity exposure of the portfolio may not be reduced by more than 50% or increased beyond 120 % of the physical equity portfolio.

Arising from these needs the aim of standards is clear:

- (i) consistency of treatment;
- (ii) simplicity of representation; and
- (iii) adoption by the industry as a standard i.e. adoption by portfolio managers, performance measurers, actuaries and regulators.

3. THE REPORTING OF PORTFOLIOS CONTAINING FUTURES AND OPTIONS

3.1 THE PHILOSOPHY OF REPORTING

The current approach of reporting 'physical' exposures of various asset classes without the impact of derivatives (and other related instruments) on this exposure, and thus no overall view of the total exposure of a fund on a consistent basis, is an extremely unsatisfactory and unsound position.

The proposed structure for the minimum standards for reporting is outlined in the following sections. Section 3.2 covers the detailed reporting of each derivative investment in the listing of portfolio assets and transactions. Sections 3.3, 3.4 and 3.5 cover the macro asset allocation view of the portfolio in a logical sequence:

The Market Value Report covers the physical assets and the market value of derivatives;

The Exposure Report builds on the previous Market Value Report by adjusting for the effective exposure of derivatives to obtain a total effective exposure for the portfolio; and

The Sensitivity Report shows the impact of various alternative financial scenarios on the portfolio, highlighting the possible effects of the portfolio management strategies adopted.

The combined effect of the above reporting recommendations, we believe, will place the trustees in a sound position to undertake their fiduciary duties and responsibilities as trustees to retirement funds.

The recommended approaches are, we suggest, minimum standards. Clearly any reporting that moves beyond these mini-

mum levels is to be encouraged as it enables the trustees to obtain greater insights.

It should be noted that these approaches are **not** geared to the use of futures and options as a separate asset class and thus a different approach is necessary for the reporting and measurement of managed futures and options funds as well as treasury portfolios.

3.2 REPORTING ON INDIVIDUAL DERIVATIVES

The key principles to be followed in the reporting of individual derivative instruments are:

- (i) that each derivative should be individually listed under the particular asset or asset class to which it relates; and
- (ii) that there should be full information disclosure for each derivative to enable it to be identified.

This enables the trustees to relate the instrument to the underlying asset or asset class. This is of particular importance to the trustees in the case of short positions with their inherent risks.

Two approaches can be used in the listing of individual derivatives; reporting within current column headings or, preferably, reporting with expanded column headings.

3.2.1 Reporting within current column headings

Examples of the reporting of futures and options would be:

Holding	Description	Book Value	Current Price	Market Value
100	JSE All Share June 93 Futures (R10 x Index Point)	R3,0 m	3 200	R3,2 m
(Shown at the end of the listing of equity holdings)				
10 000	De Beers	R750 000	8000 c	R800,000
10 000	De Beers Call Options June 93 – 8000 c	R15 000	200c	R20,000
(Shown within the body of the listing, to ensure the equity option related to the underlying asset)				

The description of the option or future must be sufficiently detailed to fully identify the instrument. For futures, the multiplier (R10 for equity futures) must be shown. For options it is necessary to show the strike price.

It should be noted in the De Beers option example above that under the *Holding* column, it is **not** the number of option contracts held but the related underlying asset holding that must be reflected. This makes it easier for trustees to understand what has been bought or sold.

In the above example, the headings of the columns of *Book Value* and *Market Value*, while being appropriate for options and for ELFI's, are not entirely appropriate for futures. In the case of futures, *Book Value* would be more appropriately titled *Initial Exposure* and *Market Value*, *Current Exposure*. The calculation of exposure is discussed in Section 3.6. The implication of this is that the *Book Value* and *Market Value* columns are not additive when futures are included.

In the case of options and ELFI's, while the column headings are appropriate and additive, they do not reflect the actual current exposure position. An additional column, *Current Exposure* is needed to show the actual exposure to an asset or asset class.

It should be noted that as ELFI's behave more like equity than bonds they need to be categorised under the equity asset class in the description of assets. However, if the Bull and Bear tranches are held in equal amounts, this effectively creates a bond and this would be listed under bonds.

The method of reporting with current column headings clearly has the advantage of easy implementation within the existing portfolio reporting systems.

3.2.2 Reporting with expanded column headings

This approach attempts to deal with problems outlined in Section 3.2.1 above. In order to cater for all the types of instruments, the headings would need to be expanded to include:

- Holding
- Description
- Book Value
- Initial Exposure
- Current Price
- Market Value
- Current Exposure

and the instruments would have entries under the relevant headings. This method will in most cases require additional systems programming to accommodate the expanded headings. This second more detailed approach is the preferred approach.

3.3 THE MARKET VALUE REPORT

The departure point for any reporting system needs to be the market value of the portfolio in terms of physical assets and derivatives.

The current approach in terms of the valuation of physical assets clearly continues to apply in these reports e.g. listed equities valued at JSE closing prices etc. Futures do not have a true 'market value', while listed options and ELFI's have clearly determinable closing market values which can be used for market value reporting. In the case of over-the-counter (OTC) options, market values are not available. Theoretical market values should be determined from option pricing models, provided the model used is generally accepted in the market place and its usage in the organisation is consistent over time.

The approach adopted in the recommended layout is to clearly distinguish the market values of:

- physical assets
- options
- ELFI's
- any other derivatives (which should be separately listed).

Furthermore it is recommended that at a minimum four asset classes be shown:

- Equities
- Property
- Bonds
- Cash

Cash must be further broken down to show the various margins which each type of derivative instrument may require. These margins, typically:

- Futures margin at SAFEX
- Options margin at SAFEX
- Options margin at TOM

together with 'other cash' make up the total cash element of the portfolio. 'Other cash' may be called 'un-encumbered' cash or non-margined cash.

The recommended minimum **Market Value Report** layout is as follows:

Asset Class	Market Value Physical Portfolio (R)	Market Value Options (R)	Market Value ELFI (R)	Total Market Value (R)	Total Market Value %
Equity					
Property					
Bonds					
Cash					
Futures margin (SAFEX)					
Options margin (SAFEX)					
Options margin (TOM)					
Other Cash					
TOTAL					

From section 3.6 it will be seen that, depending on the type of option, the market value of options could be positive or negative. The market value ELFI will usually be positive. Any profits or losses on futures, because of the daily mark-to-market, will be incorporated in margin or will already have been allocated to one of the asset classes. No market value column is thus needed for futures.

This type of layout has major advantages for the trustees as it clearly highlights the market value of each class of derivative instrument and, together with the individual reporting of each instrument (which sums to this report), enables the trustees to be aware of the physical market value and margins of their fund.

3.4 THE EXPOSURE REPORT

The next step in reporting is to bring in the 'exposure' effect of derivatives. The purpose of the **Exposure Report** is to take account of the effective exposure brought about by the use of derivative instruments by portfolio managers in the execution of their mandate.

The recommended minimum **Exposure Report** layout is as follows:

Asset Class	Total Market Value (R)	Adjustment For Futures (R)	Adjustment For Options * (R)	Adjustment For ELFI's (R)	Effective Exposure (R)	Effective Exposure %
Equity						
Property						
Bonds						
Cash						
TOTAL						

* Note: The effect of these options will differ depending on the direction of the movement of the market as indicated in the Sensitivity Report which follows. For a more complete understanding of the possible effects on the portfolio, please discuss this with the portfolio manager.

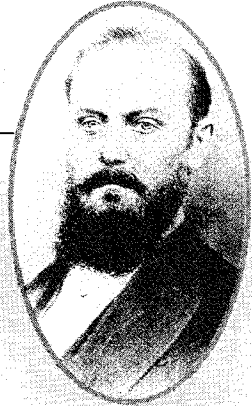
Some comments on the above table are appropriate:

Total Market Value – this comes from the previous **Market Value Report**.

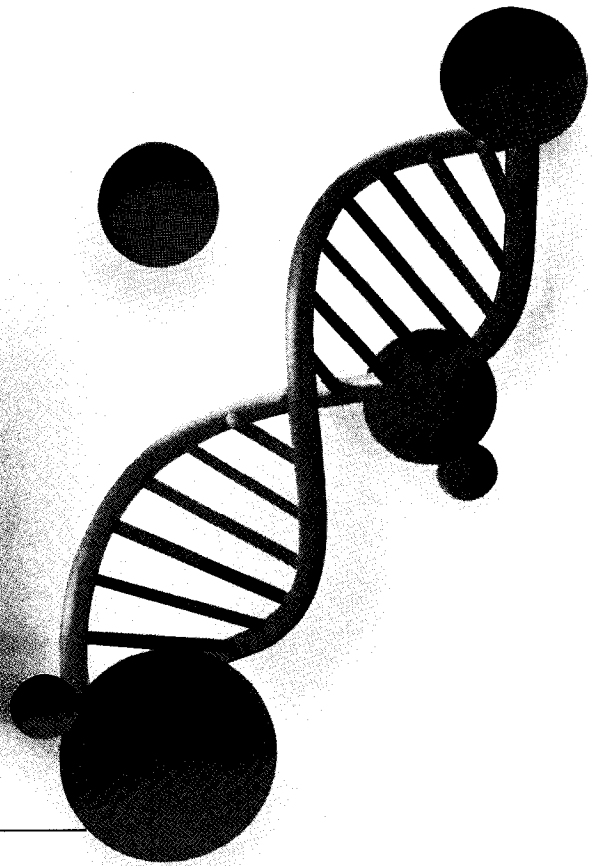
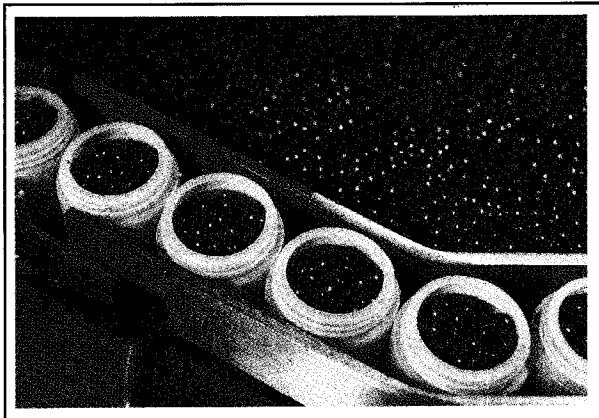
Adjustment for Futures – the calculation and signage of economic exposure for various futures strategies is set out in Section 3.6.

Health Care for the Nation

Then

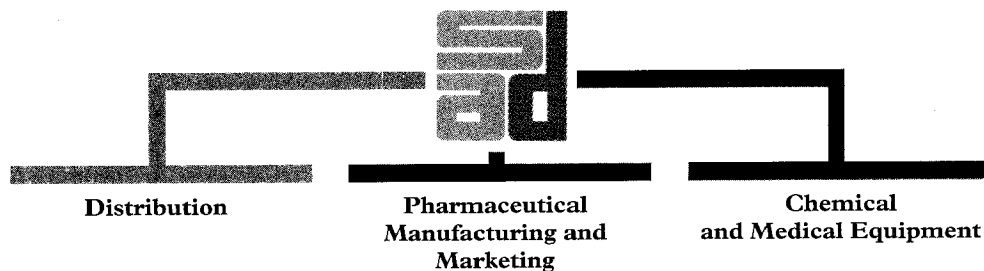


Now



and into the Future

A century and a half ago Berry Grey Lennon opened a pharmacy in Port Elizabeth and laid the foundation for the SA Druggists group. Since then, the group's products and services have helped to promote the welfare of generations of South Africans. And today, more than ever, its formula of high-quality medicines at affordable prices is the right prescription for the health care of the nation.



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Adjustment for Options – the calculations and signage of economic exposure for various options strategies is set out in Section 3.6. An adjustment **must** however be made to the economic exposure of the option to take cognisance of the market value of the option already included in the *Total Market Value* of each asset class in column one. The formula to be used is:
 Adjustment for options = total exposure of options **MINUS** market value of options.

Adjustment for ELFI's – a similar adjustment formula needs to be applied as for options.

It should be noted that very careful attention needs to be paid to the signage of all the derivative instruments as outlined in Section 3.6.

In drawing up the **Exposure Report** each of the three *Adjustment* columns **always** sum to zero. The reason for this is that the execution of a portfolio strategy will result in an increase or decrease in exposure to an asset class and the portfolio will behave as though there was a corresponding decrease or increase in the effective cash exposure. Hence for each positive adjustment in effective exposure of equities, bond or property, there will be a corresponding negative adjustment in effective exposure to cash.

The column *Effective Exposure* in Rand terms will consequently also sum to the *Total Market Value* column in Rand terms.

Two examples will demonstrate this in practice.

Example I: Using Futures

Let us assume that a portfolio manager has a physical portfolio of R100 m with an asset profile of:

Equities	65%
Property	10%
Bonds	20%
Cash	5%

A decision is taken to hedge R10 m of the equity portfolio. The **Exposure Report** would look as follows:

Asset Class	Total Market Value (R)	Adjustment For Futures (R)	Effective Exposure (R)	Effective Exposure %
Equity	65	-10	55	55
Property	10	-	10	10
Bonds	20	-	20	20
Cash	5	+10	15	15
TOTAL	100	0	100	100

If the portfolio manager had decided instead to increase the exposure to equities by R10 m, the **Exposure Report** would look as follows:

Asset Class	Total Market Value (R)	Adjustment For Futures (R)	Effective Exposure (R)	Effective Exposure %
Equity	65	+10	75	75
Property	10	-	10	10
Bonds	20	-	20	20
Cash	5	-10	-5	-5
TOTAL	100	0	100	100

In this case the gearing effect is readily visible – not a situation many trustees would feel very comfortable with in terms of the resultant risk profile. The investment parameters of many funds do not allow any gearing of this nature. This example demonstrates the reason why market value reporting on its own is insufficient for trustees, actuaries and regulators.

Example II: Using options

Using the same physical portfolio as in Example I above, the portfolio manager decides to buy an equity call option for R1 m. At the portfolio valuation date the market value of the option is R1 m and the exposure of the option is calculated as R10 m.

The **Exposure Report** would look as follows:

Asset Class	Total Market Value (R)	Adjustment For Options *	Effective Exposure (R)	Effective Exposure %
Equity	66	+9	75	75
Property	10	-	10	10
Bonds	20	-	20	20
Cash	4	-9	-5	-5
TOTAL	100	0	100	100

* Note: The effect of these options will differ depending on the direction of the movement of the market as indicated in the Sensitivity Report which follows. For a more complete understanding of the possible effects on the portfolio, please discuss this with the portfolio manager.

The 'gearing' effect is similarly clearly noticeable.

3.5 THE SENSITIVITY REPORT

In the recommended minimum **Exposure Report** layout in Section 3.4 there is an annotation to the column *Adjustment for Options* marked with a "*" which reads 'The effect of these options will differ depending on the direction of the movement of the market as indicated in the Sensitivity Report which follows. For a more complete understanding of the possible effects on the portfolio, please discuss this with the portfolio manager'.

In section 2.1, when the nature of options was discussed, attention was drawn to their non-symmetrical nature. The **Exposure Report** while highlighting the effective exposure of options at the current market levels, gives no indication of the non-symmetrical effects of options exposure.

There is thus a need for the trustees to have some reporting mechanism that can reflect the impact that market movements will have on the portfolio so that the effect of portfolio management strategies will be clearly visible to them.

We thus recommend that a separate **Sensitivity Report** be produced for all portfolios where derivative instruments are used by the portfolio manager.

The question naturally arises as to what ranges should be used for the various asset classes to demonstrate the sensitivity to market movements. While many alternatives would be satisfactory, we recommend that, as a minimum, the ranges laid down by the Financial Services Board in respect of the Reasonable Benefit Expectations Valuation be adopted i.e.:

Equities	± 20%
Bonds and Cash	± 3% interest rate movement
Property	± 10%
Foreign currency assets	± 20%

Clearly one can readily move beyond these minimum guidelines and give the trustees a greater understanding of the implication of different financial market scenarios on the portfolios and the implications of the portfolio strategies they have adopted. For example, for equity the use of movements of $\pm 5\%$, $\pm 10\%$ and $\pm 20\%$ would give deeper insights.

The recommended minimum **Sensitivity Report** layout would be to show each asset class separately for which derivatives instruments were used by the portfolio manager. For equities, the format would be as follows:

Equities	Move in Equity Market	
	-20%	+20%
Change in market value of physical (R)	-R	+R
Relative % change (compared to current market value)	-%	+%

Similar layouts would be used for other asset classes. There is no need to sum movements across asset classes into a total movement as there is no suggestion that markets could all move simultaneously in the same direction.

If there was no use by the portfolio manager of derivative instruments then there would be no **Exposure Report** or **Sensitivity Report**.

3.6 THE CALCULATION OF ECONOMIC EXPOSURE

The calculation of the economic exposure of futures, options and ELFI's can be, and is, undertaken in more than one way in the market at present. We recommend that the following approaches be adopted, as being both simple and in line with international recommendations.

3.6.1 FUTURES

Exposure = number of contracts x multiple x price

Where Price = mark-to-market price (at closing)

e.g. 300 Contracts x R10 x 3200 = R9,6 m

In this approach a long position is shown as positive exposure and a short position (having sold futures) as a negative exposure.

It can be argued here that the last term in the formula above, 'price', should be defined as the index value (as opposed to the mark-to-market price). The difference between the two methods relates to basis risk which is of critical importance in bank and treasury portfolios that are run on a hedged basis. We suggest however that the above method be adopted as being simpler for trustees to understand. In the context of a fund with large physical holdings where derivatives are used at the margin, the methodology fulfils the criteria of simplicity and understandability. It enables trustees to update reports from the daily published prices, as they can do for equity holdings.

As a minimum, exposure is to be added across different expiry dates and instrument types within the same asset class. Preferably, the portfolio manager will show more information to enable the trustees to more clearly understand the strategy adopted. For example, showing Industrial contracts separately from All Share and showing different expiry dates separately.

The signage conventions to be adopted for futures are as follows:

	Holding	Initial Exposure	Current Exposure
Buying a future (long position)	+	+	+
Selling a future (short position)	-	-	-

3.6.2 OPTIONS

The economic exposure of an option is very sensitive and can change dramatically if conditions change only marginally in the physical markets. The exposure calculation is readily determined using an appropriate options model and is thus already available to portfolio managers.

More detailed calculation of options exposure using an expansion of the Black-Scholes Model is in use by some companies and may continue to be used. We are concerned with minimum standards and any more accurate representations are to be encouraged.

Exposure = number of contracts x delta x market value of underlying assets

Where delta = change in value of derivative associated with change in the value of the underlying asset

market value of underlying asset = 'spot' price.

e.g. 200 x 0,5 x 40,000 = R4 m

In this approach buying calls or writing puts is shown as positive exposure. Writing calls or buying puts is shown as negative exposure.

The signage conventions for options are more difficult than for futures. In the listing of assets, holdings and current exposure will have the same signage depending on the effect on the portfolio. Book value and market value are positive for buying options and negative for writing options.

	Holding	Book Value	Market Value	Current Exposure
Buying a Call (long call)	+	+	+	+
Buying a Put (long put)	-	+	+	-
Writing a Call (short call)	-	-	-	-
Writing a Put (short put)	+	-	-	+

3.6.3 ELFI's (Equity Linked Fixed Interest Instruments)

As indicated in Section 2.1, ELFI's are appropriately categorised under the equity asset class. When the underlying index moves, the ELFI 'Bull' tranche has a sensitivity similarly to that of buying a future and the Bear similar to that of selling a future. This relationship forms the basis of the recommended calculation of the economic exposure of ELFI holdings under which ELFI's are converted notionally to futures.

Exposure = number of notional futures x R10 x price

Number of notional futures = nominal holdings \div (10 x base index used in ELFI)

Where price = mark-to-market price of future with closest expiry date to ELFI

In this approach the ELFI Bull has positive exposure and the ELFI Bear has negative exposure. Short positions have the reverse sign.

4. THE MEASUREMENT OF PERFORMANCE OF PORTFOLIOS CONTAINING FUTURES, OPTIONS AND ELFI'S

4.1 PERFORMANCE MEASUREMENT PRACTICE

The standard approach to performance measurement for comparative purposes in South Africa uses the Consulting Actuaries Survey methodology. This is an approximation to the time-weighted performance using market values at the beginning and end of the period and purchases, sales and income during the period. Performance is typically calculated monthly with the assumption that all flows occur at mid-month. Successive monthly performance are rolled together to obtain performance over longer periods.

Performance is calculated overall for the portfolio as well as separately for each major asset class (equity, interest-sensitive and property). League tables are drawn up overall and for each asset class. Trustees are familiar with judging performance according to ranking in the league tables. The performance within asset classes can readily be compared against indices to determine whether managers are adding value over and above a passive portfolio. The comparison of total performance against notional funds or benchmarks constructed from indices is still in its infancy.

4.2 A VARIETY OF METHODOLOGIES

The market value of the portfolio containing futures and options at the beginning and end of the period under observation is not in doubt. Performance on the portfolio as a whole can readily be calculated and, regardless of the methodology discussed below, will provide the same answer.

The difficult issue in performance measurement of derivatives is the splitting of performance between the major asset categories. The issues are best understood by examining the treatment of futures. Three different methodologies are illustrated in Appendix 2 and the results summarised below.

SUMMARY OF THE RESULTS OF VARIOUS METHODOLOGIES				
Performance is shown as percent per annum.				
	Physical Portfolio	"Cash" Method	"Asset Class" Method	"Total" Method
Equity	-5,3 %	-2,0 %	-2,0 %	-5,3 %
Property	15,0 %	15,0 %	15,0 %	15,0 %
Bonds	10,0 %	10,0 %	10,0 %	10,0 %
Cash	20,0 %	20,0 %	20,0 %	20,0 %
	1,1 %	3,5 %	3,5 %	3,5 %

An example typical of the 1990 year when equity produced a negative performance has been used. The physical portfolio consisted of 65% equity, 10% property, 20% bonds and 5% cash. Given the performance of each asset class, this structure would have given a total performance on the physical portfolio of 1,1%.

The portfolio was hedged with futures to the extent that equity exposure was reduced to 55% and thus cash exposure was raised to 15%. Hedging was the correct action to take under the circumstances and produced an enhanced performance of 3,5% in all three cases.

The 'cash' method allocates all profit on the futures position to the cash class, reasoning that margin at SAFEX is a cash item and all profits have come through this cash account. This produces a return on cash of 67,9% when the market return was 20,0%. This is patent nonsense and the method can readily be discarded.

The 'asset class' method allocates profit on the equity futures to the equity asset class. Performance on equity is thus -2,0% compared to the market return of -5,3%. The cash

performance is unaffected and remains at 20%. This method is the intuitive one chosen by portfolio managers but its use raises some difficult philosophical issues as discussed in Section 4.3.

The 'total' method reports performance in each asset class as if only physical assets were present and makes a single adjustment to the total portfolio. The portfolio performance is thus similar to that of a portfolio made up of 55% rather than 65% equity. The British recommendations produce the same result although using a much more complex means to arrive at the answer.

4.3 THE METHODOLOGY DILEMMA

The dilemma in choosing between the "asset class" and "total" methods is not easily resolved. The problem is further illustrated below.

Assume a portfolio with 65% in equity and split-funded between three portfolio managers. The trustees issue an instruction to reduce equity exposure to 55%, leaving the managers to choose how this is to be accomplished.

Manager 1 sells physical equity, he reports equity performance of -5,3%.

Manager 2 buys ELFI Bears, he reports equity performance of -2,0%.

Manager 3 sells futures, he reports equity performance of either -2,0% or -5,3%, depending on the methodology adopted.

All three managers have achieved the same effect and all three will obtain the same total performance, not allowing for anomalies in the pricing of the various instruments.

We believe there must be neutrality of treatment and that the same equity performance should be reported for all three managers.

The recent British recommendations in this regard treat futures philosophically as asset allocation tools. In other words futures affect the allocation between asset classes and do not contribute to the result in any particular asset class. This results in an equity performance of -5,3% for all three managers in the example.

To follow the British philosophy locally would imply using the "total method" or the British equivalent for futures. An adjustment would need to be developed to the way in which ELFI's are treated to ensure consistency.

The American philosophy is different. The widespread usage in that country of specialist portfolio managers has led to a fundamentally different accounting treatment in portfolios. The industry standard, mandatory from 1993, is to allocate all new cashflow amongst the equity, bond and property classes. Cash is not a separate asset class but may form part of any of the other classes, thus there is equity-cash, bond-cash and property-cash. The decision to lighten up on equity in the portfolio would result in a performance of -2,0% being reported in the above example for all three managers.

The American philosophy follows the "asset class" methodology as far as futures are concerned. However, current South African practice is to keep cash as a separate class (or amalgamated with bonds) and thus Manager 1 will report -5,3% while Managers 2 and 3 report -2,0%. If the principle of equivalence of treatment is accepted, this difference in reporting is unacceptable.

4.4 A SOUTH AFRICAN METHODOLOGY

South African portfolio managers overwhelmingly choose the 'asset class' methodology as the preferable treatment for

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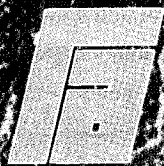
There has to be a happy medium between the need for industrial development and the desire to protect our natural resources: a middle ground where conservation and consumption can co-exist in harmony.

YES...

The Fraser Alexander group helps companies to develop and implement commercially sensible and socially responsible environmental management policies. Fraser Alexander's involvement in waste management dates back to the beginning of this century; its technology is already heading into the next. Which makes it uniquely well-equipped to find that prudent balance where the benefit of using our resources exceeds the cost.

...BUT

PLEASE HELP
NO FOOD
FOOD
HELP WITH
FOOD
PLEASE HELP
NO JOB
THING
AT HOME
SOME
PLEASE HELP



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tures as this gives recognition for the correct use of futures. There is also an argument that futures are not an asset allocation tool, but rather a selection tool and thus performance in the asset class must be affected. In most other markets the equity index future is based on an index that represents the entire equity market. In South Africa there are Industrial, Gold and All Share Index futures and thus the instruments can be used to change weightings within the equity asset class.

Despite extensive discussion in the investment industry, no clear solution has emerged to the inconsistencies outlined in Section 4.3. The authors at one stage suggested a two stage approach, showing performance on physical separately from performance including derivatives. This was not seen as practical by the investment industry.

The pragmatic approach is to accept the inconsistencies and to adopt the 'asset class' method for futures and options on futures. Options on specific assets would naturally fall into the relevant asset class and do not present a problem. ELFI's would be treated as equity class assets.

The authors' have a major reservation about this approach. Equity league tables are used by the industry and trustees to determine, amongst other things, who is the leading equity manager. The use of ELFI's and All Share futures is, we believe, fundamentally a decision about whether to be in or out of equities. The manager that buys or sells physical shares to achieve the same purpose will be penalised. The asset class league tables will become a nonsense and much valuable information currently available to the industry will be lost.

The solution to this inconsistency is to adopt the American approach of allocating cash amongst the other asset classes. This is intuitively appealing but the authors do not believe the implementation will be acceptable to the local investment industry.

The British approach is internally consistent in the British market but will only work locally if profits and losses on ELFI's are removed from the equity class. The British approach appears to be difficult to calculate, making a three stage transformation of equity profit or loss into pseudo cash. The results are not intuitively appealing to local portfolio managers.

The choice appears to be between the pragmatic approach with its inconsistencies and the American approach with its near-impossible implementation.

The authors at one stage proposed a compromise solution of calculating physical performance separately and then calculating performance including derivatives. The difference between the two would allow trustees to assess the value added by the use of derivatives. The proposal was not well received by investment managers with complexity of interpretation and difficulty in implementation being cited.

5. A PROPOSAL FOR STANDARDS FOR THE SOUTH AFRICAN INDUSTRY

A proposal on reporting standards, based on the arguments in this paper, is enclosed in Appendix 1. The issue of a standard for performance measurement must be deferred until a choice of methodology has been made.

6. CONCLUSION

The standards for reporting are put forward to the actuarial profession as a firm recommendation.

As the standards for performance measurement at this stage require further input and debate from the profession, we would like to propose that a sub-committee of the Actuarial Society be established to lead the industry towards establishing an appropriate standard. The sub-committee could then continue

to work and take the lead in finalising and obtaining endorsements from the many industry bodies affected, including the Investment Analysts Society, the South African Futures Exchange, the Traded Options Market, the Bond Market Association, the South African Financial Instruments Association, the Institute of Retirement Funds and the regulatory authorities.

7. ACKNOWLEDGEMENTS

The authors would like to thank all those who have contributed to the lively debates over the last year, as well as those who will contribute now that the debate has been broadened in the profession. There have been many inputs from interested parties, particularly members of the Investment Analysts Society, and their contribution to the development has been extremely valuable.

The views expressed in the paper, as well as the recommendations made, however, remain our own.

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APPENDIX 1

THE REPORTING AND PERFORMANCE MEASUREMENT OF FUTURES, OPTIONS AND ELFI'S

STANDARDS FOR SOUTH AFRICAN INVESTMENT PORTFOLIOS

1. OUTLINE OF THE PHILOSOPHY ADOPTED

The rationale for the philosophy adopted is presented in the paper *Measuring the Impact of Futures and Options on Investment Portfolios: A South African Perspective* by A.C. Ryder and H.D. McLeod, presented to the Actuarial Society of South Africa in November 1992.

An important principle is that derivatives are amalgamated with the asset class applicable to the underlying assets. Share index futures, options on share index futures, options on share indices, options on underlying shares, ELFI instruments and physical shares thus all form part of the asset class "Equity".

These Standards are only applicable to portfolios where derivative instruments are used as a means of increasing or reducing exposure to existing assets or asset classes. They are not

designed for use on futures and options funds nor for deposit-taking institution treasury portfolios.

2. REPORTING STANDARDS

Reporting is separated into the listing of assets and the reporting on portfolio asset allocation. This is followed by technical notes applicable to the calculation of elements of both sections.

2.1 LISTING OF ASSETS

Wherever physical transactions or holdings are listed, those of derivative instruments should be similarly part of the listing.

Detailed information for the full identification of each derivative is required.

The derivative instruments are to be listed with the underlying security or asset class, as appropriate.

Two formats are shown.

Example I: The most simple format to implement uses the existing headings of portfolio tabulations, despite the inaccuracy of the description for futures.

Holding	Description	Book Value (R)	Current Price	Market Value (R)
10 000	De Beers	750 000	8000 c	800 000
10 000	De Beers Call Option June 93 8000 c	15 000	200 c	20 000
100	JSE All Share June 93 Futures (R10 x Index Point)	3,0 m	3200	3,2 m

Example II: The preferred format uses more appropriate headings to cater for the derivatives:

Holding
Description
Book Cost
Initial Exposure
Current Price
Market Value
Current Exposure

Only the appropriate entries would be filled in with data.

NOTES: The *Holding* column for futures shows the number of contracts. The *Description* must indicate the multiple e.g. (R10 x Index Point), the expiry date and the nature of the contract, e.g. All Share.

The *Holding* of options shows the equivalent number of underlying shares (or futures) not the number of contracts. The *Description* shows the nature of the option, the expiry date and the strike price.

2.2 REPORTING ON PORTFOLIO ASSET ALLOCATION

The allocation of assets to various asset classes is of vital interest to trustees. As a minimum, four classes of assets should be reported upon: equities, bonds, property and cash. Cash should be sub-divided into:

- futures margin at SAFEX
- options margin at SAFEX
- options margin at TOM
- other cash

A three stage reporting process is to be used:

I The Market Value Report

This shows the market value of physical holdings, the market value of options and ELFI's. The total market value should be shown in money and percentage terms.

The minimum **Market Value Report** layout required is:

Asset Class	Market Value Physical Portfolio (R)	Market Value Options (R)	Market Value ELFI (R)	Total Market Value (R)	Total Market Value %
Equity					
Property					
Bonds					
Cash					
Futures margin (SAFEX)					
Options margin (SAFEX)					
Options margin (TOM)					
Other Cash					
TOTAL					

II The Exposure Report

This shows the total market value and adjustments to reflect the economic exposure of each class of derivative separately. Total effective exposure is shown in money terms and percentage terms. The report must be shown if derivatives are used in the portfolio.

The minimum **Exposure Report** layout required is shown below. The note on the effect of options must be included.

Asset Class	Total Market Value (R)	Adjustment For Futures (R)	Adjustment For Options * (R)	Adjustment For ELFI's (R)	Effective Exposure (R)	Effective Exposure %
Equity						
Property						
Bonds						
Cash						
TOTAL						

* Note: The effect of these options will differ depending on the direction of the movement of the market as indicated in the Sensitivity Report which follows. For a more complete understanding of the possible effects on the portfolio, please discuss this with the portfolio manager.

The calculation of exposure is detailed in Section 2.3 below. For every positive adjustment of economic exposure under *equity, property and bonds* there is a corresponding negative adjustment (and vice versa) to the *cash* asset class in the report above. Thus the columns reflecting *Adjustments* above all sum to zero and the *Effective Exposure* column will sum to *Total Market Value*.

The adjustment for the options column is the economic exposure of the option **minus** market value of the option. ELFI's are treated similarly.

III The Sensitivity Report

This shows the impact that market movements will have on the portfolio. The report must be shown if derivatives are used in the portfolio. The minimum set of ranges to be used in this report are:

Equities	± 20%
Bonds and Cash	± 3% interest rate movement
Property	± 10%
Foreign currency assets	± 20%

Portfolio managers are encouraged to provide more detailed information than required in the minimum standards.

Both the change in the market value of the physical and the relative percentage change are to be shown for each asset class.

Each asset class where derivatives are used is to be shown separately. Do not sum across asset classes into a total movement in each direction.

An example of the reporting format is:

Equities	Move in Equity Market	
	-20%	+20%
Change in market value of physical (R)	-R	+R
Relative % change (compared to current market value)	- %	+ %

2.3 TECHNICAL NOTES

2.3.1 CALCULATION OF ECONOMIC EXPOSURE

FUTURES:

Exposure = number of contracts x multiple x price

Where Price = mark-to-market price (at closing)

e.g. 300 Contracts x R10 x 3200 = R9,6 m

In this approach a long position is shown as positive exposure and a short position (having sold futures) as a negative exposure.

OPTIONS:

Exposure = number of contracts x delta x market value of underlying assets

Where delta = change in value of derivative associated with change in the value of the underlying asset

market value of underlying asset = 'spot' price.

e.g. 200 x 0,5 x 40,000 = R4 m

In this approach buying calls or writing puts is shown as positive exposure. Writing calls or buying puts is shown as negative exposure.

ELFI'S:

In 2.1 above, the ELFI Bull and Bear tranche's are treated as buying and selling a future respectively. The calculation of the economic exposure of ELFI's thus involves converting the ELFI holding to a number of notional futures and then treating as for futures.

Exposure = number of notional futures x R10 x price

Number of notional futures = nominal holdings ÷ (10 x base index used in ELFI)

Where price = mark-to-market price of future with closest expiry date to ELFI

In this approach the ELFI Bull has positive exposure and the ELFI Bear has negative exposure. Short positions have the reverse sign.

2.3.2 SIGNAGE CONVENTIONS

The signage usage for individual tabulations and reports is as follows:

FUTURES	Holding	Initial Exposure	Current Exposure	
Buying a future (long position)	+	+	+	
Selling a future (short position)	-	-	-	
ELFI				
Bull - treated as buying a future (as above)				
Bear - treated as selling a future (as above)				
OPTIONS	Holding	Book Value	Market Value	Current Exposure
Buying a call (long call)	+	+	+	+
Buying a put (long put)	-	+	+	-
Writing a call (short call)	-	-	-	-
Writing a put (short put)	+	-	-	+

3. PERFORMANCE MEASUREMENT STANDARDS

The question of performance measurement standards has not yet been resolved.

APPENDIX 2

ILLUSTRATION OF PERFORMANCE CALCULATION METHODOLOGIES

An example has been developed to illustrate the various calculation methodologies. Returns are typical of the 1990 year. Purchases, sales, income and end market value have been constructed so as to achieve the desired performance in each asset class.

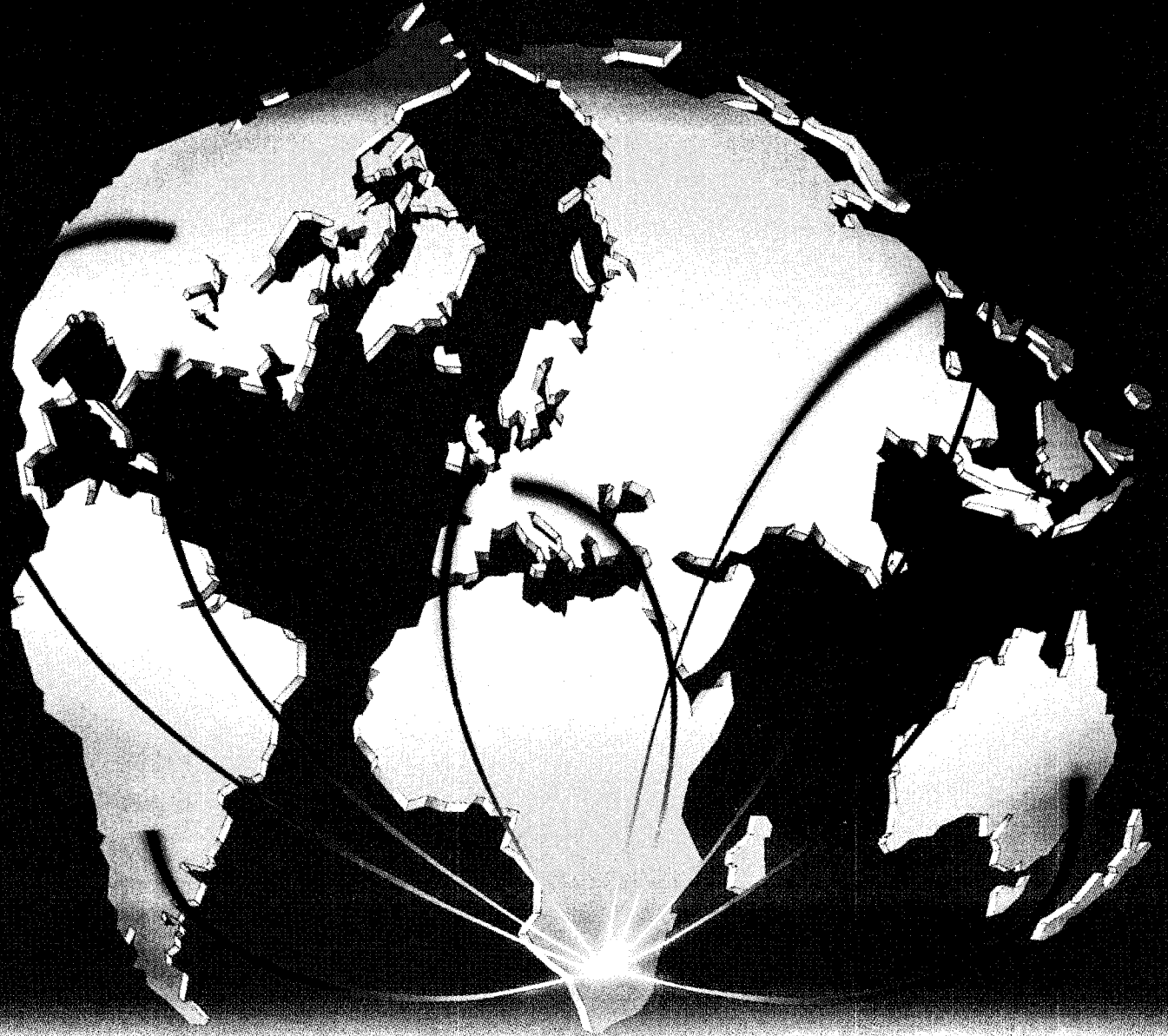
TABLE 2.1: PHYSICAL PORTFOLIO

	Market Value Beginning R m	Purchases R m	Sales R m	Income R m	Market Value End R m	Annual Performance
Equity	65	3,25	0	3,25	61,575	-5,3 %
Property	10	1,00	0	1,00	11,500	15,0 %
Bonds	20	2,40	0	2,40	22,000	10,0 %
Cash	5	1,00	0	1,00	6,000	20,0 %
	100	7,65	0	7,65	101,075	1,1 %

Assume that the portfolio was hedged by selling futures contracts at the start of the year, effectively reducing equity exposure from 65% to 55%. The calculations in respect of the futures contracts are shown below.

Price beginning: 4 000

Want R10 m Hedge ∴ $\frac{10\,000\,000}{4\,000 \times 10} = 250$ contracts



From its base at the mineral-rich foot of the African continent, Samancor spans the globe to supply industrialised society with some of its most indispensable ingredients.

Each year, more than two million tons of Samancor's products – manganese and chrome ores and alloys; silicon and manganese metals; dolomite, quartzite and ferro-silicon – are shipped to more than 1 000 customers in almost 100 countries. Its major markets are the world's metallurgical industries, but the materials it supplies are ultimately converted into a wide variety of end uses, from household appliances to spacecraft.

With its vast manganese and chrome reserves, advanced technology, and



cost-effective mines and works, Samancor has long been established as a reliable supplier of quality products to a global market. Its inherent dynamism will ensure that its already wide horizons continue to expand.

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Initial margin of 2 000 per contract = R0,5 million

Price ending: 3 130

Profit on futures = $(3\ 130 - 4\ 000) \times 250 \times 10 - 1 = R2,175$ million

Additional income earned on futures profit = $1/2 \times 2,175 \times 20\%$
= R0,218 million

“CASH” METHOD

In the “Cash” Method, the profits on the futures are treated as an increase to cash income. The additional interest earned on the futures profit is also an increase to cash income. This results in increased purchases of cash assets.

**TABLE 2.2:
“CASH” METHOD**

	Market Value Beginning R m	Purchases R m	Sales R m	Income R m	Market Value End R m	Actual Performance
Equity	65	3,250	0	3,250	61,575	-5,3 %
Property	10	1,000	0	1,000	11,500	15,0 %
Bonds	20	2,400	0	2,400	22,000	10,0 %
Cash	5	1,0 + 2,175 + 0,218	0	1,0 + 2,175 + 0,218	6,0 + 2,175 + 0,218	67,9 %
	100	10,043	0	10,043	103,468	3,5 %

“ASSET CLASS” METHOD

In the “Asset Class” Method, profits on equity futures are allocated to the equity asset class. The profit results in inflow to the portfolio and is thus treated as a sale in the equity asset class. The additional interest on the futures profit is treated as cash income. These two items result in additional purchases of cash assets.

**TABLE 2.3:
“ASSET CLASS” METHOD**

	Market Value Beginning R m	Purchases R m	Sales R m	Income R m	Market Value End R m	Actual Performance
Equity	65	3,250	2,175	3,250	61,575	-2,0 %
Property	10	1,000	0	1,000	11,500	15,0 %
Bonds	20	2,400	0	2,400	22,000	10,0 %
Cash	5	1,0 + 2,175 + 0,218	0	1,0 + 0,218	6,0 + 2,175 + 0,218	20,0 %
	100	10,043	2,175	7,868	103,468	3,5 %

“TOTAL” METHOD

Performance in each asset class is calculated on the physical assets only. A single adjustment is made at the end of the calculation to include derivatives in the total portfolio. The profit on futures is treated as a sale as money flows into the portfolio. The additional interest on the futures profit is treated as income. Additional balancing purchases are made.

**TABLE 2.4:
“TOTAL” METHOD**

	Market Value Beginning R m	Purchases R m	Sales R m	Income R m	Market Value End R m	Actual Performance
Equity	65	3,250	0	3,250	61,575	-5,3 %
Property	10	1,000	0	1,000	11,500	15,0 %
Bonds	20	2,400	0	2,400	22,000	10,0 %
Cash	5	1,000	0	1,000	6,000	20,0 %
	100	7,650	0	7,650	101,075	1,1 %
AFTER FUTURES:	100	7,650 + 2,175 + 0,218	2,175	7,650 + 0,218	101,075 + 2,175 + 0,218	3,5 %



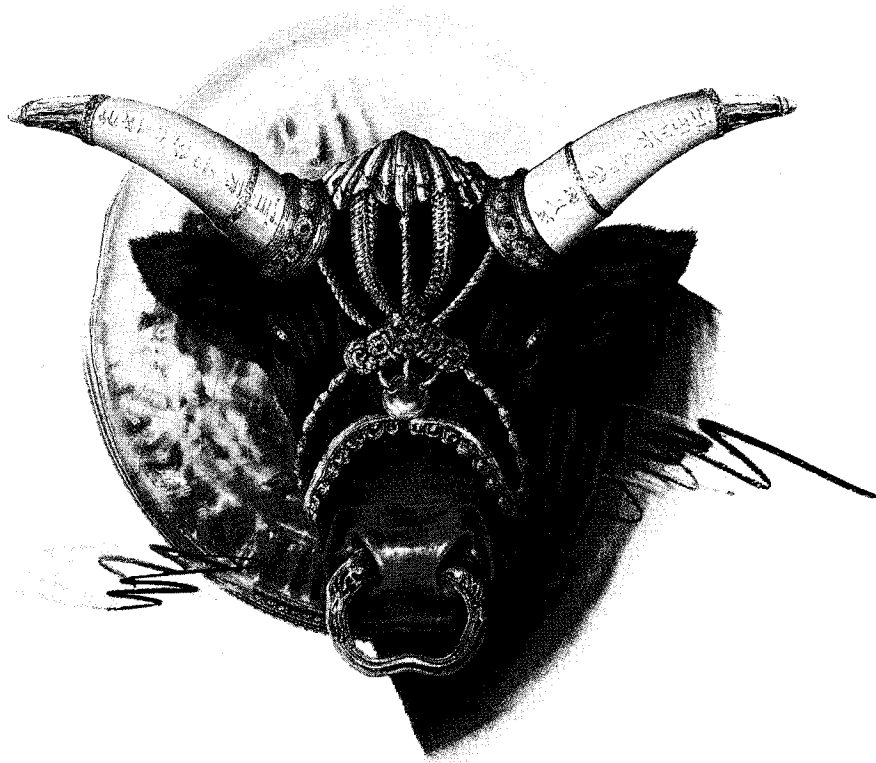
The intrinsic nature of gold has always inspired craftsmen to create items of beauty, not only for adornment but also as symbols of wealth and power. So, when gold coinage was introduced some 2 500 years ago, it was natural to relate its worth to something as prized, but of known value: namely, a healthy and mature ox.

Thus established, gold and gold coinage progressively contributed to wealth creation by stimulating international trade and expediting the development of rural societies.

As the twentieth century progressed, gold's monetary role dimmed and, for a brief period, it also lost some of its investment allure.

But gold is once again regaining strength and its significance as a measure of value is as relevant today as it was to the ancients.

It is said that he who ignores the lessons of history is condemned to repeat them. Although we no longer relate gold's value to that of an ox, we remain bullish about gold, reinforcing as it does our commitment to enriching man through minerals.



GOLD FIELDS

Finance Research in South Africa

Over the past 30 years, a branch of applied microeconomics developed into what is today known as modern finance theory (Copeland and Weston, 1988, p. iii). This paper reviews the research output in the field of finance in South Africa.

According to Brigham and Gapenski (1988), finance was historically taught as a descriptive, institutional subject, rather than from the perspective of management. During the late fifties and early sixties, emphasis shifted from the liabilities side of the balance sheet towards asset management. Investment decisions within the firm were recognised as being the critical issue in corporate finance.

In the later sixties and seventies there was a renewal of interest in the liabilities side of the balance sheet, the focus being on the optimal way to finance the firm and on portfolio theory – the way in which individual investors make investment decisions. In the eighties the emphasis moved towards derivative instruments and derivative markets, inflation and agency theory.

It is therefore of interest to trace the development of research in these broad areas in South Africa to see if local studies followed the development of the field and to identify under-researched areas.

There is a developing body of literature which aims to codify contributions to research journals by such variables as the research centre from which the studies emanated, by the institution which granted the doctorate of the author and by the individuals who conducted the research. In the field of finance, in particular, a number of studies can be found (e.g. Heck and Cooley, 1988; Moore and Taylor, 1980). The development of this literature reflects the maturation of finance and the natural curiosity of those involved in the discipline. These studies provide yard-sticks by which to measure productivity in financial research.

No such study has appeared in South Africa. A review of the research output of South African finance academics would thus provide a measure which would be of value in evaluating and setting standards of scholarly output.

On the related question of publication rates by individuals, it is often observed that an author of many papers is more likely to publish again than an author who has published only once. Lotka (1926) proposed an inverse law of scientific productivity. He plotted, on a logarithmic scale, the number of authors of scientific papers against the number of publications, and established that the points were closely scattered about a straight line with slope of about -2 . He concluded that the number of authors publishing n papers is approximately $1/n^2$ of those publishing one paper. Lotka's Law is a specialised case of the bibliometric distribution derived by Bookstein (1977) which states that the number of authors publishing n papers is approximately $1/n^c$ of those publishing one paper.

Numerous authors have attempted to apply Lotka's Law to the literature of various disciplines. For example, Chung and Cox (1990) investigated the patterns of productivity in the finance literature in the USA and established that it conformed well to the inverse square law.

One of the more controversial issues in management education is the relationship between research productivity and

teaching effectiveness. In many universities, promotions are based on evidence of scholarly research. Arguments supportive of the need for lecturers to engage in research have been presented by Paul and Rubin (1991) and by Dyl (1991). Dyl concluded that "it is not the research *per se* that is important, but rather what it signals about intellectual curiosity and capacity of the faculty member and therefore about the probability that students will acquire education by emulating (or questioning) his/her thought process."

This paper presents the results of a study undertaken using a database of all locally published research in the field of finance. The research productivity of finance researchers is discussed. The data is tested against theoretical bibliometric distributions. Finally an analysis of the subject matter of all published papers in the finance area is carried out.

The Database

A number of South African journals were scanned in order to produce the list of published papers in finance. The search covered the period from the inception of publication of the journal until the end of 1992. Table 1 shows the year of first publication of each journal, the year during which the first finance paper was published by the journal and the number of finance papers published. Ideally it would have been valuable to include all published work in overseas journals by South African authors, but such information is not easily available.

Since the Second World War, there have been 311 papers published in the general area of finance. Figure 1 is a graph of all papers published by year for the last 30 years. Prior to 1962 only two papers appeared. There has been steady growth in the number of papers published per year. Between 1962 and 1966 an average of 0,4 papers per year were published. In the following five years this grew to 2,2 per year. During the last 20 years the five-year annual averages were 6,8, 13,2, 15,8 and 17,8 respectively.

TABLE 1
 The Number of Finance Papers Published by Journal

	# of Finance Articles	Year 1 st Finance Article Published	Year Journal Published
Investment Analyst Journal	135	1972	1972
SA Journal of Business Management	70	1970	1970
Accountancy SA (formerly the SA Chartered Accountant)	52	1968	1965
Journal for Studies in Economics and Econometrics	20	1982	1977
De Ratione	15	1987	1987
SA Journal of Economics	13	1949	1948
SA Journal of Economic & Management Sciences	2	1988	1988
Businessman's Law	2	1991	1971
SA Journal of Entrepreneurship & Small Business	1	1991	1989
Journal of the SA Institute of Mining and Metallurgy	1	1980	1884
TOTAL	311		

* To whom all correspondence should be addressed

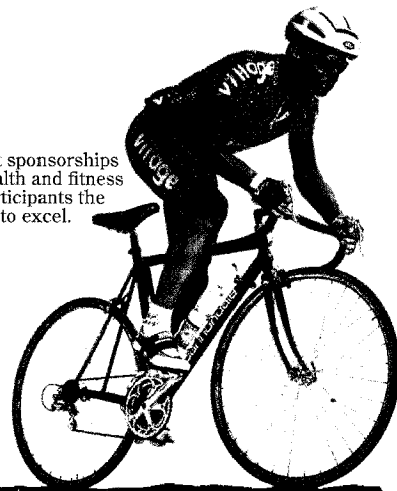


By establishing new companies, we supply jobs to thousands of people.



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Our sport sponsorships promote health and fitness and give participants the opportunity to excel.



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Sanlam has no shareholders, but belongs only to our policy-owners. The profits generated by our investments are yours. Yet the benefits your money creates while growing for you are there for each and everyone in our country. Today, and all the tomorrows lying ahead.

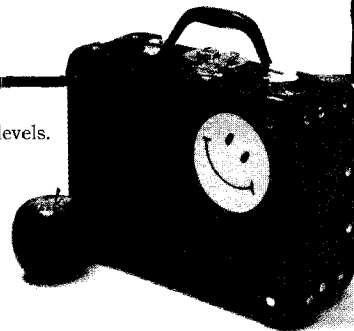
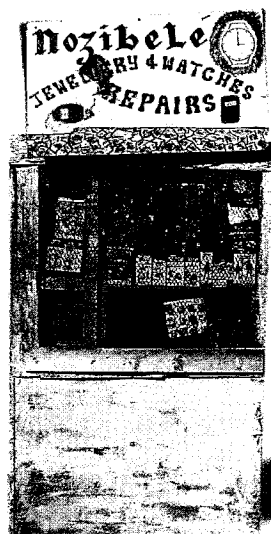


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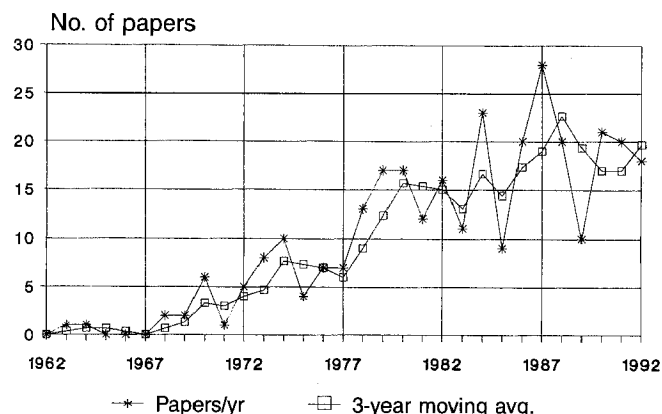
As we believe it is vital for our country's economic growth that small businesses flourish, we contribute to the development thereof.



Our 'Pretty Things for Little Things' competition gives senior citizens the opportunity to bring happiness to needy children.

Investing in local artists enriches our country's culture as a whole.

FIGURE 1
Number of Papers Published per Year



Author Productivity

Of the 311 papers, four papers had four authors, 31 represented the work of three authors, 86 had dual authorship and 190 had single authorship. Thus just over 60% of all published papers were the work of a single author.

The data was analysed to establish the productivity per author over the time period studied. In this analysis, authors were given credit for a paper irrespective of whether or not they were the sole authors. Figure 2 shows the distribution of number of papers published per author. As can be seen it is a highly skewed, long-tailed distribution. What cannot be established is the number of potential authors (e.g. academics teaching in the area) who have never published. This could exceed by far the number of authors who have published.

FIGURE 2
Number of Appearances

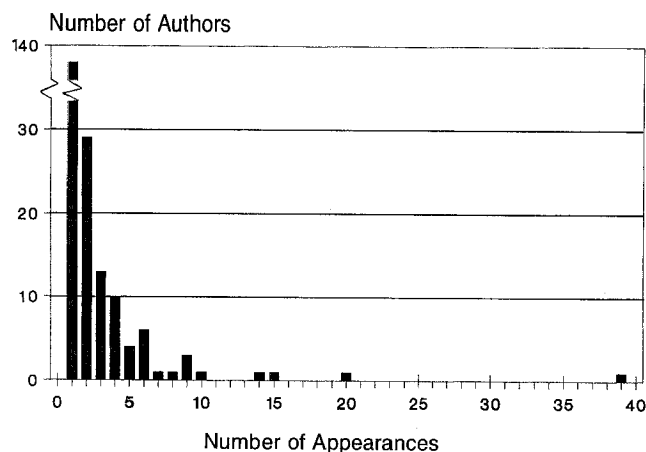


Table 2 compares the theoretical and actual frequency distributions of publications in the finance literature of the USA and SA. The chi-square goodness-of-fit test was performed to

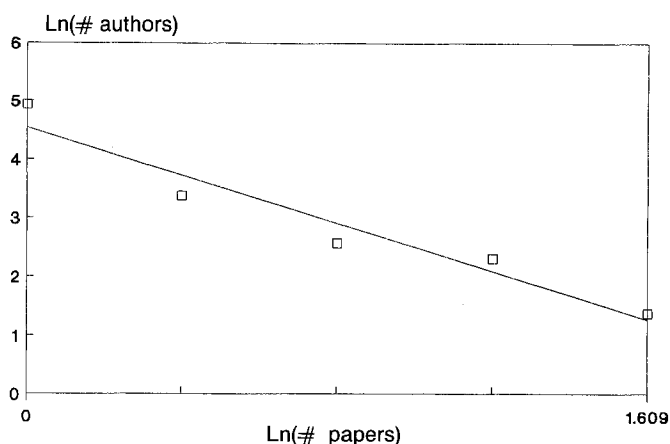
TABLE 2
Theoretical and Actual Frequency Distributions of Authorship

	No of papers	No of authors	Frequency Distribution in %					
			1	2	3	4	5	>5
SA	311	210	65,7	13,8	6,2	4,8	1,9	7,6
USA	10353	6270	62,2	15,3	7,1	4,0	2,9	8,5
Lotka			60,8	15,2	6,8	3,8	2,4	11,0

ascertain if Lotka's Law was applicable to the South African data. The calculated chi-square statistic was 4,12 whereas the critical value ($\alpha = 0,05$) was 11,1. The null hypothesis could not be rejected and therefore it appears that Lotka's Law does describe the frequency distribution of publications in the finance literature in South Africa.

Figure 3 shows the number of authors plotted against the frequency of publications on a logarithmic scale. In the US study (Chung and Cox, 1990), the slope of the regression line was calculated using only data for publication frequencies of five or less. A value of c of -2 with an R^2 very close to one was obtained. The South African data yielded a value of -2,08 with an R^2 of 0,98.

FIGURE 3
Papers vs # Authors (Non-Weighted)



In order to estimate publication rates of authors, a definition of "publication life" was needed. The starting year of the "life" was defined as the first year in which an article by an author was published. The finishing year was the last year in which an article by the author appeared. The working life of the author, perhaps a better measure, was not available.

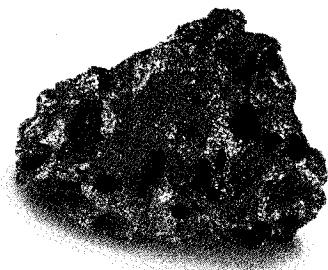
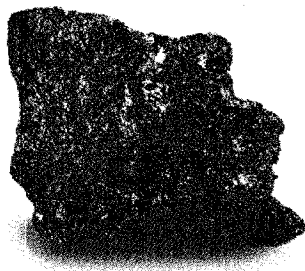
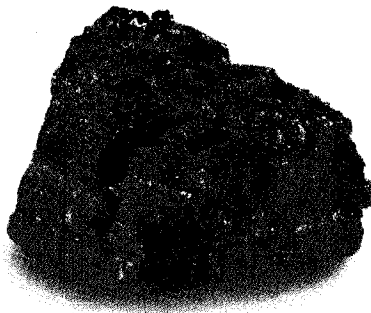
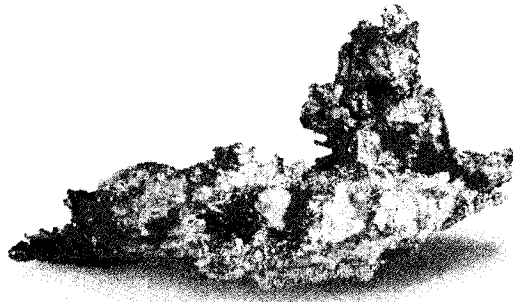
A total of 210 authors were wholly or partially responsible for all the articles written during the period studied. However two-thirds of these authors had only one publication to their credit. At the other end of the scale, almost 20% of all the output was the work of four individuals. Of the authors who had published more than three papers, half had a publication rate of at least one article per year.

The highest publication rate was 2,6 papers per year over a 15 year life. The academic responsible was indeed a prodigious writer. The second highest rate of 2,0 per year was achieved by eleven authors. However, all eleven had an active life of less than three years, and only one of them has published in the last three years. Apart from these authors with short publication lives, four others achieved a publication rate of between 1,5 and 1,8 papers per year and a further seven between 1,0 and 1,5.

The overall average publication rate was 1,0 per year. However, if those authors with one- and two-year publication lives were excluded, the average dropped to 0,77 per year.

Figure 4 shows the average publication rate as a function of "publication life". As the "life" increased, the publication rate dropped until a long term average of approximately 0,8 per year was reached. Authors who continued to publish for more than seven years appear to have a higher publication record. However the latter figures are biased upwards by an individual with a very high average. Excluding this person, the "long-life" publishers averaged only 0,65 per year.

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The new Gencor holds a world-class portfolio:

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Impala – *The world's second largest platinum producer.*

Trans-Natal – *South Africa's foremost exporter of steamcoal.*

Minerals Division – *A major player in the titanium minerals industry (via RBM), the principal shareholder in the new Alusaf aluminium smelter and a strategic investor in Keeley Granite.*

No other major corporation in South Africa is as single-mindedly focussed on the business of mining, metals and minerals.

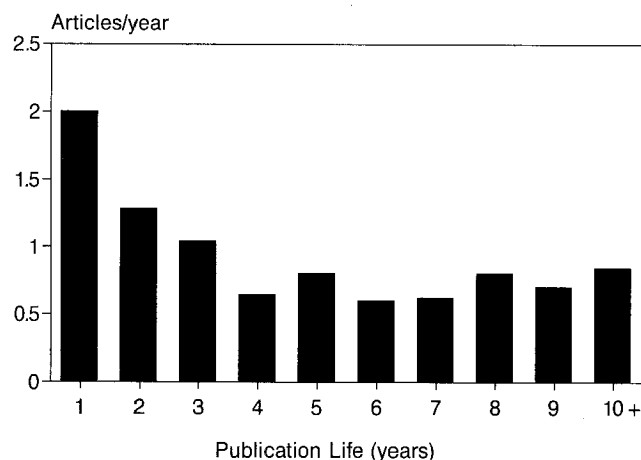
Few in the world, if any, can match the range and quality of our underlying resources – most of strategic interest to the major world economies.

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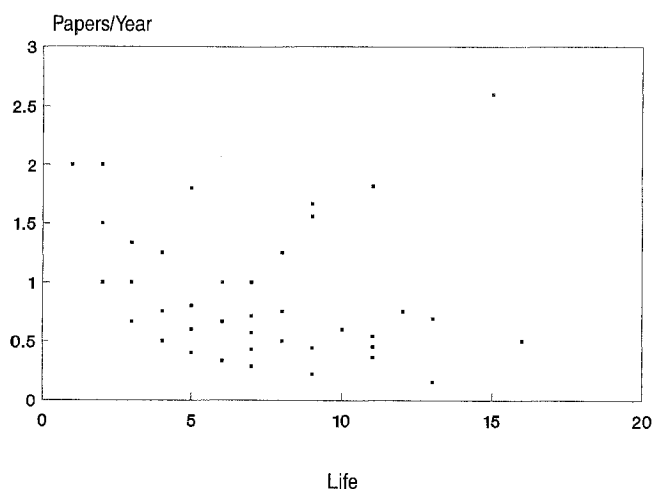
FIGURE 4
Avg/Year vs Publication Life



The initial high levels may be the result of authors completing Ph.D.'s and finding they are able to publish multiple papers based on their work, or else lecturers needing a number of publications in order to progress on the academic ladder.

A scattergram of average number of publications per year versus "publication life" for all authors with more than one publication to their credit (Figure 5) revealed the following:

FIGURE 5
Annual Average Output vs Life

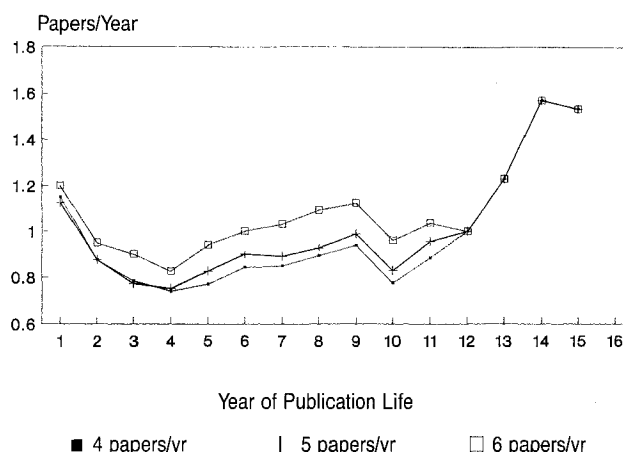


There was a negative correlation coefficient of -0,44 between these two variables, indicating that "longer-lived" academics have a lower average publication rate. Could this be the consequence of success in the academic world?

If the two most prolific authors (with 39 and 20 publications to their credit respectively) are omitted from the scattergram, the correlation improves somewhat to -0,65. The regression line $[y = -0,11x + 1,55]$ suggests that, on average, finance academics will produce 1,44 papers in their first year of publication, but that this will drop to 0,45 papers in the tenth year of publication of their "publication life".

The cumulative average number of publications year by year over the "life" of each author was calculated for all those who had, by 1992, produced more than four papers. The average of all such authors over time is shown in Figure 6, together with the two sets of averages obtained if only authors with more than five and six papers respectively were included.

FIGURE 6
Cumulative Average Number of Papers/Year



As can be seen, all three sets of averages followed a similar pattern, namely a drop in publication rate over the first four years, followed by an increase during the next five, then a drop in the tenth year and finally a steady increase. The drop is the result of the peculiarity in the dataset in that four of the eight authors who had published for at least ten years happened not to have published during their tenth year. The average for the years 12, 13, 14 and 15 is derived from four, three, two and two authors respectively. The rather dramatic rise in the graph is thus related to the more prolific authors, in particular the author with 39 papers to his credit, who showed a sharp increase in publication rate during the last five years of his active history.

Of the 72 authors who produced two or more papers, 51 have not produced a paper in the last three years, and can be classified as being currently non-active. The distribution of "publication lives" of the 21 active authors is shown in Table 3.

TABLE 3
"Publication Lives" of Active Authors

"Publication Life"	No. of Authors
12 years	1
11 years	3
9 years	3
8 years	1
7 years	1
6 years	4
5 years	2
4 years	1
3 years	3
2 years	1
1 year	1
Total no. of Authors	21

There is a fairly even spread between the more experienced and the novice authors. Emigration has resulted in the loss of four of the more prolific South African finance researchers and untimely death the loss of another. A number of former

contributors have moved from academia into the commercial world, and the cessation of publication by others could be related to their promotion to the more senior ranks in university administration.

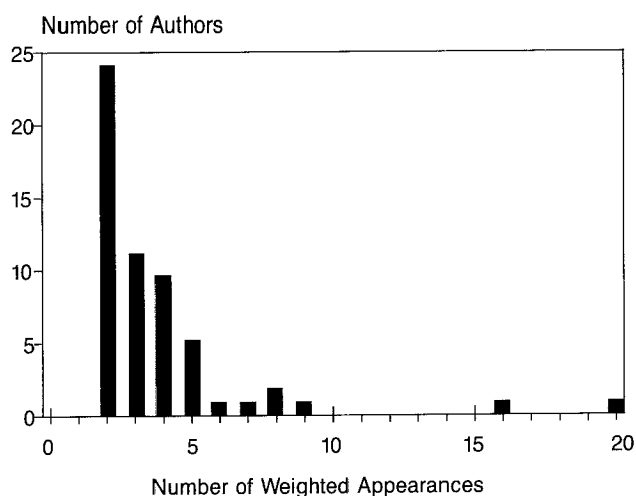
It is nevertheless disconcerting to note that there are at present only 21 people credited with more than a single publication who have published in the last three years. Of these, only nine can be considered to be experienced publishers, having more than four papers each.

The above analysis was based on giving each author full credit for a paper, irrespective of the number of authors responsible. It could, however, be argued that a scholar with only individually authored papers has a better publication record than one whose entire output has been co-authored. The publication records were therefore adjusted to take multi-authorships into account.

The adjustment process allocated fractional credit for multi-authorships. For example, an author earned a credit of one-half for an article having two authors, one-third for a three-author article, etc. Figure 7 shows the distribution of adjusted appearances in the finance literature. It is also long-tailed.

FIGURE 7

Number of Weighted Appearances Above 1



These adjustments caused a change in rankings to the extent that authors differ in the propensity to co-author their work. For example authors ranked six and sixteen for unadjusted appearances, fell to positions nineteen and twenty-nine respectively. Also of interest is the fact that the most prolific author (39 papers) had an adjusted output of 15,2 papers. However, the Pearson Correlation Coefficient between the unadjusted and adjusted outputs was 0,90 indicating that overall the adjustment process did not lead to highly significant changes in rank.

The Contents of Finance Papers

For the purpose of this analysis, the broad area of finance was divided into two main sections, Corporate Finance and Investments. These were in turn broken down into a number of categories. All papers in the database were placed in one of these categories, as shown in Table 4.

Under the heading *Corporate Finance* the section with the highest number of papers is *Capital Budgeting*, with 18% (or 21 entries). Fifteen of these were published in the 1970's. Given

the emphasis on asset management in the period around 1960, one would have expected this subject to have been studied earlier on. The three papers making up the work published in the last ten years do deal with topical issues: the use of Adjusted versus Net Present Value, risk in capital budgeting and the techniques used by local management in making the capital budgeting decision.

TABLE 4

COR	Corporate Finance
10	Annual Financial Statements
21	Capital Budgeting
5	Capital Structure
3	Corporate Collapse/Bankruptcy
10	Cost of Capital
15	Dividend Policy
10	Financial Analysis and Planning
6	Inflation
2	Leasing
14	Mergers and Acquisitions
5	Miscellaneous
13	Strategic Financial Management
4	Working Capital Management

INV	Investments
3	Agency Theory
8	Asset Pricing Models
8	Bonds/Long Term Debt
35	Efficient Market Hypothesis
4	Equity/Rights Issues
7	Foreign Exchange
11	Futures
4	Insider Trading
23	Investment Basics
5	Miscellaneous
3	Options
33	Performance
18	Portfolio Management
2	Property
15	Risk Analysis
14	Valuation

By contrast, however, the subject of *Working Capital Management*, which is an equally important part of asset management, is represented by only four papers in South Africa, all published prior to 1985. Of these, two relate to factoring, one highlights the importance of debtors and creditors management for small firms and the last deals with the forecasting of cash flows.

CORPORATE FINANCE					
JOURNAL	YEAR	VOL	NO	PAGE	TITLE
ANNUAL FINANCIAL STATEMENTS					
IAJ	1979		13	9-15	STANDARDS OF ACCOUNTING PRACTICE & THE OBJECTIVES OF FINANCIAL REPORTING
IAJ	1980		16	29-37	A FRAMEWORK FOR REPORTING
IAJ	1982		20	25-33	SOME THOUGHTS ON THE AVAILABILITY & USE OF ACCOUNTING DATA
SACA	1984		MAR	301-302	LIFO MISCONCEPTIONS: A NOTE
SAJBM	1984	15	2	71-79	FINANCIAL IMPLICATIONS OF A CHANGE TO LIFO INVENTORY VALUATION
IAJ	1986		27	11-17	INVESTOR INFORMATION REQUIREMENTS & DISCLOSURE IN ANNUAL REPORTS
DER	1987	1	2	2-12	PERCEPTIONS REGARDING THE SOURCES OF FINANCIAL INFORMATION FOR SA INSTITUTIONAL INVESTORS
DER	1988	2	1	19-32	BASIC FINANCIAL STATEMENTS: OBJECTIVES, CATEGORIES, PRINCIPLES & PRESENTATION
IAJ	1988		31	13-19	FINANCIAL FLEXIBILITY & THE ASSESSMENT OF FUTURE CASH FLOWS
DER	1992	6	1	43-58	VALUE ADDED REPORTING IN SA
CAPITAL BUDGETING					
SACA	1969	5	3	77-81	INVESTMENT ANALYSIS BY THE DCF METHOD
SACA	1970	6	5	169-171	EXPLICIT RISK ANALYSIS FOR PROJECTS (I)
SACA	1970	6	6	219-222	EXPLICIT RISK ANALYSIS FOR PROJECTS (II)
SACA	1970	6	7	265-268	EXPLICIT RISK ANALYSIS FOR PROJECTS (III)
SAJBM	1970	1	2	32-38	EVALUERING VAN KAPITAALPROJEKTE
IAJ	1972		1	3-6	CAPITAL INVESTMENT & RISK ANALYSIS FOR A NEW MINING VENTURE
SACA	1973		MAY	147-150	IMPROVING CORPORATE CAPITAL INVESTMENT EVALUATION PROCEDURES
IAJ	1973		3	29-32	THE RE-INVESTMENT ASSUMPTION IN CAPITAL BUDGETING RE-EXAMINED
IAJ	1974		5	13-14	TRADE-IN VS SALVAGE VALUE: THEIR TREATMENT IN DCF
SACA	1974		MAY	156-160	DIE NETTO TEENWOORDIGE WAARDE METODE
SACA	1974		JUN	21-23	THE CAPITAL INVESTMENT DECISION
SAJBM	1975	6	3	3-9	DIE TOEPASSING VAN KAPITAALINVESTERINGSMETODES DEUR NIE-VERVAARDIGINGSONDERNEMINGS
IAJ	1976		8	27-31	THE PRACTICE OF CAPITAL INVESTMENT DECISION-MAKING IN SA
SACA	1979		JUL	281-288	DCF - MAGIC OR MYTH?
SACA	1979		DEC	494-498	DCF - IS IT MAGIC OR MYTH?
SACA	1980		NOV	470-471	OPTIMAL BORROWING FOR PROJECT FINANCING
SACA	1981		NOV	527-533	ON FORECASTING CASH FLOWS AND THEIR RISK
SACA	1982		FEB	69-72	CHOOSING BETWEEN MUTUALLY EXCLUSIVE INVESTMENTS
ACCSA	1985		FEB	124-128	APV OR NPV: A MATTER OF COMPLEXITY
IAJ	1986		27	31-37	CRITERIA FOR MAJOR INVESTMENT DECISIONS
SAJBM	1990	21	3	52-58	CAPITAL BUDGETING UNDER UNCERTAINTY: AN EMPIRICAL STUDY
CAPITAL STRUCTURE					
SAJE	1964	32	1	26-35	FINANCIAL LEVERAGE AND GEARING IN PERSPECTIVE
SAJE	1978	46	3	235-244	DEBT, DEBT CAPACITY AND FINANCIAL PERFORMANCE
SAJBM	1987	18	3	145-151	INFLATION, TAX SHIELDS & BORROWING: WHY IS THE BALANCE SHEET OF THE CORPORATE SECTOR BECOMING VULNERABLE
JSEE	1991	15	3	81-91	MODIGLIANI & MILLER CAPITAL STRUCTURE THEORY: SOME CLARIFYING COMMENTS
JSEE	1992	16	3	85-87	MODIGLIANI AND MILLER CAPITAL STRUCTURE THEORY - A CORRECTION
CORPORATE COLLAPSE/BANKRUPTCY					
ACCSA	1990		MAR	52-53	FAILURE PREDICTION - IS IT POSSIBLE?
DER	1991	5	2	3-15	AN INVESTIGATION INTO THE SIGNIFICANCE OF CERTAIN FIRM-SPECIFIC NON-FINANCIAL VARIABLES IN A FAILURE PREDICTION MODEL
JESB	1991		JUL	31-47	DISTRESS PREDICTION IN PRIVATELY OWNED SA INDUSTRIALS
COST OF CAPITAL					
IAJ	1973		2	16-22	DEFINING THE COST OF CAPITAL
IAJ	1974		5	17-26	THE COST OF CAPITAL RAISED BY WAY OF A RIGHTS ISSUE
IAJ	1975		6	5-13	THE OBJECTIVE OF THE FIRM & ITS COST OF CAPITAL
ACCSA	1984		JAN	227-228	DETERMINING THE COST OF CAPITAL IN PRIVATE COMPANIES

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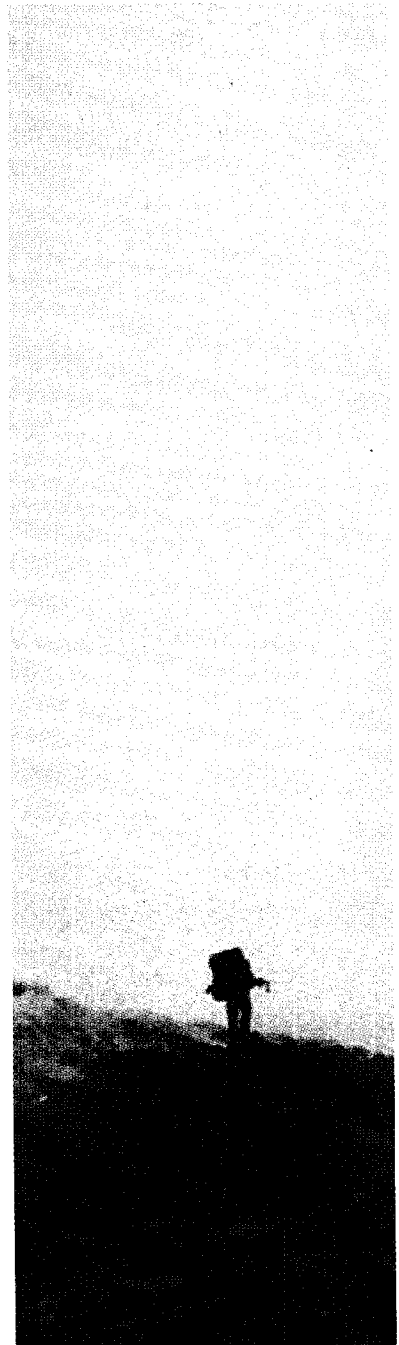
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COST OF CAPITAL (CONT)					
ACCSA	1987	4	2	42-44	THE COST OF EQUITY
ACCSA	1987		JUL	219-225	THE COST OF EQUITY REVISITED
DER	1991	5	1	27-40	AN ANALYSIS OF THE APPROACHES USED BY INDUSTRIAL COMPANIES LISTED ON THE JSE TO IDENTIFY THEIR COST OF CAPITAL
JSEE	1991	15	2	31-46	WEIGHTED AVERAGE COST OF CAPITAL: THEORY & SA EMPIRICAL EVIDENCE
SAJBM	1992	23	1	27-32	THE COST OF CAPITAL AND THE DIVIDEND DECISION: SA PRACTICE
SAJBM	1992	23	2	46-54	RISK, REQUIRED RATE OF RETURN & ASPECTS OF SA MANAGEMENT PRACTICE
DIVIDEND POLICY					
SAJE	1949	17	3	349-357	DIVIDENDS ON INDUSTRIAL SHARES 1947-1948: A NOTE
SAJE	1963	31	1	38-59	PRICE BEHAVIOUR OF ORDINARY SHARES ON EX-DIVIDEND DATES ON THE JSE: JULY 1959 TO JUNE 1961
SACA	1973		MAR	95-97	DIVIDEND POLICY: A NORMATIVE APPROACH (I)
SACA	1973		APR	131-134	DIVIDEND POLICY: A NORMATIVE APPROACH (II)
IAJ	1978		12	8-17	FACTORS AFFECTING DIVIDEND POLICY
IAJ	1983		21	35-41	DIVIDEND POLICY AND PRACTICE IN SOUTH AFRICA
SAJBM	1986	17	3	119-124	HISTORIC INCOME VERSUS INFLATION-ADJUSTED INCOME IN THE DIVIDEND DECISION
IAJ	1987		29	33-47	DIVIDEND POLICY, SHARE PRICE AND RETURN: A STUDY ON THE JSE
SAJBM	1987	18	2	79-86	AN EVALUATION OF DIVIDEND SIGNALLING ON THE JOHANNESBURG STOCK EXCHANGE
SAJBM	1987	18	4	187-197	THE INFORMATION CONTENT OF DIVIDENDS ON THE JHB STOCK EXCHANGE: AN EMPIRICAL ANALYSIS
SAJE	1987	55	2	101-113	THE EFFECT OF DIVIDEND POLICY ON CHANGES IN SHAREHOLDER'S WEALTH
JSEE	1988	12	2	15-23	DIVIDEND POLICY IN PERIODS OF CONTINUING INFLATION: AN EMPIRICAL STUDY OF LISTED INDUSTRIAL COMPANIES 1982-1986
SAJBM	1991	22	3	33-40	REACTION ON THE JSE TO MAJOR SHIFTS IN DIVIDEND POLICY
SAJBM	1991	22	4	75-82	SIGNIFICANT CHANGES IN DIVIDEND POLICY & INSIDER TRADING ON THE JSE
IAJ	1992		36	32-34	EQUIVALENT DIVIDENDS: AN EXTENSION
FINANCIAL ANALYSIS AND PLANNING					
SAJBM	1970	1	4	17-21	ANALYSIS & INTERPRETATION OF FINANCIAL STATEMENTS (I)
SAJBM	1970	1	5	17-22	ANALYSIS & INTERPRETATION OF FINANCIAL STATEMENTS (II)
IAJ	1975		6	29-36	EXPANDED RATIO ANALYSIS
IAJ	1976		7	29-34	SOME FALLACIES IN FINANCIAL ANALYSIS
SACA	1976		DEC	421-424	RATIO ANALYSIS WITH RESPECT TO FINANCIAL PROFILES
IAJ	1979		13	29-39	SOME RESULTS OF AN EMPIRICAL STUDY OF RATIO ANALYSIS IN SA
SACA	1980		DEC	497-500	ANALYSIS & INTERPRETATION AFTER FACTORING
SAJBM	1980	11	1	37-41	FINANSIËLE BELEID VAN 'N HANDELSONDERNEMING TYDENS PRYSSTYGING
ACCSA	1981		NOV	535-536	EFFECTS OF FACTORING UPON ACCOUNTING RATIOS
IAJ	1981		17	44-45	RETURN ON INVESTMENT - AN INTEGRATED MEASURE OF PROFITABILITY & PERFORMANCE
INFLATION					
IAJ	1978		11	14-17	SOME ASPECTS OF AN ASSET REPLACEMENT/PROTECTION MODEL UNDER CONDITIONS OF INFLATION
IAJ	1978		12	24-27	INVESTMENT DECISIONS IN AN INFLATIONARY ECONOMY
ACCSA	1981		MAR	137-138	INFLATION: GEARING AND RETURN RATIO
IAJ	1981		18	9-17	BUSINESS INVESTMENT DECISIONS UNDER INFLATION: SOME SA EVIDENCE
SAJBM	1986	17	1	1-6	THE INCREMENTAL INFORMATION CONTENT OF AC 201 INFLATION-ADJUSTED DATA
DER	1988	2	2	3-7	REAL PROFITS FOR 1986 OF JSE INDUSTRIALS
LEASING					
SACA	1979		MAR	85-86	DIE KAPITALISASIE VAN 'N FINANSIËLE HUUR
IAJ	1982		19	31-40	A GRAPHICAL SOLUTION TO THE LEASE EVALUATION PROBLEM



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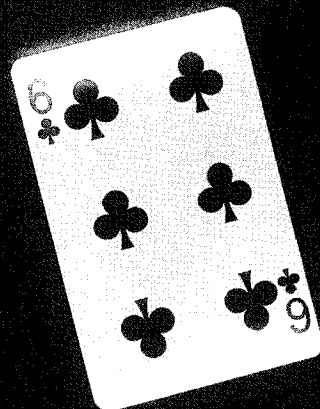
MERGERS AND AQUISITIONS					
SACA	1980		SEP	367-370	FINANSIERING VAN OORNAMES
SACA	1980		OCT	418-419	OORNAMES AS 'N MIDDEL TOT GROEI
IAJ	1982		20	21-23	THE TAKE-OVER OBJECTIVES OF SA ACQUIRING COMPANIES
IAJ	1983		21	43-45	THE VALUATION OF TAKE-OVERS BY COMPANIES LISTED ON THE JSE
SAJBM	1984	15	4	53-55	HOSTILE TAKEOVERS: REVIEW OF DEFENSIVE TECHNIQUES CURRENTLY USED BY TARGET COMPANIES
SAJBM	1984	15	4	229-231	THE LONG TERM EFFECTS OF TAKEOVERS ON THE SA ECONOMY
SAJBM	1987	18	1	10-20	CORPORATE GROWTH THROUGH MERGERS AND ACQUISITIONS: VIABLE STRATEGY OR ROAD TO RUIN?
SAJBM	1987	18	4	198-208	TAKE-OVER ANNOUNCEMENTS & INSIDER TRADING ACTIVITY ON THE JSE
SAJBM	1988	19	1	1-10	MERGER ANNOUNCEMENTS & SHARE PRICE RETURN – THE ROLE OF THE RELATIONSHIP BETWEEN ACQUIRING & TARGET FIRMS
SAJBM	1988	19	4	147-154	THE EFFECT OF MERGER ANNOUNCEMENTS ON SHARE PRICES OF THE ACQUIRED & ACQUIRING COMPANIES
SAJBM	1988	19	4	155-160	THE PREMIUM ON ACQUISITION IN SA MERGERS
SAJBM	1988	19	4	141-146	EXPLAINING SHIFTS IN SYSTEMATIC RISK AFTER MERGER
SAJBM	1989	20	2	70-77	EFFECT OF SHARE EXCHANGE RATIOS ON WEALTH OF MERGING FIRMS
SAJBM	1991	22	4	83-86	ON ESTIMATING THE RISK THAT SHAREHOLDERS BEAR DURING HOSTILE MERGER ACTIVITY
MISCELLANEOUS					
ACCSA	1983		AUG	221-225	THE VALUE ADDED STATEMENT
ACCSA	1983		SEP	21-25	REPORTING VALUE ADDED
SACA	1984		AUG	493-495	ACADEMIC ACCOUNTANTS – DO THEY ESCHEW MANAGERIAL FINANCE?
SAJBM	1987	18	4	243-249	TOEGEVOEGDE WAARDE IN JAARVERSLAE VAN SA MAATSKAPPE: 'N KORT OORSIG VAN DIE PRAKTYK
ACCSA	1988		NOV	336-340	EMPLOYEE REPORTING – A NEW DIMENSION IN ACCOUNTING
STRATEGIC FINANCIAL MANAGEMENT					
SAJE	1969	37	1	32-41	PROFIT MAXIMISATION – CAN IT BE JUSTIFIED?
SAJBM	1973	4	1	27-32	DIE MODERNE BENADERING TOT FINANSIËLE BESTUUR
IAJ	1979		13	23-26	THE INFLUENCE OF FINANCIAL POLICY ON THE GROWTH, PROFITABILITY & SIZE OF FIRMS
SACA	1980		JUN	244-246	ROLE OF THE FINANCIAL MANAGER IN THE EIGHTIES
IAJ	1982		20	15-19	OWNERSHIP & CONTROL OF LARGE COMPANIES IN SA
SACA	1982		OCT	425-427	IMPACT OF A DECLINING ECONOMY ON CORPORATE FINANCIAL POLICY
SAJBM	1982	13	2	76-87	AN EMPIRICAL INVESTIGATION OF THE GOALS OF LISTED FIRMS ON THE JSE
SAJBM	1982	13	3	118-120	THE RELATIONSHIP BETWEEN CORPORATE TURNOVER & DEGREE OF DIVERSIFICATION IN SA LISTED INDUSTRIAL COMPANIES
IAJ	1984		25	42-48	THE IMPACT OF STRATEGIC PLANNING ON CORPORATE PERFORMANCE IN A TURBULENT ENVIRONMENT
SAJBM	1988	19	3	85-89	THE RELATIONSHIP BETWEEN RETURN ON INVESTMENT & THE MARKET SHARE OF CERTAIN LISTED COMPANIES 1975-1985
JSEE	1989	13	3	61-73	EMPIRICAL INVESTIGATIONS INTO PRIMARY & SECONDARY GOALS OF LISTED & UNLISTED FIRMS: PART 1
JSEE	1990	14	1	51-70	EMPIRICAL INVESTIGATIONS INTO THE GOALS OF LISTED & UNLISTED FIRMS WITH SPECIAL REFERENCE TO SOCIAL RESPONSIBILITY: PART 2
DER	1992	6	1	7-20	THE NATURE OF THE SA CORPORATE ECONOMY: A NEED TO REVIEW COMPANY OBJECTIVES?
WORKING CAPITAL MANAGEMENT					
SACA	1971	7	1	13-16	FACTORING FOR THE MODERN BUSINESS
SACA	1977		JUN	197-201	THE IMPORTANCE OF THE EFFECTIVE MANAGEMENT OF DEBTORS & CREDITORS FOR SMALL FIRMS
SACA	1980		MAR	133-135	FACTORING COSTS
SAJBM	1984	15	3	135-139	THE USE OF REGRESSION ANALYSIS TO FORECAST CASH FLOWS

INVESTMENTS					
JOURNAL	YEAR	VOL	NO	PAGE	TITLE
AGENCY THEORY					
DER	1988	2	2	22-28	THE IMPACT OF CORPORATE CONTROL ON THE FINANCIAL VARIABLES OF JSE COMPANIES
DER	1990	4	1	7-14	EVALUATION OF CORPORATE OWNERSHIP STRUCTURES ON EMPLOYEE, MANAGEMENT & SHAREHOLDER COMPENSATION FOR JSE COMPANIES
DER	1990	4	1	15-20	CORPORATE CONTROL, ECONOMIC CONDITIONS & FINANCIAL PERFORMANCE
ASSET PRICING MODELS					
IAJ	1981		17	40-43	THE MARKET MODEL AND THE JSE
IAJ	1982		19	41-45	THE PUZZLE OF THE TWO MARKETS
SAJBM	1986	17	1	38-42	EMPIRICAL TESTING OF THE APT USING JSE DATA
DER	1987	1	2	28-40	RECENT DEVELOPMENTS IN THE PRICING OF FINANCIAL ASSETS
SAJBM	1987	18	1	46-50	THE COVARIANCE BIPLLOT AND STOCK MARKET DATA: AN ALTERNATIVE RELATIVE STRENGTH CHART
SAJBM	1988	19	1	11-21	ASSET PRICING IN SMALL MARKETS - THE SOUTH AFRICAN CASE
DER	1989	3	1	2-7	REVIEW OF CAPITAL MARKET THEORY - A SA PERSPECTIVE
SAJBM	1990	21	1	17-26	A MACROECONOMIC IDENTIFICATION OF PRICING FACTORS ON THE JSE
BONDS/LONG TERM DEBT					
IAJ	1978		11	33-35	REDEMPTION YIELDS & VALUATION OF SA GILTS
IAJ	1979		14	37-43	THE VALUATION OF FIXED INTEREST SECURITIES
IAJ	1981		18	18-40	ANALYSING THE YIELD CURVE: A NEW APPROACH
IAJ	1983		22	39-44	THE 'HIDDEN' COSTS & BENEFITS ASSOCIATED WITH THE DIFFERENT LOAN REPAYMENT FREQUENCIES
IAJ	1984		24	35-41	BOND IMMUNISATION IN SA
IAJ	1987		29	17-21	THE TRUE COST OF LOANS WITH RESTS BETWEEN ADJUSTMENTS OF PRINCIPAL
IAJ	1991		34	37-48	IMMUNISATION IN SA
IAJ	1992		35	41-48	A SOUTH AFRICAN CORPORATE BOND MARKET?
EFFICIENT MARKET HYPOTHESES					
SAJE	1974	41	1	43-55	BEHAVIOUR OF SOME SHARE INDICES: A STATISTICAL ANALYSIS
SAJE	1975	43	3	382-388	A NOTE ON THE RANDOM WALK MODEL AND SA SHARE PRICES
IAJ	1977		9	21-27	THE JOHANNESBURG STOCK EXCHANGE AS AN EFFICIENT MARKET
IAJ	1977		10	15-20	THE LIMITED EFFICIENCY OF THE JOHANNESBURG STOCK EXCHANGE
IAJ	1978		11	21-31	SOME FURTHER COMMENTS ON THE JOHANNESBURG STOCK EXCHANGE AS AN EFFICIENT MARKET
IAJ	1978		12	29-30	THIN TRADING, MARKET EFFICIENCY TESTS AND THE JOHANNESBURG STOCK EXCHANGE: A RE-JOINDER
SACA	1978		MAR	91-93	THE IMPLICATIONS OF LIFO FOR SHARE PRICES
IAJ	1979		13	17-21	THE RELATIONSHIP BETWEEN PORTFOLIO THEORY AND THE EFFICIENT MARKET HYPOTHESIS
IAJ	1979		14	15-22	RESERVATIONS CONCERNING THE EFFICIENT MARKET HYPOTHESIS
IAJ	1979		15	19-23	THE RANDOM WALK MODEL & THE BEHAVIOUR OF GOLD PRICES: A NOTE
IAJ	1979		15	25-33	AN ANALYSIS OF THE BEHAVIOUR OF MARKET PRICES DURING RIGHTS ISSUES
SAJBM	1981	12	3	53-59	THE JSE AS AN EFFICIENT MARKET
IAJ	1983		21	21-33	THE EFFICIENT MARKET HYPOTHESIS & A CHANGE TO LIFO: AN EMPIRICAL STUDY ON THE JSE
IAJ	1984		24	11-15	THE ECONOMICS OF INFORMATION
IAJ	1985		26	45-47	THE EFFECT OF INVENTORY VALUATION METHODS ON SHARE PRICES: SOME NEW EVIDENCE FOR THE JSE
JSEE	1985		22	25-46	EARNINGS FORECASTING ON THE JSE: AN EMPIRICAL STUDY OF SOME STATISTICAL MODELS.
SAJBM	1985	16	1	7-11	THE MONDAY EFFECT ON THE JSE
SAJBM	1985	16	4	157-160	AN EMPIRICAL EVALUATION OF THE EFFECTIVENESS OF SOUTH AFRICAN INVESTMENT ANALYSTS
IAJ	1986		28	27-33	FORECASTING SHARE PRICES ON THE JHB STOCK EXCHANGE USING MULTIVARIATE ANALYSIS
IAJ	1986		28	35-39	PREMIUM TO BOOK VALUE MAY BE A CONTRARY INDICATOR
SAJBM	1986	17	2	87-92	WHO BENEFITS FROM SHARE SPLITS?
SAJBM	1986	17	3	130-138	THE INCREMENTAL INFORMATION CONTENT OF HALF-YEARLY EARNINGS DATA RELEASES BY SA COMPANIES

EFFICIENT MARKET HYPOTHESES (CONT)					
IAJ	1987		30	19-31	MARKET TIMING AND THE JSE
SAJBM	1987	18	1	35-40	THE HORSE RACING INDUSTRY AND THE EFFICIENT MARKETS HYPOTHESIS
SAJBM	1987	18	2	61-64	THE RELATIVE INFORMATION CONTENT OF AUDITED AND UNAUDITED FINANCIAL DATA RELEASES
SAJBM	1988	1	NOV	35-53	DIE PRYSVASSTELLING VAN AANDELE (PRICING OF NEW FLOTATION OF SHARES)
SAJBM	1989	20	3	119-128	PRICE ADJUSTMENTS ON THE JSE FOR UNEXPECTED NEWS EVENTS
SAJBM	1989	20	4	195-203	NEW LISTINGS SHARE PRICE BEHAVIOUR ON THE JSE
JSEE	1990	14	2	77-103	STOCK MARKET REACTION TO THE ABOLITION OF LIFO
SAJBM	1990	21	1	7-9	A NOTE ON THE SEASONALITY OF STOCK RETURNS ON THE JSE
SAJBM	1990	21	3	86-95	AN EMPIRICAL EVALUATION OF THE EFFECTIVENESS OF SHARE RECOMMENDATIONS BY STOCK-BROKERS AND INVESTMENT ADVISORY SERVICES IN SA
SAJBM	1990	21	4	129-134	THE PERFORMANCE OF SUNDAY SHARE RECOMMENDATIONS PUBLISHED IN THE NEWS MEDIA & THE EFFECTS ON THE EFFICIENT MARKETS HYPOTHESIS
IAJ	1992		35	7-14	MARKET TIMING REVISITED
IAJ	1992		36	35-50	STOCK MARKET OVER-REACTION: THE SA EVIDENCE
JSEE	1992	16	3	1-15	THE MARKET REACTION TO STOCK SPLITS AND CAPITALISATION ISSUES: RECENT JSE EXPERIENCE
EQUITY/RIGHTS ISSUES					
IAJ	1977		9	33-40	AN ANALYSIS OF THE POSSIBLE EFFECTS OF A RIGHTS ISSUE ON THE ISSUING COMPANY'S SHARE PRICE
ACCSA	1984		JAN	199-200	REDEEMABLE PREFS - DEBT OR EQUITY?
SAJBM	1988	19	3	90-95	TIMING OF RIGHTS ISSUES ON JSE
JSEE	1990	14	3	1-14	VOTING RIGHTS & THEIR MARKET VALUE
FOREIGN EXCHANGE					
IAJ	1980		16	9-13	THE SA FORWARD EXCHANGE MARKET
IAJ	1980		16	15-21	INTERVENTION POLICIES OF THE RESERVE BANK IN THE FOREIGN EXCHANGE MARKET
IAJ	1983		21	13-19	A THEORY OF THE FINANCIAL RAND DISCOUNT
IAJ	1984		25	11-16	HEDGING & REGRET MINIMISATION: A POLICY FOR THE MANAGEMENT OF FOREIGN CURRENCY EXPOSURE
IAJ	1987		30	33-39	ANATOMY OF THE FINANCIAL RAND
SAJBM	1987	18	4	209-214	COVERED INTEREST ARBITRAGE OPPORTUNITIES IN THE SA FOREIGN EXCHANGE MARKET
IAJ	1992		36	9-21	SA FOREIGN EXCHANGE RISK UNDER MANAGED FLOATING: DISTRIBUTIONAL ASPECTS
FUTURES					
ACCSA	1984		FEB	267-277	THE USE OF FINANCIAL FUTURES IN SA
IAJ	1984		23	31-39	THE ROLE OF HEDGING IN THE MARKETING OF GOLD
ACCSA	1988		SEP	271-275	FUTURES & OPTIONS: SUMMARY OF STALS REPORT
JSEE	1988	12	3	1-9	THE PRICING OF THE SATS BULL & BEAR STOCKS
IAJ	1990		32	25-31	THE PRICE OF SA STOCK INDEX FUTURES CONTRACTS
JSEE	1990	14	3	37-52	THE PERFORMANCE OF SA SHARE INDEX FUTURES 1987-1989
SAJBM	1990	21	1	1-6	GOLD FUTURES PRICES: AN INVESTIGATION INTO THE THEORIES OF STORAGE AND FORECAST POWER AND PREMIUM
SAJEM	1990	3	APR	54-62	THE RELATIONSHIP BETWEEN FUTURES PRICES AND SPOT PRICES FOR ESKOM'S LONG BOND (E168) FUTURES CONTRACT
IAJ	1991		34	31-35	ARE FUND MANAGERS USING FUTURES AND OPTIONS?
IAJ	1992		35	21-28	THE IMPACT OF THE EFFICIENCY OF THE SA SHARE INDEX FUTURES MARKET ON HEDGING EFFECTIVENESS & OPTIMAL EXPOSURE MANAGEMENT OVER THE PERIOD 1987-1989
IAJ	1992		35	29-40	AN EVALUATION OF THE MARKET RATING OF RETAINED EARNINGS OF COMPANIES LISTED ON THE JSE: AN EMPIRICAL ANALYSIS
INSIDER TRADING					
BL	1991	20		167-170	IN SUPPORT OF INSIDER TRADING
JSEE	1991	15	2	57-69	MARKET EFFICIENCY & REGULATION OF INSIDER TRADING IN SA
SAJBM	1991	22	4	87-93	THE AGENCY ORIGINS OF INSIDER TRADING
BL	1991	21	3	94-94	INSIDER TRADING



**TELL US HOW YOU'D PLAY THESE CARDS
AND WE'LL TELL YOU IF YOU'LL RETIRE WEALTHY.**



Here's how a professional blackjack player would play these hands.

Hand 1. Double the bet and draw another card.

Hand 2. Stand.

Hand 3. Stand. Some may be tempted to split the jacks but 20 is probably a winning hand.

Hand 4. Draw another card. Stand on any total of 12 upwards.

His overall reasoning: The dealer has a bad card. If he draws a 10 he makes 16. He is then obliged to keep drawing, and is likely to bust.

All of which makes an interesting point. Professionals are not in the game for amusement, but to accumulate money. They do so by not taking uncalculated risks.

A strategy shared by Liberty Life's investment managers.

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So let's look again at the cards. If you would play them with a professional low risk strategy, you are definitely a Liberty Life sort of person.

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INVESTMENT BASICS					
IAJ	1972		1	14-17	USE OF COMPUTERS IN INVESTMENT RESEARCH
IAJ	1978		11	18-19	ON CALCULATING AVERAGE RATES OF RETURN
IAJ	1978		12	38-40	EARNINGS PER SHARE & P/E RATIOS
IAJ	1979		14	52-54	ADJUSTING EARNINGS PER SHARE & DIVIDEND DATA FOR CAPITAL CHANGES
IAJ	1982		19	47-48	INVESTMENT BASICS: THE EFFECT OF TAXATION ON EARNINGS PER SHARE
IAJ	1982		20	47-48	INVESTMENT BASICS: AN INTRODUCTION TO GOLD MINING TAX – PART 1
IAJ	1983		21	27-36	A MICROCOMPUTER DATABASE FOR A NOTIONAL INDEX FUND
IAJ	1983		22	45-47	INVESTMENT BASICS: AN INTRODUCTION TO GOLD MINING TAXATION – PART 2
IAJ	1983		22	47-48	INVESTMENT BASICS: AN INTRODUCTION TO GOLD MINING TAXATION – PART 3
SAJBM	1984	16	2	98-103	A FINANCIAL EVALUATION OF PRICE FORMULAE
IAJ	1984		23	50-51	INVESTMENT BASICS: POPULAR MYTHS: GILT SWITCHING
IAJ	1984		25	50-52	INVESTMENT BASICS XVI: THE ANALYSIS OF BANK SHARES
IAJ	1985		26	59-61	INVESTMENT BASICS XVII: WHAT IS THE RETURN ON YOUR INVESTMENT
IAJ	1986		27	49-52	INVESTMENT BASICS XVIII: RISK & RETURN – PART 1
IAJ	1986		28	51-53	INVESTMENT BASICS XIX: RISK & RETURN – PART 2
IAJ	1987		29	49-51	INVESTMENT BASICS XX: RISK & RETURN – PART 3
IAJ	1987		30	40-42	INVESTMENT BASICS XXI: OPTION TRADING IN THE GILT MARKET – PART 1
IAJ	1988		31	43-45	INVESTMENT BASICS XXII: OPTIONS TRADING IN THE GILT MARKET – PART 2
IAJ	1990		32	31-32	INVESTMENT BASICS XXIII: TECHNICAL ANALYSIS
IAJ	1991		34	49	TECHNICAL ANALYSIS 2: MOVING AVERAGES & MOMENTUM OSCILLATORS
IAJ	1992		35	15-20	MODELLING A SERIES OF UNEVEN DEPOSITS & A SERIES OF UNEVEN PERCENTAGE WITHDRAWALS
IAJ	1992		35	49-50	INVESTMENT BASICS XXV: VOLUME & THE BULL-BEAR CYCLE
IAJ	1992		36	51-52	INVESTMENT BASICS XXVI: TRADING SYSTEMS
MISCELLANEOUS					
IAJ	1973		3	12-23	ASPECTS OF THE SHORT-TERM MONEY MARKET IN SA
IAJ	1974		4	7-15	THE NEW COMPANIES ACT – AN INVESTMENT ANALYST'S VIEW
IAJ	1978		12	18-23	STRATEGIC CONSIDERATIONS FOR INVESTMENT DECISION-MAKING
IAJ	1988		31	21-31	THE INDIVIDUAL INVESTOR ON THE JSE
IAJ	1990		32	16-24	SHOULD MBA STUDENTS STUDY THE THEORY OF FINANCE?
OPTIONS					
IAJ	1980		16	23-27	OPTIONS TRADING
SAJE	1980	48	4	370-379	A STOCK OPTIONS EXCHANGE IN SA?
IAJ	1986		27	23-29	THE VALUATION OF CALL OPTIONS ON GILTS AND WARRANTS IN SA
PERFORMANCE					
SAJE	1968	36	4	280-303	THE BEHAVIOUR OF EQUITY PRICES IN SA DURING THE PERIOD 1946-1967
IAJ	1972		1	7-11	EQUITY PERFORMANCES IN THE SIXTIES & SEVENTIES
SAJE	1972	40	3	254-267	AN INVESTIGATION OF THE RETURN ON ORDINARY SHARES QUOTED ON THE JSE WITH REFERENCE TO HEDGING AGAINST INFLATION
IAJ	1973		3	24-27	AN ANALYSIS OF AN INTERNATIONAL SET OF SHARE INDICES
IAJ	1974		5	29-37	NOTES ON THE CHARACTERISTICS & PERFORMANCE OF SOME SA MUTUAL FUNDS
IAJ	1976		7	9-15	THE BEHAVIOUR OF INDUSTRIAL SHARE PRICES IN RELATION TO GNP & INTEREST RATES IN SA
IAJ	1976		8	13-24	AN INVESTIGATION INTO THE BEHAVIOUR OF EARNINGS & SHARE PRICES OF SA LISTED COMPANIES
SACA	1977		OCT	347-352	AN ADEQUATE RETURN ON INVESTMENT?
SACA	1978		JUN	209-210	MEASURING THE PROFITABILITY OF INVESTMENTS
SACA	1978		DEC	437-439	MEASURING THE PROFITABILITY OF INVESTMENTS
IAJ	1979		14	9-20	MEASURING THE INVESTMENT PERFORMANCE OF PENSION FUNDS IN SA
IAJ	1979		14	21-36	THE PRICING OF INDUSTRIAL SHARES ON THE JSE

PERFORMANCE (CONT)					
IAJ	1979		14	45-50	A PRINCIPAL COMPONENT INDEX SUBJECT TO CONSTRAINTS
IAJ	1980		15	34-38	EMPIRICAL COMPARISON OF DIFFERENT STOCK MARKET INDICES
SAIMM	1980		OCT	370-377	THRESHOLD RATES OF RETURN ON NEW MINING PROJECTS
SACA	1981		SEP	417-421	BILLIKE OPBRENGS OP BELEGGINGS IN AANDELE (REASONABLE RETURNS ON INVESTMENTS IN SHARES)
IAJ	1982		19	21-29	TRADING IN LOW PRICED SHARES: 1968-1979
IAJ	1982		20	35-45	THE PERFORMANCE OF SOUTH AFRICA MUTUAL FUNDS: 1974-1981
JSEE	1983		17	24-45	AN ANALYSIS OF THE CO-MOVEMENT OF SHARES LISTED ON THE JSE
IAJ	1985		26	31-43	THE RISK/RETURN CHARACTERISTICS OF THE POSTAGE STAMP MARKET
IAJ	1986		27	19-21	AN INVESTIGATION INTO THE RETURN DISTRIBUTIONS OF ORDINARY INDUSTRIAL SHARES ON THE JSE
SAJBM	1986	17	2	49-55	GOLD SHARES OR KRUGERRANDS - WHICH IS THE BETTER INVESTMENT?
SAJBM	1986	17	4	191-195	INVESTIGATION INTO THE SMALL FIRM EFFECT ON JSE
IAJ	1987		29	7-15	THE PERFORMANCE OF FAMILY CONTROLLED COMPANIES ON THE JSE: A FINANCIAL & INVESTMENT EVALUATION
DER	1988	2	1	11-18	THE ASSOCIATION BETWEEN STOCK MARKET RETURNS AND RATES OF INFLATION
SAJBM	1988	19	4	127-132	THE PERFORMANCE OF CONGLOMERATES ON THE JSE
SAJBM	1989	20	1	1-6	THE PERFORMANCE OF SA CONGLOMERATES
SAJBM	1989	20	2	78-81	MODEL SELECTION FOR MEASURING SECURITY PRICE PERFORMANCE
SAJBM	1989	20	2	82-87	POST-LISTING PERFORMANCE OF NEW LISTINGS ON JSE
SAJBM	1990	21	4	129-134	THE PERFORMANCE OF SECONDARY SHARE RECOMMENDATIONS ON JSE
JSEE	1991	15	1	59-78	KRUGERRANDS AS INVESTMENTS
SAJBM	1991	22	3	63-72	THE RELATIONSHIP BETWEEN EXCESS RETURNS, SIZE & E/P RATIOS ON THE JSE
JSEE	1992	16	3	17-34	SHARE RETURNS, INFLATIONARY EXPECTATIONS AND MONETARY POLICY: THE SA EXPERIENCE
PORTFOLIO MANAGEMENT					
IAJ	1974		5	5-11	PORTFOLIO SELECTION AND THE SOUTH AFRICAN EXPERIENCE
IAJ	1976		7	35-40	A COMPARISON OF TWO PORTFOLIO SELECTION MODELS
IAJ	1977		10	21-27	PORTFOLIO SELECTION: A NON-TECHNICAL OVERVIEW
IAJ	1981		17	9-22	THE CASE FOR EQUITIES
SAJBM	1982	13	4	169-175	UNIT TRUSTS & PORTFOLIO SELECTION ON THE JSE
IAJ	1984		23	11-29	'IS A PENSION FUND'S INVESTMENT YIELD INFLUENCED BY THE SIZE OF THE FUND'S ASSETS?'
IAJ	1984		24	17-21	A HYPOTHESIS: PORTFOLIO THEORY IS ELEGANT BUT USELESS
SAJBM	1985	16	2	88-91	INTERNATIONAL DIVERSIFICATION AND THE SOUTH AFRICAN INVESTOR
SAJBM	1986	17	3	139-142	INTERNATIONAL DIVERSIFICATION AFTER 1985 - THE ARGUMENT BECOMES STRONGER
SAJBM	1986	17	3	162-168	INTERNATIONAL SHARE PORTFOLIO DIVERSIFICATION: POSSIBLE BENEFITS FOR SA INVESTORS
IAJ	1987		29	23-31	THE ROLE PLAYED BY BULLION AND GOLD SHARES IN INTERNATIONAL DIVERSIFICATION
JSEE	1987	11	2	95-113	DIVERSIFICATION IN FOREIGN ASSETS - A COMMENT
SAJBM	1987	18	2	74-78	THE BENEFITS TO SA INVESTORS FROM INTERNATIONAL PORTFOLIO DIVERSIFICATION USING AN EX-ANTE INVESTMENT STRATEGY
SAJBM	1987	18	3	123-132	THE EFFECTS OF TRADE SANCTIONS & DISINVESTMENT BY FOREIGN COUNTRIES & ITS IMPACT ON THE SA ECONOMY
IAJ	1990		32	13-15	WELFARE EFFECTS OF A BOYCOTT OF SA INVESTMENTS
IAJ	1990		32	7-12	THE USE OF EX-POST INTER-COUNTRY CORRELATION COEFFICIENTS TO PREDICT GAINS FROM INTERNATIONAL PORTFOLIO DIVERSIFICATION FROM THE STANDPOINT OF A SA INVESTOR
IAJ	1991		34	21-29	THE MAINTENANCE OF LIVING STANDARDS HYPOTHESIS - THE KEY TO THE PRACTICAL SELECTION OF EFFICIENT PORTFOLIOS
IAJ	1992		36	22-31	ARE OUR PORTFOLIO MANAGERS READY TO INVEST OVERSEAS WHEN EXCHANGE CONTROL GOES?
PROPERTY					
SAJE	1980	48		64-86	MODERN INVESTMENT THEORY & REAL ESTATE ANALYSIS
IAJ	1991		34	7-19	A STANDARD METHOD OF PROPERTY PERFORMANCE MEASUREMENT

RISK ANALYSIS					
IAJ	1974		4	30-34	RISK ANALYSIS OF ORDINARY SHARES QUOTED ON THE JSE
SACA	1980		JUN	247-249	RISK ANALYSIS: A FRAMEWORK FOR STUDENTS
IAJ	1981		18	59-60	THE USE OF COMPREHENSIVE CASH FLOW ANALYSIS AS A BASIS FOR RISK MEASUREMENT & DETERMINATION OF DEBT CAPACITY
JSEE	1982		13	53-70	AN EVALUATION OF ALTERNATE METHODS OF ESTIMATING THE BETA COEFFICIENTS IN THE MARKET MODEL
IAJ	1984		24	23-33	LEVERAGE=RISK? EMPIRICAL FINDINGS FOR THE JSE
IAJ	1984		24	43-46	THE ROLE OF SHARE RISK MEASUREMENT IN THE MANAGEMENT OF INVESTMENT PORTFOLIOS
SAJBM	1984	15	4	205-211	THE MEASUREMENT OF RISK
ACCSA	1985		APR	109-111	INFLATION AND RISK MEASUREMENT
SACA	1986		AUG	300-301	RISK ASSESSMENT & THE ANNUAL REPORT
SAJBM	1986	17	3	153-161	THE ASSOCIATION BETWEEN MARKET-DETERMINED AND ACCOUNTING-DETERMINED RISK MEASURES IN THE SA CONTEXT
IAJ	1987		30	7-18	ESTIMATING THE MARKET RISK PREMIUM ON THE JSE USING EX-POST & EX-ANTE MODELS
JSEE	1987	11	1	65-89	THE EFFECT OF DIFFERENT INDICES ON BETA ESTIMATES FOR SECURITIES LISTED ON THE JSE
DER	1989	3	2	22-25	A NOTE ON ESTIMATION PROBLEMS CAUSED BY THIN TRADING ON THE JSE
SAJBM	1989	20	4	169-173	RISK ESTIMATION IN THE THINLY TRADED JSE ENVIRONMENT
DER	1990	4	1	2-6	INFLUENCE OF THE NYSE ON THE RISK OF JSE STOCKS
VALUATION					
SAJE	1949	17	2	175-183	RETURNS TO CAPITAL INVESTED IN THE GOLD MINING INDUSTRY IN SA
SACA	1968	4	8	217-223	THE VALUATION OF REAL ESTATE
SACA	1972	8	8	287-292	THE ROLE OF DEPRECIATION IN SHARE VALUATION
IAJ	1974		4	22-28	THE P/E RATIO AS AN AID TO THE VALUATION OF SHARES
SACA	1976		AUG	271-275	THE VALUATION OF A MINING COMPANY
IAJ	1977		9	29-32	SIMPLIFIED METHOD OF ASSESSING THE VALUE OF A SA GOLD MINE
IAJ	1979		13	41-43	NET ASSET VALUE
IAJ	1979		15	39-40	INTEREST RATES, YIELD CURVES & THE VALUATION OF ORDINARY SHARES
SACA	1980		AUG	332-333	INVLOED VAN INFLASIE OP DIE WAARDE VAN AANDELE (THE INFLUENCE OF INFLATION ON THE VALUE OF SHARES)
IAJ	1981		18	49-57	AN ILLUSTRATIVE METHOD FOR VALUING ANNUITIES
ACCSA	1982		MAY	195-197	CALCULATING THE VALUE OF PRIVATE COMPANY SHARES
IAJ	1984		25	26-41	A GOLD SHARE EVALUATION MODEL
IAJ	1986		28	7-19	A SURVEY OF INVESTMENT APPRAISAL METHODS USED BY FINANCIAL ANALYSTS IN SA
JSEE	1991	15	3	1-21	THE PRICING OF SA EQUITY LINKED FINANCIAL INSTRUMENTS

JOURNAL ABBREVIATIONS	
ACCSA	ACCOUNTANCY SOUTH AFRICA
BL	BUSINESSMAN'S LAW
DER	DE RATIONE
IAJ	INVESTMENT ANALYSTS JOURNAL
JESB	SOUTH AFRICAN JOURNAL OF ENTREPRENEURSHIP AND SMALL BUSINESS
JSEE	JOURNAL FOR STUDIES IN ECONOMICS AND ECONOMETRICS
SACA	SOUTH AFRICAN CHARTERED ACCOUNTANT
SAJBM	SA JOURNAL OF BUSINESS MANAGEMENT
SAJEMS	SOUTH AFRICAN JOURNAL OF ECONOMIC & MANAGEMENT SCIENCES

Additionally two-thirds of the asset management papers appeared in The South African Chartered Accountant. Perhaps the subject was perceived as being more in the realm of Accounting than Finance?

Issues of *Dividend Policy* form the next most numerous class of papers. Given the perceived relationship between dividends and share prices, it is not surprising to note that the earliest paper on the subject was published in the South African Journal of Economics in 1949. Over the last 30 years, papers have appeared regularly, highlighting the ongoing debate between town and gown on this topic.

Dividend policy output is closely followed by work on *Mergers and Acquisitions*. The fourteen papers listed were all published in the eighties and nineties. The most recent "merger waves" in the United States occurred in the sixties and the eighties (Brigham and Gapenski, 1988, p. 845). The absence of South African papers following the boom of the late sixties could simply be a reflection of the overall lack of publications prior to the mid 1970's (only 9% of all papers were published before 1974).

The important topic of the *Cost of Capital* has produced ten papers, six of them in the past five years. On the other hand, the subject of *Financial Analysis and Planning*, on which ten papers were also written, has not received any attention since 1981.

Given the severe impact *Inflation* has had on the South African economy during the past 25 years, to find only six papers on the subject is somewhat surprising. Only the most recent of these (1988) analyses the important question of the real profits made by firms.

The problem of the optimal *Capital Structure* of the firm, first addressed by Modigliani and Miller in 1958, has been the subject of intense research elsewhere in the world. The publication of only five local papers (spread over nearly 30 years) may be the result of the relatively small population of well-traded listed companies in South Africa.

Only three papers on the subject of *Corporate Collapse* have appeared, all in the last three years. Given that research on the subject began during the 1970's (Strebel and Andrews, 1977) this may be indicative of a problem. Although post-graduate research is carried out in South Africa, particularly at Graduate Schools of Business and Departments of Business Economics, little of it has been turned into published work. A great deal of work lies on library shelves in the form of unpublished theses, dissertations and research reports. Research without publication makes the findings difficult to access!

Leasing had received almost no attention, with only two papers, both published around 1980. The balance of the literature in the category of corporate finance can be grouped under the headings of *Annual Financial Statements* and *Strategic Issues*. The latter involves subjects such as corporate objectives, ownership and control, the role of the financial manager and the impact of strategic planning on corporate performance.

Just over 60% of the papers fell into the category of *Investment Management*. This higher proportion may well reflect the fact that data is more readily available (in the form of stock market prices) in this area than for issues pertinent to matters of corporate finance.

Almost one in five papers (35 in number) could be classified as dealing with the *Efficient Market Hypothesis* and related issues. This is understandable, given the importance of knowing whether or not shares are likely to be correctly priced on the stock market.

A close second (33 papers) can be found in a sub-section en-

titled *Performance Measurement*. This is a subject of great importance in the area of investments. Studies of the behaviour of share prices were published as early as 1968. In the related area of *Property Investment*, two papers have been published.

Nearly ten percent (eighteen in number) of the investment papers were classified under *Portfolio Management*. A number of these deal with international diversification. They were published during the mid to late 1980's and reflect the impact of the sanctions era on the country. *Risk Analysis* formed an important group of fifteen papers. A further eight papers were devoted to the topic of *Asset Pricing Models*, particularly the applicability of the Capital Asset Pricing Model and the Arbitrage Pricing Model to the JSE. Fourteen works make up a sub-section devoted to *Valuation* issues. The valuation of ordinary shares received the most attention.

The emergent derivative markets have led to the publication of fourteen pieces of research, of which three dealt with *Options* and the balance *Futures*. Most of the latter were published during the past five years. It is only during this period that futures markets have existed in South Africa.

The subject of *Bonds and Gilts* has led to a small but steady trickle of eight papers over the past fifteen years. The lack of a corporate bond market would obviously have been an inhibiting factor. *Rights Issues* have been looked at four times, likewise the subject of *Insider Trading*. Three papers, all in recent years, have dealt with *Agency Theory*.

The topic of *Foreign Exchange* has led to only seven papers in the finance area. Perhaps the material lends itself better to economics research.

Included in the database are 23 papers collectively placed under the heading *Investment Basics*. Whilst most are not strictly research works, they deal with various topics in the field of investment management, and some could have found a home in journals such as the US based Journal of Financial Education. They are largely devoted to explanations of the more difficult concepts in the field. The articles have generally been written by practitioners rather than academics, almost all have appeared in the Investment Analysts Journal, and their authors have seldom published again.

Conclusion

This study investigated the existence of bibliometric regularity in the South African finance literature. The empirical results strongly suggest that, in line with overseas studies, the number of authors publishing in papers follows Lotka's Law and is approximately $1/n^2$ of those publishing a single paper.

The overall average publication rate per author was one paper per year. It is interesting to note that the publication rate decreased as the author's "publication life" increased. Adjusting the publication output to take multiple authorships into account did not lead to significant changes in rank amongst authors.

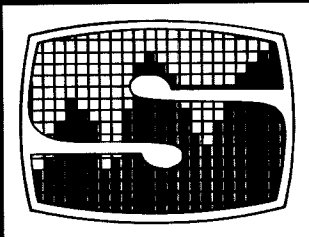
A review of the content of finance papers was undertaken in order to trace the development of research in South Africa and to identify under-researched areas. In the broad field of *Corporate Finance*, research on Capital Budgeting has lagged that in the USA by approximately ten years. Papers on Dividend Policy and Mergers and Acquisitions have appeared regularly but topics such as Working Capital Management, Capital Structure, Inflation and Leasing are poorly represented.

There was evidence of a much greater research interest in the field of *Investment Management*, perhaps due to the easier availability of data. The Efficient Market Hypothesis was a popular topic closely followed by Performance Measurement. In fact most subject areas were well represented.

It is hoped that this paper will stimulate research in finance in South Africa by highlighting under-researched areas, and by offering yard-sticks against which current productivity can be measured.

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Public holiday share price behaviour on the Johannesburg Stock Exchange

ABSTRACT

This investigation evaluates the impact of the public holiday effect on the share returns of companies listed on the JSE during the period 1975-1990. On the trading day prior to holidays shares advance with disproportionate frequency and show mean returns averaging five times the mean returns for the remaining days of the year. Over one-fifth of the total return accruing to the market portfolio over the 1975-1990 period was earned on the nine trading days which fall each year before holiday market closings. The empirical evidence suggests that the pre-holiday return may, in part, be due to the simultaneous movements from "bid" to the "ask" price. The holiday effect appears to be related to the human tendency to bid up share prices prior to market closings for weekends and holidays.

Introduction

Conventional theory assumes that the same return process operates over all trading and non-trading periods. There are reasons to assume that the return sequence when an organised market is formally open may differ from the return sequence during closed periods. For example, during a trading day share prices fluctuate as orders are executed. During evenings, holidays, and holiday-weekends there are no transactions, but from the close to the opening on the next trading day a share's value may still change to reflect revised expectations about the company's profitability. In fact, capital changes and important news items are usually announced after the stock exchange closes. An empirical analysis of open and closed trading period returns undertaken by Granger and Morgenstern (1970) suggests that important and distinct aspects of a share's return generating process through time goes on when the market is closed.

Calendar anomalies have long been part of the market folklore. Studies of the day-of-the-week, holiday, and January effects first began to appear in the 1930's. Although academics have only recently begun to examine these return patterns seriously, they have found them to withstand close scrutiny. This paper explores a seeming empirical regularity in the pattern of daily share returns surrounding public holidays – the trading day prior to public holidays on average exhibits high positive returns. The holiday effect has been observed in all the major stock exchanges of the world (Kim, 1988, p 61). Generally, the average of the after-holiday returns was low, with the converse true for the average of the before-holiday returns. The purpose of this paper is to determine whether or not the holiday effect is applicable to shares traded on the Johannesburg Stock Exchange (JSE).

The holiday effect

Suggestions of the pre-holiday strength of share prices was first documented over the 1901-1932 period. During this period, Fields (1934), found a disproportionate frequency of increases in share prices on trading days preceding long holiday weekends. Roll (1983) found high returns accruing to the shares of small companies on the trading day prior to New Year's Day. Lakonishok and Smidt (1984) confirmed the existence of the holiday period share price anomaly on the New York Stock Exchange (NYSE). This study also identified a holiday-related phenomenon occurring from December 24 to 31 each year. Not only Christmas and New Year's Eve, but also

the days between the holidays exhibit exceptional returns. In fact, the average cumulative return for just these eight calendar days is a remarkable 1,6 per cent. Lakonishok and Smidt (1984, p. 453). concluded that the year-end rally may reflect "window dressing" by financial institutions whose financial year ends on December 31.

Ariel (1984) studied the average return for the day prior to each of the eight public holidays for the period 1963-1982. The average pre-holiday return of 0,365 per cent dwarfed the average regular-day return of 0,026 per cent. In fact, 35 per cent of the entire market advance over this period occurred on just the eight pre-holiday trading days each year. The pre-holiday phenomenon does not appear to be a statistical artifact. For instance, it is not driven by outliers, as 75 per cent of pre-holiday trading days reported positive returns, as against only 54 per cent of all trading days (Ariel, 1984, p. 17). Abnormal pre-holiday returns were not attributable to increased risk. In fact, during the 1963-1982 period, the standard deviation of pre-holiday returns was less than the variance of non-holiday returns.

Another perspective is provided by holidays not associated with market closings, such as St. Patrick's Day or Rosh Hashanah. Hirsch (1986) reported that such days do not experience abnormal returns. The absence of anomalous returns may be due to the lack of a trading break or to a lower level of festivity. In a class by itself – almost considered the antithesis of a holiday by the superstitious – is Friday the 13th. For the 1962-85 period, the return for shares listed on the NYSE was significantly negative on this day (Kolb and Rodriguez, 1987, p. 1386). If shares decline in value on Friday the 13th, the market may have become superstitious and market psychology would appear to be a likely explanation for this phenomenon.

The holiday effect is intimately tied to the weekend effect. The daily share price changes are characterized by low returns on Mondays and high returns on Fridays (Keim and Stambaugh, 1984, p. 834). Kim (1988, p. 61) suggests that the weekend and the holiday effects can be considered in the context of the "closed-market hypothesis". This hypothesis assumes that returns on days before and after a public holiday exhibit patterns similar to the weekend effect. If the closed market hypothesis holds true, we can expect low after-holiday returns, measured from the trading day before the holiday to the trading day after the holiday. The returns on the trading day immediately preceding the holiday can be expected to be high.

Research Methodology

The purpose of this investigation is to determine whether or not the holiday effect has an influence on share returns of companies listed on the JSE. The returns associated with the JSE Overall Actuaries Index was used to reflect the price changes of all shares traded on the JSE. The daily share index returns were used to study the public holiday share price behaviour during the period 1975-1990 (16 years). The public holidays considered are those which provoke share market closings. These holidays are: New Year's Day, Good Friday, Easter Monday (Family Day), Founder's Day, Workers Day, Ascension Day, Republic Day, Kruger Day, Day of the Vow, Christmas Day and Day of Goodwill. There are eleven public holidays in a calendar year.

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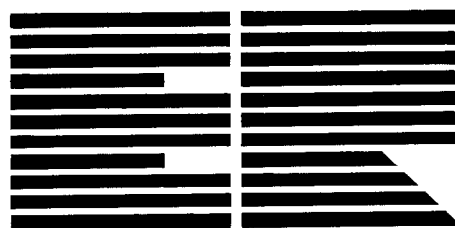
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Some of these eleven holidays (e.g., Good Friday, Easter Monday) invariably fall on a weekday, and therefore are always accompanied by an extra stock market closing. Other holidays (e.g., Christmas Day, New Year's Day) may fall on weekends and therefore will not always induce an extra market closing. No distinction is made in this study between holidays accompanied by market closings and those which are not. Although each year has eleven holidays, there are only nine pre-holiday periods because Good Friday and Easter Monday, as well as Christmas Day and Day of Goodwill, fall on consecutive trading days and therefore have a common market closing.

Empirical results

The 4032 trading days in 1975-1990 were divided into two subsets: the trading days prior to the holidays in this period (144 days), and all the rest (3 888 days). The first holiday in this period was New Year's Day of 1975 and the last holiday was Day of Goodwill 1990. The 144 pre-holidays are the trading days prior to these holidays. The means and variances for these two sets of days were calculated and are reported in Table 1 Panel A (henceforth Table 1(A), along with a t-statistic for the difference of the means. The mean of the pre-holiday returns exceeded the mean of the non-pre-holiday returns by a factor of 5. The corresponding t-statistic for the difference of the means ($t = 5,81$) is statistically significant.

TABLE 1
The sample means, standard deviations, and frequency of positive returns for the pre-holiday and non-pre-holiday subsets of days for shares traded on the JSE during 1975-1990

Panel A: Mean and standard deviations	
Mean of 144 pre-holiday returns (standard deviation)	0,2620% (0,5424%)
Mean of 3888 other day returns (standard deviation)	0,0547% (0,6747%)
t-statistic for difference of the means	$t = 5,81$
Ratio of pre-holidays to non-pre-holiday returns	4,8
Global mean, all 4032 trading days (global standard deviation)	0,0621% (0,6754%)
Panel B: Frequency of advances (chi-square test)	
Positive return days among 4032 trading days (fraction positive days)	2416 59,92%
Positive return days among 144 pre-holidays (fraction positive days)	121 84,03%
chi-square statistic (t-statistic)	32,4 $t = 5,37$

The difference of the means test reported in Table 1(A) presupposes independence of the returns in the two sub-sets of days as well as constancy of the return generating process over the sixteen years in the sample. A nonparametric test less sensitive to these assumptions can be performed by supposing the 144 pre-holidays are merely random draws from the 4032 trading days in the full period. The chi-square statistic is used to test the following null hypothesis:

H_0 : The expected frequency of positive return days among the pre-holidays equals the frequency of positive return days among all trading days in the period.

Table 1(B) reports the result of the chi-square and related statistical tests for testing the null hypothesis. The resulting tests reject the hypothesis of equal positive return frequencies in the two groups of days in favour of the alternative hypothesis of more frequent pre-holiday advances. The highly significant chi-square statistic also shows that the high pre-holiday mean returns reported in Table 1(A) do not derive from a small number of very high return pre-holidays.

To examine whether the high pre-holiday returns persisted during the entire sample period, the sixteen years of data was divided in half and mean pre-holiday returns calculated separately for the 72 pre-holidays in each eight-year period. The mean pre-holiday return during the first and second eight-year periods are trivially different 0,238 per cent and 0,286 per cent; the number of advances among the 72 pre-holidays during the two periods are 62 and 59, respectively. High pre-holiday returns persisted and were of comparable magnitude during the two halves of the sixteen-year sample period. The results of this JSE investigation are in agreement with Merrill's (1966) finding of a disproportionate frequency of share price increases on days preceding holidays during the 1897 to 1965 period for shares listed on the NYSE. This suggests that high pre-holiday returns have long predated the sample period employed in the present study.

Table 1(A) also shows that on pre-holidays the mean return is 48 percent of the standard deviation. This is surprising since the average return earned by shares is typically negligible compared to the variation in the return. Despite the much higher return, the pre-holiday variance of return is no larger than the return variance for all other days; means and variances do not increase proportionately, as would be the case if the pre-holiday mean return, which is 5 times the mean for the other days, resulted from 5 "regular" days somehow compounded into one day. Rather, it seems an extra component of return is added to a regular trading day. Indeed, not only is the pre-holiday variance no greater than the variance for other days, the pre-holiday variance is actually lower than the variance of non-pre-holidays. This fact serves to emphasize that the high pre-holiday return is not a reward for bearing extra risk.

A significant portion of the total sixteen-year cumulative return earned by the market index (JSE Overall Actuaries Index) can be attributed to the returns earned on pre-holidays. Table 1 shows the mean pre-holiday return exceeds the mean return for all non-pre-holidays by a factor of 5. Hence, the nine pre-holidays collectively equal 45 non-pre-holidays in their impact on annual returns. Since there are 252 trading days in the average year, holiday returns will constitute a nontrivial fraction of the total return accruing to the market index. For example, the arithmetic mean monthly return accruing to the JSE Overall Index falls from 1,3041 per cent per month to 1,1067 per cent per month (i.e., falls by 16,81 per cent) if returns accruing on pre-holidays are ignored. The annual continuously compounded return accruing to the market index falls from 18,25 per cent to 14,46 per cent (i.e., falls by 20,8 per cent) if returns on pre-holidays are ignored; fully 20,8 per cent of the sixteen-year cumulative return earned by the broad market accrued on the 3,57 per cent (144/4032) of days preceding holidays during this period.

TABLE 2
Mean returns on trading days surrounding holidays for shares traded on the JSE during 1975-1990

Period relative to holiday ($t = 0$)	return (%)
$t = -3$	0,0698
$t = -2$	0,0732
$t = -1$	0,2620
$t = +1$	0,0395
$t = +2$	0,0571

High returns predominate only on the single trading day preceding holidays and not on other days around the holiday period. Table 2 displays the mean returns on the five trading days surrounding holidays, i.e., the three trading days preceding the holiday and the two trading days following the holiday. Only the mean return on the trading day immediately before holidays differs significantly from the return on all remaining trading days. The mean return on the trading day immediately following holidays is significantly lower than the mean of the all trading days covering the entire period 1975-1990. These results support the "closed-market hypothesis" proposed by Kim (1988, p. 61) which states that the public holiday effect should exhibit a pattern similar to the weekend effect.

Some holidays, such as Easter Monday, always fall on a Monday and hence the trading day prior to these holidays will always be a Friday. In fact, 49 of the 144 pre-holidays fall on Friday. Other holidays (e.g., Good Friday) also always fall on other specific days of the week. French (1980) and Gibbons and Hess (1981) report that for shares listed on the NYSE the mean returns differ on different days of the week, with mean returns highest on Friday and lowest on Monday. Bhana (1985) found that for shares listed on the JSE, the average return for Monday is significantly negative while the average return for other days was positive with Wednesday and Friday showing the highest return. Therefore, the high frequency of Friday and low frequency of Monday pre-holidays may be partially responsible for the observed pre-holiday strength.

As a check on this possibility, Table 3 reports the results of regressing the daily market index returns against dummy variables for the days of the week plus an added pre-holiday dummy variable. The magnitude of the pre-holiday dummy will then represent the incremental returns earned on pre-holidays after correcting for the differing means across different days of the week. For the market index, the magnitude of the pre-holiday dummy is large and statistically significant, thereby showing that the high frequency of Friday and low frequency of Monday pre-holidays is not responsible for the observed pre-holiday strength.

TABLE 3
Dummy variable regression analysis to test if holiday returns are caused by the weekend effect

Regression equation: $R_t = \text{Constant} + \text{Monday} + \text{Tuesday} + \text{Wednesday} + \text{Thursday} + \text{Friday} + \text{Pre-holiday}$	
Panel A: significance of pre-holiday returns	
Constant 0,063 (t = 5,41)	Pre-holiday +0,242 (t = 6,35)
Panel B: Pre-holiday strength is not caused by weekend effect	
Constant :	+0,024 (t = 1,09)
Monday :	-0,056 (t = -1,84)
Tuesday :	+0,063 (t = 1,94)
Wednesday :	+0,132 (t = 3,64)
Thursday :	+0,054 (t = 1,82)
Friday :	+0,109 (t = 2,64)
Pre-holiday :	+0,209 (t = 5,43)

To further explore the intraday pattern of share returns around holidays, Ariel (1984) collected values of share prices for the 1963-1982 period and converted them into overnight, daily, and hourly returns. These returns were calculated for the two trading days before and the trading day after each public holiday during the investigation. Unusually high returns accrue during the session before the pre-holiday and during pre-holidays trading. In particular, high returns accrue during the last hour of trading, the last hour being responsible for one-fourth of the total pre-holiday return (Ariel, 1984, p. 170). In contrast, the trading day following the holiday displays no period of unusual returns. Clearly the holiday strength is just that: high pre-holiday returns ending with the start of trading following holidays. The JSE data base does not provide for the hourly values of the JSE Overall Actuaries Index. Therefore, the hourly strength of trading on the JSE during the pre-and-post-holiday periods cannot be determined.

The returns for shares are computed from "closing" prices, where the closing price is the price at which the day's last transaction occurs. The "bid" price at which the broker is prepared to buy a security for clients is usually lower than the "ask" price at which securities are to be sold for clients. Thus, closing prices often represent a bid or an ask rather than the "true" price at which the market orders would "clear" on the stock exchange. In order to explain the weekend effect, Keim and Stambaugh (1984) hypothesized that market makers transacting at bid (ask) price with disproportionate frequency at the market close on certain days of the week could induce low (high) returns on those days. The high pre-holiday returns might likewise be induced by a disproportionate frequency of last transactions at the ask price.

To determine whether numerous closing ask-price transactions could be one source of high pre-holiday returns, the bid, ask, and closing prices were gathered for thirty randomly selected shares listed on the JSE. The bid, ask, and closing prices were collected for the two trading days Day (-2) and Day (-1) prior to the 33 holidays (27 pre-holidays periods) in the three-year period 1988-1990. A total of 810 observation sets (27 x 30) were obtained. The bid, ask, and closing prices were obtained from the database of "Macgregor's Online Information Services". Market making activity could induce positive returns from the close on Day (-2) to the close on Day (-1) if more shares which closed at the bid on Day (-2) closed at the ask on Day (-1) than vice versa. Table 4 tabulates the frequency with which shares closed on Day (-1) at the bid, ask, or "between" bid and ask, or contingent on where the shares closed on Day (-2).

TABLE 4
Frequency of shares closing at bid and ask price on trading days around holidays

		Share price closed on Day -2 at:				Row Totals:
		Bid	Ask	Between	Other	
Share price Closed on Day -1 at:	Bid	41 ^a	33	52	3	129
	Ask	81	70	130	2	283
	Between	93	91	199	4	387
	Other	4	3	3	1	11
Column Totals:		219	197	384	10	810

^aThe table is read as indicating that, e.g., 41 shares which closed the bid price on Day -2 (two days before the holiday) also closed at the bid price on Day -1 (on the pre-holiday).

Given this data, it is possible to calculate a rough estimate of the possible contribution of bid-ask effects to high pre-holiday returns. Table 4 shows that of the 810 observation sets, there

are 32 more shares that advanced from the bid on Day (-2) to the ask on Day (-1) than the reverse, 41 more shares that advanced from the bid to a "between" value than the reverse, and 20 more shares that advanced from "between" value to the ask than the reverse. Among these 810 shares, the mean value of the bid-ask spread is 1,13 per cent of the closing price of the sample of shares (numerical data not reported). Assuming that all "between" prices are halfway between bid and ask prices, the contribution of the bid-ask effect to the mean return from Day (-2) to Day (-1) among this group of shares is:

$$\frac{[32 + \frac{1}{2}(41 + 20)] \times 1,13}{810} = 0,088 \text{ per cent}$$

This value is fairly large compared to the magnitude of the pre-holiday mean return of 0,262 per cent. The bid/ask component makes up 33,6 per cent (0,088/0,262) of the pre-holiday return. Subject to the usual caveats that this is a rough calculation and that this relatively small test sample may not be representative of all shares, the bid-ask effect can be regarded as an important contributor to the high pre-holiday returns.

A similar bid-ask effect was observed by Keim (1989) for a sample of pre-holiday trading days on the NYSE for the 1983-1987 period. The bid-ask effect represented 32 percent of the average pre-holiday return as compared with closing transaction prices. Keim (1989, p. 95) concludes that returns computed with closing bid or ask prices may not represent "true" prices and may introduce measurement error into pre-holiday returns if investor buying and selling displays systematic patterns. In particular, the systematic tendencies for the pre-holiday closing prices to be recorded at the ask prices can result in large pre-holiday returns.

Conclusions

The high mean return accruing to the JSE Overall Actuaries Index on the trading day prior to holidays is statistically significant; on average the pre-holiday return equals five times the return accruing on non-pre-holidays. Over one-fifth of the return accruing to the broad market over the 1975-1990 period is attributable to the nine trading days prior to public holidays during each year.

The data presented in this paper have tested a number of possible hypotheses to explain the pre-holiday strength in share prices. Abnormal trading activity by market makers and investors at the market close cannot be ruled out as a major causal factor because there is a fairly large bid/ask component to the pre-holiday return. The empirical evidence suggests that the pre-holiday return may, in part, be due to simultaneous movements from the bid to the ask price.

Yet another explanation, and part of the "lore of the market" as reported in the financial press, attributes pre-holiday strength to covering by short-sellers who desire to close allegedly very risky short positions in advance of holidays and revert to short-selling after the holiday period (Lakonishok and Smidt, 1988).

Ritter (1988) and Harris and Gurel (1986) have demonstrated that seasonality in share prices can be induced by specific clients' investment decisions. This suggests the possibility that there may exist, in this case as well, some clients who preferentially buy (or avoid selling) on pre-holidays. Miller (1988) suggests that individual investors often buy shares before holidays, at the broker's urging, and also make sell decisions after a period of introspection during the holiday period.

Explanations rooted in human nature show promise. For example, experimental market games conducted by psychologists have demonstrated that there is a behavioural predisposition to bid up share prices prior to market closings for weekends and holidays (Coursey and Dyl, 1986). The holiday effect has also been related to the human tendency to an-

nounce good news quickly and defer bad news.

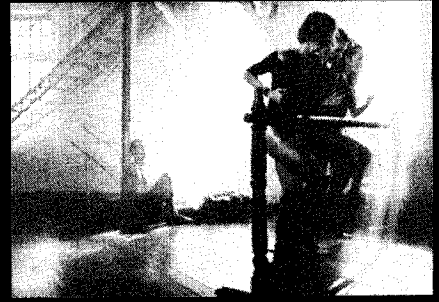
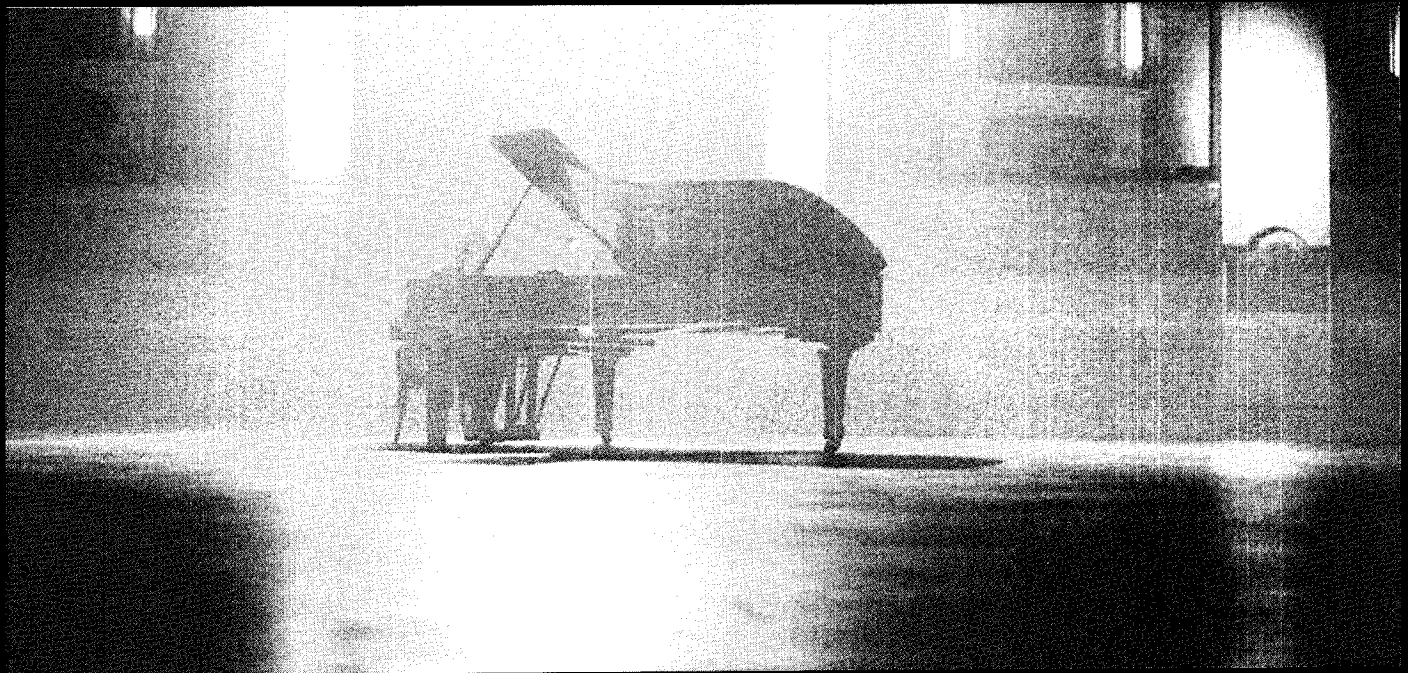
Jacobs and Levy (1988) report that most bad news, such as bank failures, reduced earnings, management reorganisations, and more recently insider trading indictments, were generally announced after the market close on weekends and public holidays. The timing of the news release was to allow the market to "absorb the shock" over an extended period.

The existence of abnormal returns at calendar turning points is indisputable. A return regularity occurring at an arbitrary time on an arbitrary day might justifiably be regarded with suspicion. But calendar anomalies such as the holiday effect occur at regular intervals in time. These turning points have little economic significance, but they apparently evoke special investor behaviour. The holiday effect has important implications for portfolio managers, active traders, and speculators. The evidence presented in this paper suggests that investors could benefit from the observed pre-holiday market behaviour by utilizing the following investment strategy: purchases should be delayed until the opening of the market after the holiday and sales should be made on the day immediately before the public holiday. An active trading strategy on the observed pattern of holiday share returns may not be profitable because of the transaction costs incurred. However, investors might increase their expected returns by utilizing this strategy for transaction which are to take place anyway.

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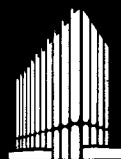
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Aandeleopbrengste en Reële Ekonomiese Aktiwiteit – Die Suid-Afrikaanse Ondervinding

ABSTRACT

This article investigates the relationships between real economic activity and share returns. A turning point analysis shows that returns consistently lead the business cycle, although with leads that substantially vary between turning points. Upswings appear to be easier to forecast than downswings, using share value indices. Causality tests show very little evidence of causality between returns and production growth. Also on the level of seasonal patterns in production growth and share returns, there is little evidence that the stock exchange leads real activity.

1. Inleiding

Die aandelemark word tradisioneel deur ekonome gesien as een van die mees sensitiewe leidende indikatore van reële ekonomiese aktiwiteit of dan van die konjunkturgolf. Burns (1950) redeneer dat aandeelpryse begin daal in die laaste derde van die duur van 'n konjunkturgolf tot en met die piek, om weer te begin styg in die laaste derde tot en met die trog van die golf. Hierdie siening is gebaseer op die navorsing van Mitchell en Burns (1938) wat aangetoon het dat die Dow-Jones Nywerheidsindeks 'n gemiddelde leiperiode van sewe maande (met standaardafwyking van vyf maande) toon ten opsigte van die algemene ekonomiese konjunktuur oor die periode 1897 tot 1932. Moore (1961) bevind dat aandeelpryse 'n mediaanleiperiode van 4,5 maande openbaar, met 'n maksimum van 21 maande. In 'n ontleding van konjunkturgolwe sedert 1945 in die VSA toon Siegel (1991) aan dat die aandeelopbrengsindeks in die nege gedokumenteerde resessies 'n piek bereik het vanaf nul tot veertien maande voor die aanvang van die resessie met 'n gemiddelde leiperiode van 6,4 maande (en standaardafwyking 4,6 maande). Opbrengste het 'n trog bereik met leiperiodes wat wissel vanaf vier tot nege maande met 'n gemiddelde leiperiode van 5,2 maande (en standaardafwyking 1,55 maande) tot die aanvang van die uitbreidingsfase.

Ook in Suid-Afrika word aandeelprysindekse in die samestelling van leidende indikatore gebruik. Van Coller (1980) ken aan die Nywerheidsaandeleindeks die hoogste puntetotaal toe in sy beoordeling van nege leidende indikatore en ken volpunte toe vir die konsekwentheid van draaipunte in hierdie indeks by pieke en trôe. Die betrokke indeks word nog steeds as leidende indikator gebruik en op 'n gereelde basis deur die BEO in die publikasie *Trends* gepubliseer. Aandeelpryse (alle klasse, nywerheid en handel) vorm ook deel van die amptelike leidende indikator wat deur die SA Reserwebank gepubliseer word (Van der Walt, 1983). Daarenteen kon Barr (1983), wat van 'n stapsgewyse regressiebenadering gebruik maak om 'n leidende indikator op te stel, nóg die Goudindeks nóg die Nywerheidsindeks in sy finale aanwyser insluit.

In 'n onlangse ontwikkeling word klein enkelvergelyking ekonometriesse modelle voorgestel vir die vooruitskatting van reële ekonomiese aktiwiteit, gebaseer op aandeelopbrengste en die termynstruktuur van rentekoerse (Harvey, 1989; 1991). Van der Mescht en Smit (1993) doen 'n *ex ante* ontleding van die vooruitskattingvermoë van 'n klein Suid-Afrikaanse model gebaseer op die Nywerheidsaandeleindeks en toon aan dat dit oor die periode 1979 tot 1989 sewe prominente Suid-Afrikaanse vooruitskattinginstansies in akkuraatheid oortref.

Ten spyte van die gekombineerde sterk getuienis van die

waarde van aandeelbeursinformatie in die vooruitskatting van reële ekonomiese aktiwiteit, is daar diegene wat twyfel uitspreek oor die waarde van aandeelbeursinformatie in dié verband. Volgens Samuelson (1966): "The stock market has predicted nine out of the last five recessions". Nadat die ineenstorting van die VSA-beurse in 1987 nie 'n resessie aangedui het nie, is nuwe leidende indikatore saamgestel wat aandeelbeursinformatie uitsluit (Stock en Watson, 1989) en wat nie 'n resessie na die 1987 beursineenstorting voorspel het nie.

'n Ontleding van die geskiedenis en rol van die Johannesburgse Effektebeurs in die Suid-Afrikaanse ekonomie, lei ook in die jongste verlede tot die bevestiging van die potensiaal van aandeelopbrengste om reële aktiwiteit vooruit te skat. Waar die privaat belegger gedurende die sestigerjare die beurs gedomineer het en verantwoordelik was vir ongeveer 70% van aandeeltransaksies beide in terme van waarde en omset, verteenwoordig hierdie syfer vandag die aandeel van korporatiewe instansies. Namate hierdie maatskappye die mark begin oorheers het, is waarde in 'n toenemende mate opgesluit. Korporatiewe instansies is netto-aankopers, met die gevolg dat die likiditeit van die mark gedaal het tot 4,3% van die markkapitalisasie per jaar. 'n Direkte gevolg hiervan is dat dit dikwels baie lank neem om 'n spesifieke portefeulje te bekom. Dit gee aanleiding tot 'n langer verwagtingsleiperiode. Gegewe selfs 'n relatief hoë aandeelprys en swak finansiële resultate, gryp beleggers die geleentheid aan om aandele te bekom met die vooruitsig van ekonomiese voorspoed moontlik baie ver in die toekoms. Hierdie argument vorm die basis van 'n hipotese dat die verwantskap tussen aandeelopbrengste en reële ekonomiese aktiwiteit stelselmatig verswak.

Laasgenoemde verwantskap word in hierdie studie op drie vlakke ontleed. In Afdeling 2 word aandeelopbrengste en die ekonomiese konjunktuur met mekaar in verband gebring deur middel van 'n draaipuntontleding; in Afdeling 3 word die verbande tussen aandeelopbrengste en reële ekonomiese aktiwiteit ontleed deur middel van regressiemodelle en Granger kousaliteitstoetse, terwyl seisoenale patrone in aandeelopbrengste en reële nywerheidsproduksie in Afdeling 4 met mekaar in verband gebring word. 'n Laaste afdeling bevat 'n opsomming van die resultate en die finale gevolgtrekkings.

2. Die aandeelbeurs en die konjunkturgolf: 'n draaipuntontleding

Kumulatiewe waarde-indeks ten opsigte van 'n hele ver skeidenheid van bateklasse is opgestel deur Smit, Mostert en Hamman (1993), gebaseer op die werkwysse van Ibbotson en Sinquefeld (1976). Twee van hierdie indekse word alhier benut, te wete die Alle Aandeleindeks en Nywerheidsaandeleindeks. Beide indekse sluit dividende in en is opgestel deur eersdens die maandelikse opbrengste ten opsigte van 'n spesifieke indeks te bereken:

$$\begin{aligned} R_t &= [(P_t + D_t)/P_{t-1}] - 1 \\ \text{waar } R_t &= \text{totale opbrengs in maand } t; \\ P_t &= \text{die waarde van die tersaaklike JEB-} \\ &\quad \text{Aktuarisise Indeks aan die einde van} \\ &\quad \text{maand } t; \text{ en} \\ D_t &= \text{die beraamde dividende betaal} \\ &\quad \text{gedurende maand } t. \end{aligned}$$

Die maandelikse dividend word as volg beraam:

$$D_t = (P_t \times Y_t)/12$$

waar Y_t = die jaarlikse dividendopbrengskoers ten opsigte van die betrokke indeks in maand t .

Vervolgens is daar aan die einde van elke maand 'n relatiewe kumulatiewe waardeindeks, W_t , gevorm vir die betrokke maandelikse opbrengsreeks, R_t ($t=1/1960, 2/1960, \dots, 12/1991$). Die indeks word begin deur $W_{12/1959}$ gelyk te stel aan 1,00 en word gevorm deur

$$W_t = \prod_{t=1/1960}^n (1+R_t).$$

Pieke en trôe in die twee betrokke waardeindekse is vervolgens vergelyk met amptelike pieke en trôe in die algemene konjunktuur (S.A. Reserwebank, 1993). Sonder uitsondering is daar dalings in die waardeindekse voor of saam met die aanvang van 'n resessie. Die piek in die waardeindeks is die piek in die voorafgaande uitbreidingsfase.

Tabel 1 bied 'n opsomming van die gedrag van aandeleopbrengste oor die sewe mees onlangse resessies. Die waardeindekse het hul pieke bereik met leiperiodes wat wissel tussen 0 en 20 maande in die geval van die Alle Aandele- en 0 en 19 maande in die geval van die Nywerheidsaandeleindeks tot die aanvang van die resessie. Die onderskeie gemiddelde leiperiodes is 5,8 en 5,3 maande met onderskeie standaardafwykings van 7,1 en 7,8 maande. Die beperkte gegewens dui op 'n besondere losse verhouding in tyd tussen die pieke in die waardeindekse en die aanvang van resessies. In teenstelling met die ondervinding in die VSA, waar 'n neiging bestaan om resessies valslik te voorspel, is daar slegs getuienis van een vals afswaaivoorspelling in die Alle Aandeleindeks.

Tabel 1: Resessies en Aandeleopbrengste

Piek van Konjunktuur golf	Piek van Alle Aandeleindeks	Piek van Nywerheidsaandeleindeks	Leiperiode (maande): Alle Aandele	Leiperiode (maande): Nywerheidsaandele
April 1965	Mrt 1965	Mrt 1965	1	1
Mei 1967	Feb 1967	Apr 1967	3	1
Des 1970	Apr 1969	Mei 1969	20	19
Aug 1974	Mrt 1974	Junie 1973	5	14
Aug 1981	Okt 1980	Aug 1981	10	0
Junie 1984	Apr 1984	Apr 1984	2	2
Feb 1989	Feb 1989	Feb 1989	0	0
Gemiddelde			5,8	5,3
Standaardafwyking			7,1	7,8

Die gedrag van aandeleopbrengste oor die sewe mees onlangse uitbreidingsfases word in Tabel 2 opgesom. Die waardeindekse vertoon trôe met leiperiodes wat wissel tussen 1 en 16 maande in die geval van die Alle Aandeleindeks en 4 en 18 maande in die geval van die Nywerheidsaandeleindeks tot die aanvang van die uitbreidingsfase. Die onderskeie gemiddelde leiperiodes is 8,1 en 10,4 maande met onderskeie standaardafwykings van 5,4 en 3,6 maande. Dit blyk asof die aandelebeurs 'n meer konsekwente voorspeller van opswaie as afswaie is. In die geval van die Alle Aandeleindeks is daar egter twee ekonomiese uitbreidings voorsien wat nie gematerialiseer het nie.

Tabel 2: Uitbreidings en Aandeleopbrengste

Trog van Konjunktuur golf	Trog van Alle Aandeleindeks	Trog van Nywerheidsaandeleindeks	Leiperiode (maande): Alle Aandele	Leiperiode (maande): Nywerheidsaandele
Aug 1961	Apr 1961	Aug 1960	4	12
Des 1965	Nov 1965	Aug 1965	1	4
Des 1967	Aug 1967	Aug 1967	4	4
Aug 1972	Okt 1971	Okt 1971	10	10
Des 1977	Aug 1976	Aug 1976	16	16
Mrt 1983	Jun 1982	Junie 1982	9	9
Mrt 1986	Feb 1985	Sept 1984	13	18
Gemiddelde			8,1	10,4
Standaardafwyking			5,4	5,4

3. Aandeleopbrengste en reële nywerheidsproduksie: 'n regressieontleding

3.1 Literatuuroorsig

Die verband tussen aandeleopbrengste en reële ekonomiese aktiwiteit spruit voort uit die standaard waardasieformule vir riskante bates in 'n effektiewe mark. Die verwagte opbrengskoers oor periode t tot $t+1$ van die markportefeulje met dividende wat herbelê word, R_{t+1} , is die som van twee terme, te wete 'n risikovrye opbrengskoers, r_{ft} , en 'n risikopremie, p_t . Dus is

$$E_t R_{t+1} = (E_t(S_{t+1}) - S_t + D_t)/S_t = r_{ft} + p_t$$

met S_t en D_t respektiewelik die aandeleprys en die dividend betaal in periode t .

S_t kan onder sekere algemene voorwaardes opgelos word om die bekende waardasieformule op te lewer waarvolgens die aandeleprys die verwagte teenswoordige waarde van toekomstige dividendstrome is, d.i.

$$S_t = E_t \sum_{i=0}^{\infty} D_{t+i} / (\prod_{s=0}^i (1 + r_{ft+s} + p_{t+s}))$$

(Sien bv. Poterba en Summers (1986)).

Hiervolgens bestaan drie bronne van variasie in aandeleopbrengste (Fama, 1990) nl. (i) skokke op verwagte kontantvloei (die D_{t+i}); (ii) vooruitskatbare variasie in opbrengste as gevolg van voorsienbare tydsvariasie in die diskontokoerse ($1 + r_{ft+s} + p_{t+s}$); en (iii) skokke op die diskontokoerse. Reële ekonomiese werklikhede vorm die determinante van die toekomstige kontantstrome vanweë die feit dat ekonomiese groei die basis is van ondernemingswinste, en gevolglik die dividende wat die aandeelhouers toekom.

'n Aantal empiriese studies in die VSA bevestig die verbande tussen aandeleopbrengste en verskeie maatstawwe van toekomstige reële ekonomiese aktiwiteit. Hieronder resorteer studies van Fama (1981, 1991), Chen, Roll and Ross (1986), Kaul (1987), Barro (1990), Schwert (1990) and Cochrane (1991).

Fama (1981) toon aan dat aandeleopbrengste positief verband hou met reële veranderlikes soos investering in die reële nasionale produk. Laasgenoemde verklaar 68% van die variasie in aandeleopbrengste oor die periode 1954 tot 1976. Die opbrengsveranderlike lei in alle gevalle die reële veranderlikes. In 'n opvolgstudie waarin die bydrae van die drie bronne van variasie in aandeleopbrengste ontleed word, bevind Fama (1990) dat toekomstige produksiegroei, wat as gevolgmagtigde

vir skokke op kontantvloei dien, 43% van die variansie in jaarlikse opbrengste oor die periode 1953 tot 1987 verklaar. Die sterkte van die verbande neem af namate daar van jaardata na maanddata beweeg word. Fama (1991:1090) verklaar hierdie waarneming as volg: "... if information about the production of a given month evolves over many previous months, the production of a given month will affect the stock returns of many previous months. A given monthly return then has information about many future production growth rates, but adjacent returns have additional information about the same production growth rates. The R² from regressions of monthly returns on future production growth rates will then understate the information about production in the sequence of returns." Schwert (1990) verbreed die Fama-studie tot die 1889-1988 tydhorison en bevestig die Fama-resultate.

In al die gemelde studies word implisiet aanvaar dat oorsaaklikheid vanaf reële ekonomiese aktiwiteit na aandeelopbrengste loop. Die verband tussen aandeelopbrengste en toekomstige produksie weërspeël dus gedeeltelik informasie betreffende dividende opgesluit in produksie, maar daar bestaan ook ander moontlikhede. In die eerste plek kan opbrengste en produksie *gesamentlik* reageer op ander veranderlikes. So byvoorbeeld kan 'n daling in diskontokoerse veroorsaak dat aandeelpryse styg, maar ook 'n toename in die produksie van kapitaalgoedere tot gevolg hê. Cochrane (1991) toon aan dat veranderlikes soos die termynpremie, die wanbetalingspremie, gesloerde opbrengste en dividend-prys verhoudings wat gebruik word om aandeelopbrengste te verklaar, en opbrengste in die besonder, ook verklarende veranderlikes is wat betref investering en reële groei. Alternatiewelik mag 'n daling in rentekoerse, wat dikwels met resessies gepaard gaan, die verwagte daling in toekomstige kontantstrome neutraliseer en lei tot 'n styging in aandeelpryse. 'n Verdere alternatief is dat *aandeelopbrengste oorsaaklik mag staan* tot veranderings in reële aktiwiteit. 'n Styging in aandeelpryse verhoog welvaart, wat neerslag kan vind in 'n verhoogde vraag na verbruiks- en kapitaalgoedere.

In die ontleding wat volg sal gepoog word om die sterkte van die verbande tussen aandeelopbrengste en ekonomiese aktiwiteit bloot te lê en terselfdertyd by wyse van Granger kousaliteitstoetse oorsaak en gevolg in die verhouding tussen opbrengste en reële aktiwiteit te ondersoek.

3.2 Data en werkswyse

Die Alle Aandele- en Nywerheidsaandeleindeks is ten opsigte van die periode 1960M1 tot 1992M12 verkry vanaf die Sanlam databasis; en die Produksievolume- en Verbruikersprysindekse ten opsigte van die periode 1963M1 tot 1992M12 van die Sentrale Statistiekdiens. Reële aandeelopbrengste is bereken vir die Alle Aandeleindeks (RAS) en die Nywerheidsaandeleindeks (RIS) op 'n jaarlikse (ARAS en ARIS), kwartaalike (QRAS en QRIS) en maandelikse (MRAS en MRIS) basis deur gebruikmaking van die logaritme van aandeelprysverhoudings

minus die logaritme van verbruikersprysverhoudings oor die betrokke periode. In navolging van Fama (1990) is die maandelikse en kwartaalike reële opbrengste metings van punt tot punt, terwyl die reële jaarlikse opbrengste bestaan uit oorvleuelende kwartaalike waarnemings.

Ook in navolging van Fama (1990) is die Produksievolumedecks gebruik as indikator van reële ekonomiese aktiwiteit nadat seisoenaliteit uit die data verwyder is met behulp van die X-1 metodiek. Maandelikse (MGSM), kwartaalike (QGSM) en jaarlikse (AGSM) groeikoerse in produksievolumes is bereken as die logaritmes van die tersaaklike volumeverhoudings.

Die verwantskap tussen opbrengste en produksiegroei is ondersoek oor die volle periode 1963M1 tot 1992M12 en daarna oor twee subperiodes wat strek vanaf 1963M1 tot 1978M12 en 1984M1 tot 1992M12. Die keuse van hierdie subperiodes reflekteer eerstens die institusionele verskuiwings wat in die aandelemark ingetree het en val tweedens saam met 'n verplasing in monetêre regimes wat, soos Smit en Philip (1992) aangetoon het, 'n uitwerking op die opbrengs-inflasie verwantskap uitoefen. Die periode vanaf 1979 tot 1983 was in 'n sekere sin 'n oorgangsperiode en omsluit te min waarnemings om sinvolle regressie-ontledings uit te voer.

Regressie-ontleding is gebruik om die verband tussen opbrengste en produksiegroeikoerse te ontleed. 'n Totaal van 72 regressielopies is uitgevoer deur maand-, kwartaal- en jaardata afsonderlik te ontleed, deur 'n AR(1)-term wat vir die teenwoordigheid van outokorrelasie voorsiening maak, in te sluit of weg te laat, deur die drie periodes afsonderlik te ontleed en deur óf huidige produksiegroei afhanklik te maak van gesloerde waardes van opbrengste, óf huidige opbrengste afhanklik te maak van toekomstige produksiegroeikoerse.

Die resultate is saamgevat in Tabelle 3 tot 5. Ten opsigte van elke geskatte vergelyking word die R²-waarde gerapporteer met die gepaardgaande betekenispeil. 'n Aanduiding word ook gegee van die sloer/leiperiode waar die eerste en laaste betekenisvolle regressiekoëffisiënt waargeneem is. Die 10% betekenispeil is deurgaans gebruik. White se heteroskedastisiteitsaanpassings is uitgevoer. Ten opsigte van maandelikse data is sloer/leiperiodes gespesifiseer wat strek van een tot 24 maande, terwyl kwartaalike vergelykings met sloer/leiperiodes van een tot agt kwartale en jaarlikse vergelykings met sloer/leiperiodes van een tot ses oorvleuelende kwartale gespesifiseer is. Die resultate word bespreek in Afdeling 3.3.

Ten einde die rigting van kousaliteit tussen aandeelopbrengste en reële produksiegroei te ondersoek, is daar vervolgens 'n totaal van 156 Granger kousaliteitstoetse uitgevoer. Die klassifikasie is in terme van die periode ter sprake, die ter sake aandeelopbrengsindeks en die aantal sloerings ingesluit in die toets. Laasgenoemde varieer van 1, 3, 6, 12 en 24 periodes ten opsigte van maandelikse data tot 1, 2, 4 en 8 periodes in die geval van kwartaal- en jaardata. Die toetsresultate is opgesom in Tabelle 6 tot 14.

Tabel 3: Maandelikse opbrengs-produksiegroeiverbande

Afhanklike veranderlike	MGSM												MRAS						MRIS					
	MRAS						MRIS						MGSM											
Onafhanklike veranderlike	MRAS						MRIS						MGSM											
Periode	1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992	
AR(1)-term	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J
Onafhanklike veranderlike lei (L) of sloer (S)	S	S	S	S	S	S	S	S	S	S	S	S	L	L	L	L	L	L	L	L	L	L	L	L
R ² (%)	5	27	13	37	26	39	8	29	12	39	35	44	8	10	16	16	24	24	8	13	18	21	30	36
p-waarde	0,89	0,00	0,52	0,00	0,43	0,03	0,30	0,00	0,62	0,00	0,07	0,00	0,39	0,20	0,23	0,25	0,89	0,92	0,34	0,02	0,10	0,03	0,67	0,43
Eerste betekenisvolle sloer/leiperiode	—	—	13	13	6	6	0	1	1	—	0	14	10	10	8	11	11	9	12	12	2	3	16	8
Laaste betekenisvolle sloer/leiperiode	—	—	17	17	24	21	20	2	20	—	24	24	22	12	24	24	11	9	12	12	22	12	16	8

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Tabel 4: Kwartaallikse opbrengs-produksiegroeiverbande

Afhanklike veranderlike	QGSM												QRAS						QRIS					
Onafhanklike veranderlike	QRAS						QRIS						QGSM											
Periode	1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992	
AR(1)-term	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J
Onafhanklike veranderlike lei (L) of sloer (S)	S	S	S	S	S	S	S	S	S	S	S	S	L	L	L	L	L	L	L	L	L	L	L	L
R ² (%)	4,5	11	11	20	44	47	5	11	9	22	49	52	5	5	15	17	29	34	5	4	9	10	43	43
p-waarde	0,83	0,21	0,66	0,26	0,08	0,09	0,79	0,26	0,82	0,21	0,04	0,04	0,81	0,87	0,41	0,42	0,72	0,71	0,82	0,92	0,79	0,85	0,34	0,45
Eerste betekenisvolle sloer/leiperiode	—	—	—	—	2	3	—	—	—	—	2	3	—	—	8	5	—	—	—	—	—	—	4	—
Laaste betekenisvolle sloer/leiperiode	—	—	—	—	8	8	—	—	—	—	4	8	—	—	8	8	—	—	—	—	—	—	4	—

Tabel 5: Jaarlikse opbrengs-produksiegroeiverbande

Afhanklike veranderlike	AGSM												ARAS						ARIS					
Onafhanklike veranderlike	ARAS						ARIS						AGSM											
Periode	1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992		1963-1992		1963-1978		1984-1992	
AR(1)-term	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J	N	J
Onafhanklike veranderlike lei (L) of sloer (S)	S	S	S	S	S	S	S	S	S	S	S	S	L	L	L	L	L	L	L	L	L	L	L	L
R ² (%)	18	60	25	47	18	67	15	60	27	46	34	74	18	63	30	65	13	61	11	60	17	64	20	60
p-waarde	0,00	0,00	0,03	0,00	0,61	0,00	0,02	0,00	0,02	0,00	0,13	0,00	0,01	0,00	0,01	0,00	0,88	0,01	0,10	0,00	0,19	0,00	0,68	0,01
Eerste betekenisvolle sloer/leiperiode	—	—	—	1	—	4	—	2	6	1	4	3	0	5	5	1	—	—	—	—	—	1	—	4
Laaste betekenisvolle sloer/leiperiode	—	—	—	5	—	4	—	2	6	1	4	4	0	5	6	5	—	—	—	—	—	1	—	4

3.3 Resultate

Die getuienis is geskakeerd. Wat maanddata, kwartaaldata én jaardata betref, kan weinig uit die betekenisvolheid van die gesloerde verklarende veranderlikes afgelei word omtrent die leiperiode van aandeelopbrengste relatief tot produksiegroei. Dit is in ooreenstemming met die losse verhoudings in tyd wat in die draaipuntontleding waargeneem is. Die spesifikasie leen dit self egter ook tot die invoering van multikolineariteit, met gepaardgaande ondoeltreffende toetsing.

Die toevoeging van 'n AR(1)-term stoot die bepaaldheidskoëffisiënte op en lei in 'n aantal gevalle tot betekenisvolle F-waardes. Dit is egter opmerklik dat sonder hierdie spesifikasie slegs twee van die regressievergelykings oorhoofs betekenisvol is en dit by die 10% betekenispeil. Oor die volle periode is die bepaaldheidskoëffisiënte onderskeidelik 5%, 8%, 8% en 8%; oor die eerste subperiode onderskeidelik 13%, 12%, 16% en 18%; en oor die tweede subperiode onderskeidelik 26%, 35%, 24% en 30%. Dit mag enersyds 'n aanduiding wees van strukturele onstabieliteit in die regressieverbande, maar terselfdertyd dui dit op beter passing oor die meer onlangse periode. Verder is daar getuienis dat die Nywerheidsaandeleindeks matige beter passings oplewer as die Alle Aandeleindeks, soos inderdaad verwag sou word vanweë die meer direkte koppeling tussen die Nywerheidsaandeleindeks en nywerheidsproduksie. Die gebrek aan betekenisvolheid veroorsaak egter dat sodanige gevolgtrekkings met omsigtigheid hanteer moet word.

Die kwartaallikse ontleding (Tabel 3) ondersteun die resultate van die maandelikse ontleding. Ook in hierdie geval is redelike losse verhoudings in tyd te bespeur ten opsigte van die leiperiodes tussen opbrengste en produksie. Die neiging van hoër bepaaldheidskoëffisiënte in vergelykings wat die AR(1)-term bevat, word bevestig, alhoewel dit nie in hierdie geval tot betekenisvolle F-waardes lei nie. Twee van die spesifikasies (een waar sloeringswaardes van die Nywerheidsindeks

gebruik word om produksiegroei te verklaar oor die periode 1984 tot 1992) is betekenisvol by die 10% betekenispeil. Hierdie verwantskap, met die betrokke betekenisvolle sloerings, is die een wat deur Van der Mescht en Smit (1993) benut is. Oor die volle periode is die bepaaldheidskoëffisiënte onderskeidelik 1%, 5%, 5% en 9% waargeneem wat vergelykbaar is met die waarnemings ten opsigte van die maanddata. Oor die eerste subperiode is bepaaldheidskoëffisiënte van onderskeidelik 11%, 9%, 15% en 9% wat ook vergelykbaar is met die maanddata, terwyl die bepaaldheidskoëffisiënte oor die tweede periode onderskeidelik 44%, 49%, 29% en 43% beloop het. Dit blyk 'n verbetering te wees op die resultate behaal in die geval van maanddata. Weer eens dui dit op heelwat beter passings oor die meer onlangse subperiode. Soos tevore neig die Nywerheidsaandeleindeks om effens beter passings op te lewer as die Alle Aandeleindeks.

Die gevolgtrekking van onstabiele leiperiodes word nog eens in die geval van jaardata bevestig (Tabel 4). Die AR(1)-spesifikasie lei in hierdie geval tot skerp verbeterings in die R²-waardes aangesien dit die outokorrelasie opvang wat deur die oorvleuelende metingswyse ingebou word. In hierdie geval is al die F-waardes betekenisvol by die 5% betekenispeil na toevoeging van die AR(1)-term. Voor dié stap is 'n hele aantal regressies egter reeds betekenisvol. Oor die volle periode is die bepaaldheidskoëffisiënte onderskeidelik 18%, 15%, 18% en 11% wat effens hoër is as in die geval van maanddata en kwartaaldata. Oor die eerste subperiode is bepaaldheidskoëffisiënte van onderskeidelik 25%, 27%, 30% en 17% waargeneem, wat ook hoër is as in die geval van maand- en kwartaaldata, terwyl die R²-waardes oor die tweede subperiode onderskeidelik 18%, 34%, 13% en 20% beloop, wat laer is as in die geval van beide die maand- en kwartaaldata. Laasgenoemde waarneming is teen die algemene tendens van R²-waardes wat groei met toenemende aggregasie oor tyd.

Die regressies van produksie op aandeleopbrengste bevestig die hipotese dat informasie betreffende die produksie in 'n spesifieke periode versprei is oor voorafgaande periodes en op hierdie wyse opbrengste oor 'n aantal voorafgaande periodes beïnvloed. Soos in die Fama (1990) studie neig die bepaaldheidskoeffisiënte om toe te neem met toenemende tyds-aggregasie. Die feit dat daar, selfs in die heel beste regressiemodel, nog 'n aansienlike komponent van onverklaarde variasie teenwoordig is, beteken dat produksie nie die enigste determinant van opbrengste is nie, soos inderdaad deur die fundamentele waardasieformule geïmpliseer word. Dit kan verder afgelei word dat die opbrengste gebaseer op die Nywerheidsaandeleindeks sterker assosiasies vertoon met nywerheidsproduksiegroei as opbrengste gebaseer op die Alle Aandeleindeks. Passingsresultate is swakker oor die 1963-1978 periode as oor die 1984-1992 periode, behalwe in die geval van jaardata. Omrede die passings in die geval van maand- en kwartaaldata egter 'n gebrek aan betekenisvolheid toon,

terwyl jaarverbande sterk betekenisvol is, is 'n versigtige gevolgtrekking dat die verbande tussen aandeleopbrengste en reële produksiegroei swakker word oor tyd, ten minste in die geval van die Alle Aandeleindeks, in ooreenstemming met die aanvanklik geformuleerde hipotese en soos ook kwalitatief ondersteun deur die draaipuntontleding, veral ten opsigte van uitbreidingsfases.

Hierdie gevolgtrekking word verder ondersteun deur die kousaliteitsontledings wat weergegee word in Tabela 6 tot 14. Met 'n enkele uitsondering (een waarde in Tabel 10) is daar geen getuieis van enige vorm van oorsaaklikheid tussen opbrengste en produksiegroei nie. Die jaarlikse data lewer wel getuieis van tweerigtingoorsaaklikheid in die geval van die volle periode en die 1963-1978 termyn, maar toon geen sodanige getuieis ten opsigte van die meer onlangse termyn nie. Hierdie getuieis is nog eens in ooreenstemming met die aanvanklik geformuleerde hipotese.

Tabel 6: Granger toets: Maandelikse data volle periode

Veranderlikes	Nulhipotese	Sloerings (maande)				
		1	3	6	12	24
MGSM MRAS	MGSM word nie veroorsaak deur MRAS nie MRAS word nie veroorsaak deur MGSM nie	0,7999 0,3833	0,6035 0,6766	0,9246 0,9447	0,5496 0,1262	0,3339 0,6573
MGSM MRIS	MGSM word nie veroorsaak deur MRIS nie MRIS word nie veroorsaak deur MGSM nie	0,1356 0,4660	0,1866 0,8785	0,3758 0,9886	0,3110 0,5265	0,5050 0,6303

Tabel 7: Granger toets: Maandelikse data 1963-1978

Veranderlikes	Nulhipotese	Sloerings (maande)				
		1	3	6	12	24
MGSM MRAS	MGSM word nie veroorsaak deur MRAS nie MRAS word nie veroorsaak deur MGSM nie	0,4940 0,8260	0,8355 0,7457	0,9462 0,8736	0,9088 0,2525	0,3046 0,8327
MGSM MRIS	MGSM word nie veroorsaak deur MRIS nie MRIS word nie veroorsaak deur MGSM nie	0,4787 0,8248	0,5670 0,6740	0,3858 0,8087	0,2197 0,3571	0,4060 0,8018

Tabel 8: Granger toets: Maandelikse data 1984-1992

Veranderlikes	Nulhipotese	Sloerings (maande)				
		1	3	6	12	24
MGSM MRAS	MGSM word nie veroorsaak deur MRAS nie MRAS word nie veroorsaak deur MGSM nie	0,9982 0,5940	0,7046 0,7358	0,8427 0,4250	0,4128 0,2563	0,9242 0,7546
MGSM MRIS	MGSM word nie veroorsaak deur MRIS nie MRIS word nie veroorsaak deur MGSM nie	0,3442 0,5683	0,6290 0,7493	0,3228 0,1925	0,5091 0,3667	0,7147 0,6797

Tabel 9: Granger toets: Kwartaallikse data volle periode

Veranderlikes	Nulhipotese	Sloerings (kwartale)			
		1	2	4	8
QGSM QRAS	QGSM word nie veroorsaak deur QRAS nie QRAS word nie veroorsaak deur QGSM nie	0,9034 0,9552	0,8508 0,7270	0,3248 0,3347	0,6825 0,6823
QGSM QRIS	QGSM word nie veroorsaak deur QRIS nie QRIS word nie veroorsaak deur QGSM nie	0,7141 0,9987	0,4041 0,4924	0,3549 0,1593	0,7339 0,1759

Tabel 10: Granger toets: Kwartaallikse data 1963-1978

Veranderlikes	Nulhipotese	Sloerings (kwartale)			
		1	2	4	8
QGSM QRAS	QGSM word nie veroorsaak deur QRAS nie QRAS word nie veroorsaak deur QGSM nie	0,4786 0,5456	0,7133 0,8339	0,7920 0,2021	0,5523 0,3502
QGSM QRIS	QGSM word nie veroorsaak deur QRIS nie QRIS word nie veroorsaak deur QGSM nie	0,3635 0,3348	0,6208 0,6123	0,6940 0,0845*	0,6381 0,1835

Tabel 11: Granger toets: Kwartaallikse data 1984-1992

Veranderlikes	Nulhipotese	Sloerings (kwartale)			
		1	2	4	8
QGSM	QGSM word nie veroorsaak deur QRAS nie	0,7711	0,9503	0,4571	0,1196
QRAS	QRAS word nie veroorsaak deur QGSM nie	0,1066	0,2394	0,4036	0,6138
QGSM	QGSM word nie veroorsaak deur QRIS nie	0,7693	0,5459	0,2135	0,1448
QRIS	QRIS word nie veroorsaak deur QGSM nie	0,2102	0,4673	0,7944	0,5292

Tabel 12: Granger toets: Jaarlikse data volle periode

Veranderlikes	Nulhipotese	Sloerings (jare)			
		1	2	4	8
AGM	AGM word nie veroorsaak deur ARAS nie	0,0221*	0,0326*	0,4598	0,4307
ARAS	ARAS word nie veroorsaak deur AGM nie	0,0173*	0,1462	0,5707	0,5359
AGM	AGM word nie veroorsaak deur ARIS nie	0,0154*	0,0468*	0,6006	0,5852
ARIS	ARIS word nie veroorsaak deur AGM nie	0,0093*	0,0535*	0,3442	0,1011

Tabel 13: Granger toets: Jaarlikse date 1963-1978

Veranderlikes	Nulhipotese	Sloerings (jare)			
		1	2	4	8
AGM	AGM word nie veroorsaak deur ARAS nie	0,1834	0,4104	0,6980	0,3649
ARAS	ARAS word nie veroorsaak deur AGM nie	0,0679*	0,1781	0,0944*	0,3314
AGM	AGM word nie veroorsaak deur ARIS nie	0,0540*	0,2122	0,6244	0,2593
ARIS	ARIS word nie veroorsaak deur AGM nie	0,0522*	0,1423	0,1572	0,1317

Tabel 14: Granger toets: Jaarliks data 1984-1992

Veranderlikes	Nulhipotese	Sloerings (jare)			
		1	2	4	8
AGM	AGM word nie veroorsaak deur ARAS nie	0,7482	0,7810	0,9070	0,3081
ARAS	ARAS word nie veroorsaak deur AGM nie	0,8039	0,2972	0,2298	0,5496
AGM	AGM word nie veroorsaak deur ARIS nie	0,5813	0,3963	0,3000	0,2106
ARIS	ARIS word nie veroorsaak deur AGM nie	0,7860	0,5943	0,2901	0,5836

*Betekenisvol by die 10% betekenispeil

4. Seisoenale patrone in aandeleopbrengste en produksiegroei

Die bestaan van maandelikse patrone in aandeleopbrengste – veral die sogenaamde Januarie-effek – is internasionaal goed gedokumenteer en ook in Suid-Afrika is die bestaan van sodanige patrone uitgewys (Hattingh en Smit, 1993). Chang en Pinegar (1989) redeneer dat seisoenale verskynsels in aandeleopbrengste verband mag hou met seisoenale patrone in produksiegroei.

Ten einde hierdie hipotese te toets, is die seisoenale patrone in die nie-seisoensaangepaste produksieindeks ondersoek, beide ten opsigte van die totale nywerheidsproduksie en vyf nywerheidssektore ten opsigte waarvan data vanaf 1963 beskikbaar was. Maandelikse groeiakoerse is deur middel van 'n analise van variansie ontleed en betekenisvolle verskille tussen maandgemiddeldes is in al vyf sektore, asook totale nywerheidsproduksie waargeneem. Die maande van hoogste en laagste seisoenale produksiegroei word in Tabel 15 opgesom. Hiervolgens is die verskille in seisoenale patrone tussen sektore heel duidelik.

Tabel 15: Seisoenale patrone in sektorale nywerheidsproduksiegroei

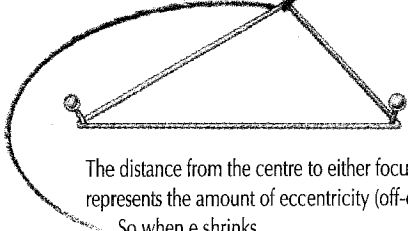
Sektor	Maande van seisoenale pieke	Maande van seisoenale trêe	p-waarde
Totaal	2,1	4,9	0,0000*
Papier en verpakking	3,6	12,4	0,0000*
Staal en ander bedrywe	1,3	12,9	0,0000*
Suiker	5,6	2,3	0,0000*
Tabak en vuurhoutjies	1,2	12,4	0,0000*
Klerasie, skoeisel en tekstiel	6,3	12,4	0,0000*

*Betekenisvol by die 10% betekenispeil

'n Analise van variansie is ook oor dieselfde periode uitgevoer ten opsigte van die opbrengste van nywerheidsaandele wat betref die totale industrie en sewentien sektore. Weer eens is dit duidelik dat die seisoenale patrone tussen sektore verskil, met Januarie, Desember en tot 'n mindere mate, April, wat uitstaan as maande van hoë groei (sien Tabel 16). Daaren-

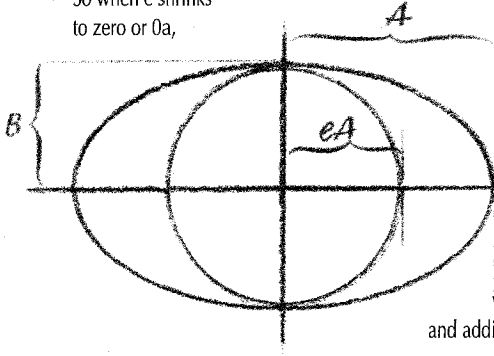
The ellipse has excellent flexibility. By moving the focus point on the perfect circle and adding a second point to it we have a broader,

flatter view which introduces a myriad of possibilities and alternate strategies. We can practically illustrate the simple logical elegance and flexibility of an ellipse with a pencil, a piece of string and two pins.



The distance from the centre to either focus is some fraction of A: eA . The symbol e represents the amount of eccentricity (off-centredness).

So when e shrinks to zero or $0a$,



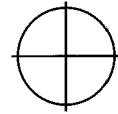
no eccentricity, the result is a perfectly rounded figure: a circle. But when e increases, the ellipse becomes increasingly eccentric while maintaining logic and adding flexibility.

The perfect circle ellipse with a graphic central focus represents Investec.

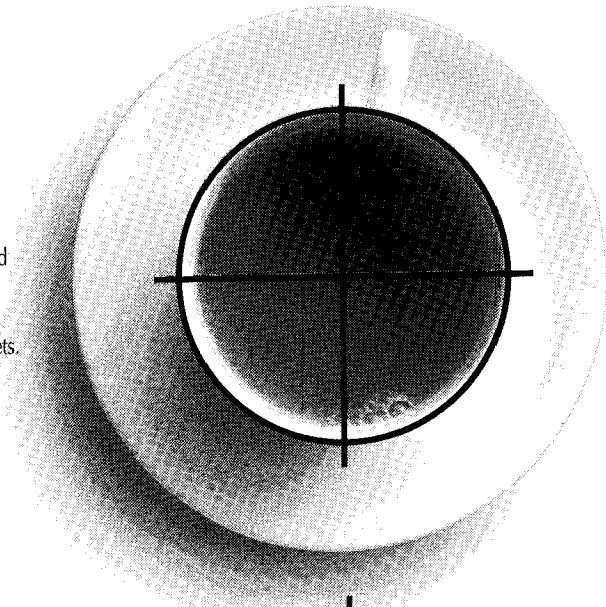
Using the central focus as a starting point, we expand our thought processes by extending the ellipse, with integrity, energy and imagination.

Investec is a Merchant Banking organisation that is resourceful, logical and creative with entrepreneurial vision.

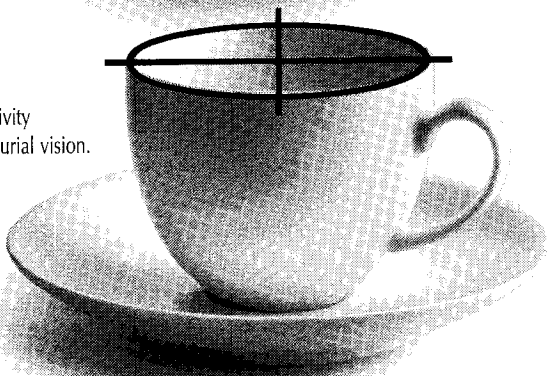
THE INTELLECTUAL VALUE OF THE INVESTEC LOGO



Crystal clear vision, discipline and correct focus – extremely valuable assets.



Imagination and creativity – the art of entrepreneurial vision.



History, and our own experience, has taught us that everything need not be exactly as we see it, nor is the obvious solution always the correct one.

The value of an idea or a thought process is not simply whether it appears to be right or wrong, but whether it is the best solution for our clients.

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teen staan Junie en November uit as maande wat met laer gemiddelde opbrengste geassosieer word. Slegs in sewe van die ontledings was die patrone egter betekenisvol by die 10% betekenispeil.

Tabel 16: Seisoenale patrone in sektorale aandeleopbrengste

Sektor	Maande van seisoenale pieke	Maande van seisoenale trôe	p-waarde
Totaal	1,12	6,5	0,3146
Papier en verpakking	1,12	6,9	0,0794*
Staal en ander bedrywe	1,7	11,2	0,0058*
Suiker	1,12	6,4	0,1458
Tabak en vuurhoutjies	12,7	9,5	0,8961
Klerasie, skoeisel en tekstiel	1,4	5,6	0,0358*
Voedsel	4,1	6,9	0,1895
Meubels en huisware	1,12	11,6	0,0313*
Motors	7,2	6,11	0,0272*
Farmaseuties en medies	12,4	11,6	0,2380
Drukkers en uitgewers	4,1	12,3	0,1262
Vervoer	12,8	11,4	0,7516
Nywerheid-beherend	1,3	6,10	0,5749
Drank, hotels en ontspanning	7,3	11,10	0,2654
Chemikalieë en olie	12,10	5,6	0,6149
Elektronika, elektriese en batterye	1,4	10,5	0,0125*
Ingenieurswese	1,12	6,10	0,0147*
Vis	1,7	3,11	0,4141

*Betekenisvol by die 10% betekenispeil

Tabel 17: Granger toets: Seisoenale patrone

Sektor	Nulhipotese	Sloerings (maande)				
		1	3	6	9	12
Totaal	Opbrengste word nie deur reële groei veroorsaak nie	0,4883	0,1287	0,0251*	0,0458*	0,1478
	Reële groei word nie deur opbrengste veroorsaak nie	0,6337	0,2882	0,3075	0,3419	0,2688
Papier en verpakking	Opbrengste word nie deur reële groei veroorsaak nie	0,1359	0,0191*	0,0819*	0,0871*	0,0697*
	Reële groei word nie deur opbrengste veroorsaak nie	0,1242	0,2847	0,6056	0,2081	0,2437
Staal en ander bedrywe	Opbrengste word nie deur reële groei veroorsaak nie	0,2877	0,0159*	0,0353*	0,0589*	0,1045
	Reële groei word nie deur opbrengste veroorsaak nie	0,0334*	0,0378*	0,1506	0,0597*	0,0015*
Suiker	Opbrengste word nie deur reële groei veroorsaak nie	0,9560	0,2888	0,5447	0,7087	0,6208
	Reële groei word nie deur opbrengste veroorsaak nie	0,2459	0,1944	0,2229	0,1763	0,1778
Tabak en vuurhoutjies	Opbrengste word nie deur reële groei veroorsaak nie	0,0978*	0,3635	0,4278	0,6695	0,6145
	Reële groei word nie deur opbrengste veroorsaak nie	0,9991	0,2091	0,6267	0,8520	0,7289
Klerasie, skoeisel en tekstiel	Opbrengste word nie deur reële groei veroorsaak nie	0,4240	0,0750*	0,0049*	0,0202*	0,0312*
	Reële groei word nie deur opbrengste veroorsaak nie	0,1887	0,5271	0,1976	0,2117	0,7561

*Betekenisvol by die 10% betekenispeil

Vervolgens is regressieontledings gebruik om die verwantskappe tussen opbrengste en nywerheidsproduksiegroei te kwantifiseer. Die ontledings bevestig die Fama-hipotese dat regressies op produksiegroei oor korttermyn opbrengs-horisonne die verklaringsmoontlikhede onderbeklemtoon weens die metingsfoutprobleem wat insluip omdat opbrengste oor 'n hele aantal periodes inligting betreffende toekomstige produksiegroei bevat. In die geval van jaardata is bepaaldheidskoeffisiënte so hoog as 34% in bepaalde gevalle waargeneem. Die verklarings wat gebied is, is oor die algemeen swakker as in die ontleding van Fama (1990). Die Nywerheidsaandeleindeks vaar marginaal beter as die Alle Aandeleindeks en daar is spore van getuienis dat die gehalte

In 'n poging om die verbande tussen seisoenale patrone in produksiegroei en aandeleopbrengste te ontleed, is daar weer van Granger toetse gebruik gemaak. Die resultate is vervat in Tabel 17. In die geval van die Suikersektor kon geen assosiasies waargeneem word nie, terwyl in die geval van die sektor Staal en verwante bedrywe, daar sprake is van tweerigting oorsaaklikheid. In al die ander gevalle waar betekenisvolle verbande waargeneem is, skyn dit asof seisoenale patrone in produksie oorsaaklik staan tot opbrengste, eerder as andersom. Op hierdie vlak is daar dus geen getuienis dat die beurs reële aktiwiteit lei nie, wat ondersteunend staan tot die bevindings in die vorige twee afdelings.

Aangesien hier egter duidelik hoër vlakke van betekenisvolheid bewerkstellig is, mag dit lonend wees om te besin omtrent (i) die invloed van seisoenale aanpassings op ontledings van hierdie aard en (ii) die invloed van aggregasie oor sektore. Beide prosesse mag neig om informasieverliese in die hand te werk.

5. Samevatting

Die referaat ontleed die verwantskap tussen reële ekonomiese aktiwiteit en aandelebeursopbrengste binne die paradigma van 'n effektiewe mark waar deelnemers rasonele sienings omtrent toekomstige ekonomiese groei neem.

In 'n draaipuntstudie word aangetoon dat opbrengste inderdaad die konjunktuur konsekwent lei, alhoewel met leiperiodes wat grootliks verskil van draaipunt tot draaipunt en effens meer stabiel is in die geval van ekonomiese uitbreidings as in die geval van resessies. Die beperkte aantal waarnemings bemoedik veralgemenings, maar daar skyn 'n tendens van langer wordende leiperiodes oor tyd te wees in die geval van uitbreidingsfasies.

van die verband afneem oor tyd. Kousaliteitstoetse bied feitlik geen getuienis van die oorsaaklikheid tussen opbrengste en produksiegroei nie, behalwe in die geval van jaardata wat oor die volle en vroeëre termyn op tweerigtingoorsaaklikheid dui, maar oor die meer onlangse termyn alle betekenisvolheid verloor.

Op die vlak van die verbande tussen seisoenale patrone in produksiegroei en aandeleopbrengste, bestaan daar geen getuienis dat die beurs reële aktiwiteit lei nie.

In samehang gesien, is die resultate afwysend van die idee dat aandeleopbrengste betroubare vooruitskatters van reële

ekonomiese groei is. Dit het implikasies vir die benutting van hierdie tipe informasie in 'n verskeidenheid van vooruitskattingsmetodieke.

Soos in die Fama (1990)-ontleding, word die implikasies aangaande die rasionaliteit van aandelepryse aan die oordeel van die leser oorgelaat.

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Window dressing by institutional investors on the Johannesburg Stock Exchange: an empirical analysis

ABSTRACT

The purpose of this paper is to investigate the widely held belief that institutional portfolio managers "window dress" or adjust their share portfolios before the release of their quarterly reports. In this study, block trading on the JSE covering the period 1983 – 1990 is examined to determine if there is abnormal end-of-period trading activity. The empirical evidence clearly rejects the null hypothesis of no abnormal end-of-period trading activity. While the company data yield less clear results, there are indications that institutional window dressing is more likely in the securities of companies that have performed poorly during the current quarter or the recent past. Although the behaviour of institutional portfolio managers cannot be generalized to other types of corporate activity, they suggest that reporting requirements do affect managerial behaviour.

Introduction

The allegation that institutional portfolio managers "window dress" their financial statements has become a controversial issue in many overseas countries as well as in South Africa. In recent years, accountants and academics have debated the effects of financial reporting requirements on producers and users of financial data. One example of the economic effect of accounting is the "window dressing" phenomenon. It is widely believed that companies "window dress", or improve their balance sheets, before the release of their quarterly reports. However, there has been no systematic empirical evidence confirming the existence of window dressing.

This behaviour could be motivated by the manager's belief that financial statement users make decisions based on observed balance sheet numbers. On the other hand, it might be argued that, in an efficient information market, the actions of producers and users of accounting data are based on economic determinants and not accounting numbers. Consequently, no window dressing takes place.

Window dressing of corporate financial reports is not directly observable. However, trading by institutional portfolio managers is an observable activity that may include window dressing. This paper documents the presence of window dressing by using block trading activity on the Johannesburg Stock Exchange (JSE) to examine the end-of-quarter trading activities of institutional portfolio managers. Abnormal trading activity occurring shortly before the end of each calendar quarter would be viewed as consistent with the conclusion that institutional portfolio managers window dress their financial statements.

The window dressing controversy

In recent years there has been considerable evidence supporting the efficient market hypothesis (Keane, 1986). However, despite the evidence in favour of efficient markets, reports that institutional portfolio managers make portfolio decisions in anticipation of their quarterly financial statements persist in the financial press (Sunday Tribune Finance, 1991, p 4). Since institutional investors report the market value of securities held, changing the portfolio immediately before releasing the quarterly report will not effect the reported value of a portfolio or its realized return. Nevertheless, reports in the financial press and comments by investment analysts suggest that unusual end-of-quarter institutional investor trading activity is widely

accepted as an explanation for changes in trading volumes (Hillery, 1982).

Two types of window dressing activity can be identified. In the first case, portfolio managers may schedule their portfolio reviews near the end of a quarter in anticipation of their end-of-quarter reports. The buy and sell decisions are made on the basis of expectations and would have been made in the absence of a quarterly report. The approach of the quarterly report may accelerate the decision process. If this is the case, institutional window dressing would not affect the composition of securities in the portfolio.

The second type of window dressing is based on the notion that the portfolio manager's decision process is affected by the end-of-quarter reporting requirements. These portfolio decisions are not part of a continuous review process of the portfolio manager. Rather, they are extraordinary portfolio adjustments that are not made solely on the future risk-expected return characteristics of the security, but are influenced by the manager's desire to show a certain type of portfolio at the end of the quarter.

A possible motive for changing the portfolio lies in the use of a fund's holdings as a sales document. Fund managers might believe that a "better looking" portfolio will increase investment in the fund, and thereby increase their compensation. The belief that investors prefer investing in a portfolio of securities that have not performed poorly presumes that managers assume that investors believe in dependency in share price changes. In this case, institutional window dressing would affect selected securities based on their previous performance. However, in a market where securities are properly priced, this type of window dressing cannot be justified economically from an investor's point of view (Jensen & Meckling, 1976).

The unit trust industry in South Africa operates in a highly competitive environment. The quarterly reporting requirement for unit trusts (until 1991) and various surveys on insurance company performance have promoted an emphasis on shortterm performance which can result in window dressing. Poor investment performance over one or more quarters could result in a massive outflow of investment funds and could threaten the jobs of portfolio managers. Therefore, it can be suggested that managers of underperforming institutional portfolios are more likely to apply cosmetic techniques and indulge in window dressing to boost performance.

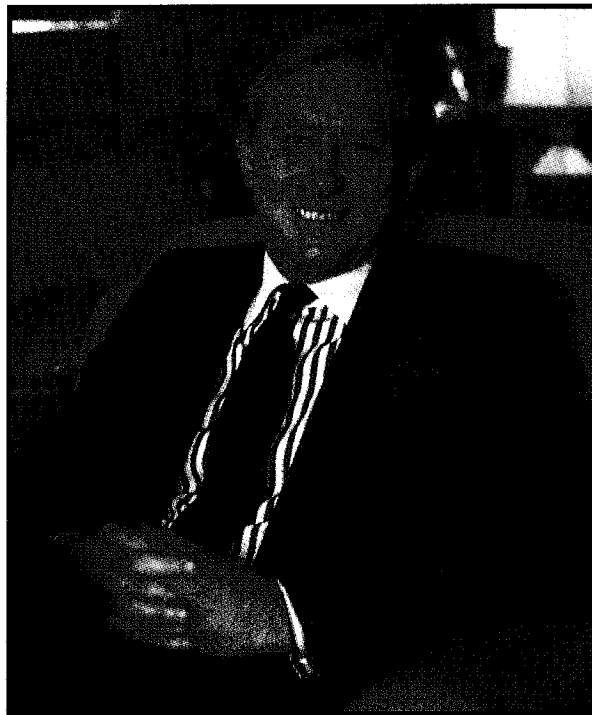
Window dressing occurs in just about all the major equity markets in the world and is especially rampant on the Tokyo stock market. Tobashi is the name the Japanese give to the common trick of shifting investments from one portfolio to another before the end of a reporting period, to avoid reporting an investment loss (The Economist, 1992, p 83). It has been reported that a practice has developed in South Africa of switching shares from a life fund into a unit trust at a price below market value (Sunday Tribune Finance, 1991, p 4). Since most unit trusts are managed by the large insurance companies, such a switch can be accomplished by a mere book entry.

The financial press in South Africa generally attributes end-of-year window dressing activity to the unit trust industry (Walker, 1992, p 3). It has been reported that stockbrokers contact fund managers a few days before the end of a reporting period to ask if they want share prices to be boosted (Harris and

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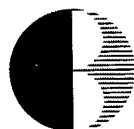
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Gillilan, 1992, p 10). It has been further reported that some brokers even place orders or book shares over in order to boost share prices for their institutional clients (Kilalea 1991, p 23).

Unit trust managers and institutional portfolio managers vehemently deny that they are involved in window dressing activity. However, it is difficult to provide an explanation for the overwhelming tendency for share prices to increase in value shortly before the end of each reporting quarter. Many institutional portfolio managers concede that their peers are guilty of window dressing (Jansson, 1983, p 139). Several portfolio managers even factor the phenomenon into their investment decisions. Some portfolio managers use the tactic of "dump-the-loser" whereby share purchases are delayed until just after the reporting quarter has ended. This tactic is based on the expected decline in share prices in response to sales by institutional investors of shares bought for window dressing purposes.

In the past the most effective way to window dress was to force up the prices of blue chip shares. These carry the heaviest weighting in the market indices and are the most important components of the general unit trusts. However, several individual investors became aware of this tactic and earned large profits by buying popular blue chip shares just before the end of the quarter (Crofty, 1991, p 17). Investment analysts and informed market watchers are of the view that window dressing currently tends to concentrate on smaller companies and poorer quality shares which generally have poor market liquidity (Kilalea, 1991). Although these shares form only a small part of the total portfolio of unit trusts, there is more scope for large price increases.

The Association of Unit Trusts contends that allegations of window dressing at quarter ends by unit trust managers are without foundation (Turner, 1991, p 7). It is argued that any short-term advantage gained from window dressing would be fully offset in the following accounting period where the measurement of performance would be taken from a higher base. It is further argued that the effect on performance in the long term would be insignificant. The practice involving the transfer of securities from life funds to unit trusts at non-market related values is also refuted by the Association of Unit Trusts. Such a practice would involve enriching unit holders at the expense of policy holders and could not possibly be countenanced by any responsible life company (Turner, 1991, p 7).

The financial press in South Africa and in the industrialised countries report widespread evidence of window dressing by institutional investors at the end of each quarter. However, this field of study has been neglected by academic researchers. Bildersee and Kahn (1987) used block trading activity to investigate evidence of window dressing on the New York Stock Exchange. They report statistically significant increase in share trading activity at the end of each quarter as a result of window dressing by unit trusts. The purpose of this investigation is to replicate the Bildersee and Kahn study to investigate the window dressing phenomenon on the JSE.

Research methodology

The vast majority of market trading is assumed to be economically motivated. Window dressing is assumed to be an incremental end-of-period trading activity. If institutional investors window dress their portfolios in anticipation of their quarterly reports, then there should be abnormal trading volume at the end of the quarter. There may be other sources of abnormal trading volume in a company's securities. Information announcements concerning the economy or specific companies may be responsible for unusual trading activity. Attempts are made to neutralize these possible causes of abnormal tra-

ding in order to focus on window dressing as a cause for the abnormal trading. The following competing hypotheses are tested:

HO: There is no abnormal trading activity at the end of the quarter.

Therefore, there is no evidence of window dressing.

HI: There is abnormal trading activity at the end of the quarter.

Therefore, there is evidence of window dressing.

An ideal method of testing the window dressing phenomenon would be to examine the end-of-quarter trading behaviour of institutional portfolio managers. However, since publicly available trading data do not identify the participants (buyers and sellers) in trades, we use block trades as a surrogate for institutional trading. A block trade is defined (for the purpose of this investigation) as a deal involving at least 10 000 shares which have a minimum value of R500 000,00. Since institutional investors such as unit trusts have calendar-quarter reporting periods, window dressing should occur toward the end of each calendar quarter when portfolio managers can observe the net impact of all economic events affecting them during the quarter. Therefore, if window dressing exists, one would expect to observe an abnormal number of block trades at the end of the quarter.

Sample selection

Block trading data were obtained from the data base of "McGregor's On Line Information Services" in the following forms:

1. Aggregate market data: The number of daily block trades and the percentage of daily trading volume represented by block trades on the JSE for the period 1 January 1983 to 31 December 1990 (32 quarters).
2. Company data: A list of every block trade, by company, on the JSE for the period 1 January 1983 to 31 December 1990 (32 quarters).

The aggregate data were used to look for general trends in end-of-period trading behaviour. The company data were used to form three samples: 30 "blue chip" shares, 30 "winners", and 30 "losers".

The "blue chip" sample was chosen for two primary reasons. The companies in this sample were selected from the "top 100" companies listed on the JSE. Institutional investors have large holdings in "blue chip" shares, so there is an opportunity to window dress investment portfolios. Second, with a few exceptions these easily marketable securities did not perform in any extreme manner. Therefore, activity in this sample is geared toward the first (routine) type of window dressing, that is, trading due to accelerated decision process. The "winners" and "losers" samples represent securities that performed in some extreme manner. As a result, these samples are geared toward testing the second type of window dressing, that is, non-routine activities to change asset composition to show a certain type of portfolio at the end of the quarter.

The "winner" and "losers" were chosen in the following manner. The Sunday Times - Business Times publishes a weekly list of companies that had the largest percentage price increases and price decreases in the previous week. This list was used to select the "winners" and "losers" on the JSE during the first two months of each quarter. The 30 losers and 30 winners were chosen after eliminating the securities with relatively less extreme performances and those securities with relatively little institutional following.

Testing procedures

Several stockbrokers and stock exchange specialists were contacted to identify the periods during which window dressing was most likely to occur. Arising from these consultations, it was decided to choose two test periods:

1. Days -15 to -6: the 10 trading days starting with the fifteenth trading day before the end of the quarter.
2. Days -5 to -1: the last five trading days in the quarter.

The stockbrokers reported that trading on the JSE is characterized by a lack of liquidity. Consequently an institutional investor cannot wait until the last five trading days to complete a window dressing transaction involving a large block of shares. Furthermore, it is unlikely that a portfolio manager would postpone window dressing to the last possible moment. The stockbrokers indicated that if window dressing exists, one would expect abnormally high block trading activity in the days -15 to -6. However, no increase in trading activity is expected during the last five trading days of the quarter. On the contrary, abnormally low trading would be expected in the last five days of the quarter compensating for the previous excess volume.

Institutional trading activity is measured by the number of block trades (NBT) and by the percentage of total trading volume represented by block trades (PBV) during the test periods. Although these statistics are related, they test different aspects of block trading. The NBT statistic weighs each block trade equally, irrespective of trade size. The PBV statistic weighs each share equally, irrespective of the number of block trades. The average statistics for days -15 to -6 and days -5 to -1 are compared with the average level for these statistics for the period starting with the first trading day of the period and ending with day -16 (the base period). Each sample quarter's test variable is compared with the block trading during the base period for that quarter to avoid any long-term trends in block trading behaviour. If there is statistically significant window dressing activity, then NBT and PBV will be significantly different for the test periods relative to the base period.

The test variable for company data does not have a normal distribution and could also have a large sample variance heavily influenced by extreme observations. Therefore, the primary tests, particularly for company data, are nonparametric. Following the suggestion of Hollander and Wolfe (1973), the Wilcoxon and Fisher Signed-Rank tests are used. For each test ratio we compare the actual data with the expected value of the ratio. If there is an abnormally high level of block trading activity, we expect the statistic to be positive. If there is an abnormally low level of block trading activity, we expect the statistic to be negative.

Information announcements that affect overall market trading (such as changes in interest rates) were not considered since they are assumed to occur randomly throughout the time periods examined. To control the information announcements made by companies in the blue chip, winners and losers samples, the tests were repeated, deleting any company that had significant information announcements during the last 20 trading days of the quarter. No systematic differences from the results to be presented were observed. Furthermore, if events do cluster during the base period, then any resulting increase in trading would bias against our finding window dressing at the end of the quarter. In those periods where the blue chip, winners and losers samples had extreme returns, separate tests were performed for the extreme quarter when any associated information flow presumably occurred.

Market test results

TABLE 1
T-Tests for Ratio Variables
Sample: Johannesburg Stock Exchange (1983-1990)

Sample Period	Parametric Test		Nonparametric Test
	Mean	T Statistic	Wilcoxon T
32 quarters			
1. PBV			
Days -15 to -6	0,532	1,456 ^c	1,372 ^c
Days -5 to -1	-0,925	-2,568 ^a	-2,734 ^a
2. NBT			
Days -15 to -6	1,027	1,821 ^b	1,973 ^b
Days -5 to -1	-1,369	-2,740 ^a	-2,457 ^a

^aOne-tailed significance at the 0,01 level
^bOne-tailed significance at the 0,05 level
^cOne-tailed significance at the 0,10 level

The results of the means test for all block trading on the JSE for the period 1983-1990 (32 quarters) are shown in Table 1.

The means are all positive for the days -15 to -6, indicating an abnormally high level of block trading. The results are significant at the 10 percent level or lower. For the last five days of the quarter, the means are all negative, indicating an abnormally low level of block trading activity. These results are significant at the 1 percent level. The results of the Wilcoxon Signed-Rank Test, also shown in Table 1, are substantially similar to the parametric results. The market test results are consistent with window dressing.

Corporate data

TABLE 2
Average daily block trading for companies
(selected samples) listed on the JSE during 1983-1990
(32 quarters).

Sample type	Average daily number of block trades	Average daily percentage block volume	Percentage of days with at least one block trade
30 "blue chip"	6,472	66,5%	92,7%
30 winners and 30 losers (extreme company-quarter excluded).	1,534	26,2%	31,8%
30 winners and 30 losers (extreme company-quarter included).	2,852	33,4%	46,1%

Table 2 presents the summary information about the corporate sample. As might be expected, the blue chip sample has more block trades and a greater block volume than the winner and loser samples, even when the winners and losers are experiencing their extreme returns.

TABLE 3
Wilcoxon and Fisher Signed-Rank Test for block trading by institutional investors during 1983-1990.

Test Variables	Wilcoxon T Values		Fisher T Values	
	PBV	NBT	PBV	NBT
Sample: 30 "blue chip"				
Extreme company-quarter excluded (N=93)				
Days -15 to -6	0,314	1,425 ^c	-0,104	0,845
Days -5 to -1	-3,073	-3,256 ^a	-3,518 ^a	-3,792 ^a
Extreme company-quarter (N=27)				
Days -15 to -6	-1,309	-0,856	-1,247	-0,761
Days -5 to -1	-2,765 ^a	-1,937 ^b	-2,294 ^b	-1,542 ^c
Sample: 30 "winners"				
Extreme company-quarter excluded (N=78)				
Days -15 to -6	0,415	-1,193	0,352	-0,968
Days -5 to -1	-1,423 ^c	-1,782 ^b	-2,851 ^a	-3,617 ^a
Extreme company-quarter (N=42)				
Days -15 to -6	-2,534 ^a	-3,106 ^a	-2,917 ^a	-3,408 ^a
Days -5 to -1	-1,443 ^c	-2,316 ^b	-1,652 ^c	-2,829 ^a
Sample: 30 "losers"				
Extreme company-quarter excluded (N=88)				
Days -15 to -6	-0,524	-0,418	-0,693	-0,975
Days -5 to -1	-2,815 ^a	-2,956 ^a	-3,172 ^a	-3,019 ^a
Extreme company-quarter (N=32)				
Days -15 to -6	-1,464 ^c	-1,025	-1,883 ^b	-1,517 ^c
Days -5 to -1	-3,315 ^a	-2,914 ^a	-3,329 ^a	-3,522 ^a

^aOne-tailed significance at the 0,01 level.
^bOne-tailed significance at the 0,05 level.
^cOne-tailed significance at the 0,10 level.

The most consistent observation, summarized in Table 3, is the presence of abnormally low trading during the last five trading days of the quarter. This result is always significantly lower at least at the 10 percent level. In most cases the significance reaches 1 percent.

The expectation of abnormally high trading during days -15 to -6 is not supported by the data. Instead, these periods cannot be distinguished from the preceding part of the quarter. However, for the sample of extreme company-quarters (those quarters when the company made the Sunday Times' list of extreme performers) there is significantly less trading than earlier in the quarter. This suggests that, in the quarters with extreme performance, the window dressing type of trading may have occurred simultaneously with the good or bad news precipitating the extreme returns. Alternatively, even if there is end-of-period window dressing in the extreme quarters, the tests do not show it since base-period block trading was very highly coincident with the distribution of good and bad news coming out.

Because the test results for the market indices are consistent with end-of-period window dressing, but the results for the individual companies generally do not support window dressing fully, it is possible that window dressing does not affect all securities equally at all times. In order to investigate this possibility, it was decided to use rank tests

to analyze whether quarter-ending trading is related to a security's risk-adjusted return after adjusting for the market's return.

If window dressing is motivated by a desire to improve a portfolio's appearance, it should occur most frequently to investments in companies underperforming the market during the base period in each quarter. While the purchase of superior performers might also improve a portfolio's appearance, a fund manager will be reluctant to acquire these superior performers at the end of the quarter since the fund's return for the quarter would not reflect their past performance. A potential investor would correctly assume they were recently purchased and the fund manager could be accused of being tardy in acquiring the securities. The sale of poor performers, however, improves the portfolio's appearance without giving a clear indication as to when they were sold.

The company excess return (CER) beyond that explainable by the company's systematic risk (beta) and the market return is calculated for each company quarter as

$$CER = R_{ij} - \beta_{ij} R_{mj}$$

Where R_{ij} is the return of the i th company in quarter j ($j = 1, 2, 3, 4$), R_{mj} is the market return in quarter j ($j = 1, 2, 3, 4$), β_{ij} is the systematic risk (beta) of company i calculated on monthly data for the year-long period preceding quarter j , and R_{ij} is the return calculated for the base period. Returns include dividend flows.

TABLE 4
Wilcoxon and Fisher Signed-Rank Tests for block trading by institutional investors classified by Company Excess Return (CER)

Test Variables	Wilcoxon T Values		Fisher T Values	
	PBV	NBT	PBV	NBT
Sample: 30 "blue chip"				
(Extreme company-quarter excluded) + CER (N=41)				
Days -15 to -6	-0,263	-0,427	-0,389	-0,451
Days -5 to -1	-2,932 ^a	-2,412 ^a	-3,247 ^a	-2,716 ^a
-CER (N=23)				
Days -15 to -6	-0,614	1,428 ^c	0,753	1,019
Days -5 to -1	-2,537 ^a	-2,165 ^b	-1,848 ^b	-2,137 ^b
Sample: 30 "winners"				
(Extreme company-quarter excluded) + CER (N=53)				
Days -15 to -6	-1,754 ^b	-1,136	-2,087 ^b	-1,212
Days -5 to -1	-1,342 ^c	-2,519 ^a	-1,965 ^b	-2,835 ^a
-CER (N=36)				
Days -15 to -6	-0,523	0,916	-0,371	0,743
Days -5 to -1	-1,867 ^b	-2,753 ^a	-2,354 ^b	-3,028 ^a
Sample: 30 "losers"				
(Extreme company-quarter excluded) + CER (N=29)				
Days -15 to -6	-2,153 ^b	-2,765 ^a	-2,219 ^b	-3,104 ^a
Days -5 to -1	-2,917 ^a	-3,106 ^a	-2,513 ^a	-3,017 ^a
-CER (N=54)				
Days -15 to -6	1,535 ^c	1,425 ^c	1,768 ^b	0,951
Days -5 to -1	-1,396 ^c	-1,738 ^b	-1,547 ^c	-1,643 ^c

^aOne-tailed significance at the 0,01 level
^bOne-tailed significance at the 0,05 level
^cOne-tailed significance at the 0,10 level

*“Do
not follow
where the path
may lead,

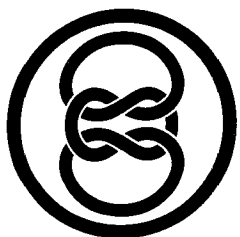
go instead
where there is
no path
and leave
a trail.”*

We believe it.

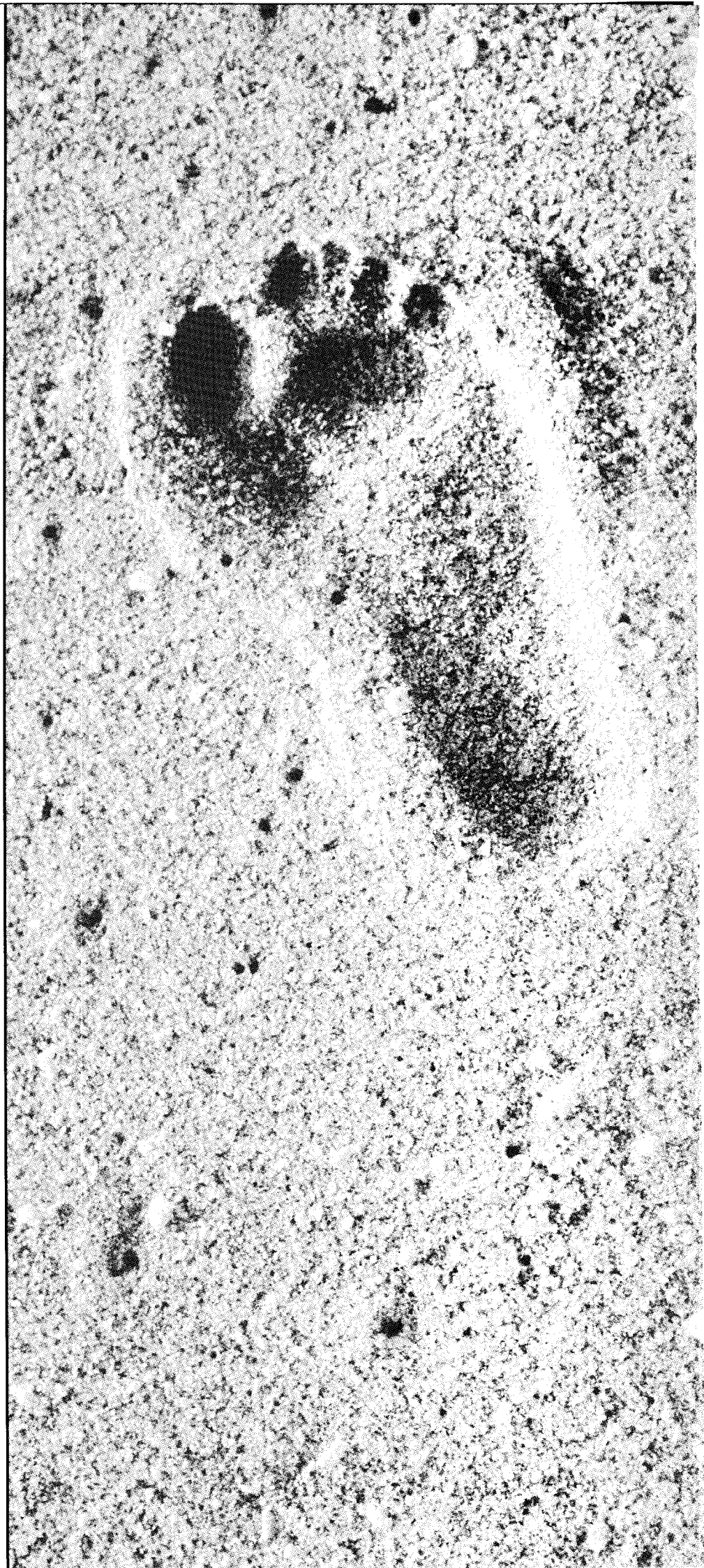
We believe we are masters of our own destiny. We believe in the values of leadership. We believe in outstanding customer satisfaction.

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The nonparametric tests were repeated, splitting each sample between company-quarters with returns greater than that explainable by the market (positive CER) and returns less than that explainable by the market (negative CER). The results are presented in Table 4. As before, the signs for days -5 to -1 are consistently negative. For days -15 to -6, a dichotomy of results begins to appear. There is some evidence of abnormally high trading if the share has underperformed the market, but some evidence of reduced trading if the share has outperformed the market. This dichotomy is most striking for the sample of 30 loser companies. All four tests for the loser companies with positive CER's suggest significantly reduced trading, and three of the four tests for companies with negative CERs suggest significantly increased trading.

It is suggested that the realization of an extreme quarter may cause changes in later trading behaviour relative to the trading behaviour when the occurrence of the extreme quarter was not yet a certainty. Therefore, it was decided to create a sample based on those quarters occurring before the company's extreme quarter and another based on those occurring after the company's extreme quarter. The resulting samples were again split on the basis of the company's CERs for those quarters. In the winners sample, the results before and after the extreme quarter could not be distinguished from those presented in Table 4. This is also the case for the losers sample in the positive CER case.

TABLE 5
Wilcoxon and Fisher Signed-Rank Tests for block trading by institutional investors: negative CER case

Test Variables	Wilcoxon T Values		Fisher T Values	
	PBV	NBT	PBV	NBT
Sample: 30 "losers"				
Extreme company-quarter excluded (-CER)				
Before extreme quarter (N=33)				
Days -15 to -6	0,832	1,152	0,963	1,475 ^c
Days -5 to -1	-1,457 ^c	-1,927 ^b	-1,548 ^c	-1,927 ^c
After extreme quarter (N=21)				
Days -15 to -6	1,371 ^c	1,852 ^b	1,419 ^c	1,867 ^b
Days -5 to -1	-0,542	-0,731	-0,476	-0,935

^bOne-tailed significance at the 0,05 level

^cOne-tailed significance at the 0,10 level

Significantly different results were obtained for the losers sample in the negative CER case. The results are presented in Table 5. Before the extreme quarter, only one of the four tests is significantly positive at the 10 percent level for days -15 to -6. However, after the extreme quarter, all four tests are positive and statistically significant including those that do not require the assumption of symmetric distribution. Also, before the extreme quarter there was significantly lower trading of these companies during days -5 to -1. After the extreme quarter there appears to be no slowdown in trading activity during the last five days of the quarter. These results suggest that a company that has distinguished itself as underperforming the market severely and suffers continued negative CERs may continue to generate unusually high end-of-period trading volume relative to other securities. These results support the proposition that window dressing is primarily associated with underperforming securities.

Summary and conclusions

The results of this investigation allow us to reject the null hypothesis of no abnormal end-of-period trading activity. The results suggest that trading activity increases at the end of each quarter. This result is consistent with the window dressing hypothesis. Based on the market data, both the parametric and nonparametric tests are consistent with a pattern of increased trading (days -15 to -6) followed by a trading lull towards the end of each calendar quarter (days -5 to -1). While the company data yield less clear results, there are indications that institutional window dressing is more likely in the securities of companies that have performed poorly during the current quarter or the recent past. Although the behaviour of institutional portfolio managers cannot be generalized to other types of corporate activity, they suggest that reporting requirements do affect managerial behaviour.

The results of this investigation tend to support the often repeated accusation in the financial press that institutional investors window dress their financial statements to present a "better-looking" portfolio to investors. Trading on the JSE is characterized by a low volume of trading for the majority of listed companies. In such an environment institutional portfolio managers have sufficient scope to window dress their financial statements. Increasing the liquidity of shares traded on the JSE may well result in reduced window dressing of financial statements and also contribute towards improving the efficiency of the JSE. Furthermore, the decision taken by the unit trust industry to discontinue the presentation of quarterly financial statements could also result in reduced window dressing activity.

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Cash Flow Statements: The importance of cash from operating activities – Investment Basics XXIX

1 OBJECTIVE

The objective of the Cash Flow Statement is to provide users of financial statements with details of cash generated or utilized by operations, investing activities and financing activities. The traditional income statement and balance sheet provide limited information regarding the timing and extent of cash flows of an enterprise. Cash flow statements therefore enable users to form a better assessment of the cash performance.

The cash flow from operating activities is usually considered the most important type of cash flow. A company which consistently fails to generate positive cash from operating activities is likely to land up in financial difficulties. In the long term a satisfactory return on assets, a healthy capital structure, high dividends and hopefully a reasonable rating in the market result from a positive cash flow from operating activities.

2 FORMAT

The format of a cash flow statement is usually as follows:

2.1 Cash from operating activities

- Cash generated by operations i.e. operating profit before interest paid and taxation, but after adjustments for non-cash items and non-cash components of working capital items
- Cash effects of finance costs and taxation
- Cash effects of distribution to owners

2.2 Cash effects from investing activities (i.e. fixed and other assets acquired and/or sold)

2.3 Cash effects from financing activities (i.e. issuing of ordinary share capital, preference share capital movements, long-term borrowings and short-term borrowings raised and repaid).

3 EXPLANATION OF CASH GENERATED BY OPERATIONS

Cash generated by operations is recorded by adjusting operating income before taxation (as per income statement) by items not involving cash outlay (non-cash items) and by the non-cash components of working capital.

Cash generated by operations is normally strongly positive in relation to operating income. The main source of non-cash items is depreciation which is added to operating income. Increases in non-cash components of working capital (stock plus debtors less creditors) will be a reduction of operating income and decreases of non-cash components of working capital will be added to operating income.

The increase in working capital is a function of increased scale of operations (e.g. sales growth) and slacker control of stocks and debtors and creditors demanding quicker payments. Therefore a change in working capital is a function of growth in sales and the cash conversion cycle (where the cash conversion cycle is equal to the stock period plus the debtors period less the creditors period). A high sales growth rate, although it will generate higher income, could be dangerous if the company has a long cash conversion cycle, especially if the profitability margin is relatively low.

4 EXAMPLE

A South African example in the Furniture and Household sector of the JSE of high sales growth rates initially yielding excellent income results and eventually poor results due to the excessive sales growth will be discussed forthwith (see Annexures 1 and 2). The cash flow data is summarised in Annexure 2 and additional non-cash flow data is summarised in Annexure 1.

ANNEXURE 1 ADDITIONAL DATA

	1988 R'000	1989 R'000	1990 R'000	1991 R'000	1992 R'000
Sales	729 571	934 052	1 287 052	1 409 189	1 422 727
Sales growth		28,03%	37,79%	9,49%	0,96%
Available for equity (per income statement)	43 143	60 129	92 878	(79 224)	(77 120)
Share price at year-end	720	800	1 250	1 100	40
Share price at year-end plus 3 months	750	1 300	1 300	550	12
EPS	260	363	560	(455)	(443)

According to Annexure 1 sales increased from R730m, in 1988 to R1 423m in 1992. The sales growth for 1989/88 was 28%, 38% for 1990/89 and 9% in 1991/90. The amount available for equity (as per income statement) increased from R43m in 1988 to R93m in 1990 only to drop to deficits of R79m and R77m in 1991 and 1992 respectively. EPS naturally showed the same trend. Share prices at year-end (June) and year-end plus three months (September) indicate a peak in 1990 and a sharp drop between 1991 and 1992.

Annexure 2 is constructed as follows:

Operating activities (Line G)

Investing activities (Line H)
Financing activities (Lines J to M)
Operating activities (line G) contain four items:
Cash generated by operations (Line A)
Working capital (Line B)
Finance cost and taxation (Line D)
Dividends paid (Line F)

Subtotals are calculated as follows:

Cash generated by operating activities (C = A - B)
Cash available from operating activities (E = C - D)
Cash retained from operating activities (G = E - F)
Cash flow after investing activities (I = G - H)

**ANNEXURE 2
CASH FLOW STATEMENT**

LINE	1988 R'000	1989 R'000	1990 R'000	1991 R'000	1992 R'000
Operating activities:					
Cash generated by operations	63 850	89 929	150 282	132 792	(130 189)
Working capital	(83 952)	(84 604)	(241 945)	(183 071)	197 770
Cash generated by operating activities	(20 102)	5 325	(91 663)	(50 279)	67 581
Finance cost and taxation	(14 342)	(20 862)	(40 985)	(77 993)	(86 987)
Cash available from operating activities	(34 444)	(15 537)	(132 648)	(128 272)	(19 406)
Dividends paid	(4 145)	(17 916)	(43 723)	(30 806)	(3 738)
Cash retained from operating activities	(38 589)	(33 453)	(176 371)	(159 078)	(23 144)
Investing activities					
Cash flow after investing activities	5 169	(8 763)	(58 719)	(600)	(26 559)
Financing activities:					
Ordinary shares	26 915				
Preference shares		58 500	104 270	(3 890)	(5 101)
Long-term loans	577	(11 029)	129 355	163 568	246 349
Short-term loans	5 928	(5 255)	1 465		(191 545)
	0	0	0	0	0

The signs of the subtotals are very important. Negative cash flows are given in brackets. It is of the utmost importance that lines C and E show a positive cash flow in the long term. In the example under discussion line E is negative throughout the period and line C has three negative cash flows (eg. 1988, 1990 and 1991).

Cash generated by operations (line A) is positive throughout, except for 1992 with a negative R130m. With the exception of 1992, when sales growth (Annexure 1) slowed down, and 1989 cash generated by operating activities (line C) remained negative. Due to relatively high finance costs and taxation (line D), cash available from operating activities (line E) remains negative throughout the period with a peak of R133m in 1990.

Notwithstanding the negative line E, the company paid out dividends (line F) resulting in negative cash retained from operating activities (line G). It would appear from Annexure 1 that they did not have the cash income to pay such dividends and had to borrow to finance the payment of dividends.

Due to the pressure of investing activities (line H), the company had to rely heavily on financing activities. Ordinary shares were only issued in 1988 (line J). Heavy use was made in 1989 and 1990 of preference shares (line K) and long-term loans in 1990 to 1991 (line L). The results of the above were that finance cost (part of line D) and dividends on preference shares (part of line F) increased to a very large extent and probably contributed to the large loss in 1992 and eventual delisting in 1993.

If the annual sales growth rates are considered, relatively large growth rates of 28% and 38% were experienced in 1989 and 1990 resulting in large amounts to be invested in working cap-

ital 1989 to 1991 (line B). Although net income, EPS and amount available for equity per income statement increased considerably from 1988 to 1990, the opposite trend is observed if line E is studied. Differences between traditional accrual accounting (see entry: Available for equity as per Annexure 1) and cash flow accounting (line E) is especially obvious in 1990 when the highest sales growth occurred.

5 CONCLUSION

Had the company slowed down the sales growth rates in 1989 and 1990, additional working capital required would have been much smaller. As stated above, line B is a function of sales growth and the cash conversion cycle. Due to the nature of the industry, the company's average cash conversion cycle over the period 1988 to 1992 was 163 days or close to 5 months.

Lower sales would have resulted in a lower line A, but the drop in line A would have been compensated by a reduced increase in working capital (line B). As a result, line C could perhaps have been much less negative in 1990. A smaller deficit in line C in 1990 could have also resulted in lower finance costs (part of line D). The overall impact of a lower sales growth in 1990 could have resulted in a large reduction of the need to issue preference shares and long-term loans in 1990. The reduced preference shares and long-term loans (1990) would have saved finance cost and preference dividends in 1991 and 1992.

With hindsight it is clear that the company's sales growth exceeded its sustainable growth rate. As a result, cash generated by operating activities became negative in 1990 and 1991. A company which consistently fails to generate positive cash from operations is most likely to land up in financial difficulties.



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