The Investment Analysts Journal

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Die Beleggings-ontleders Tydskrif

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Inhoud

This issue in brief

The impact of strategic planning on corporate performance in a turbulent environment

Strategic planning is concerned with the attainment of long-term corporate objectives. Its business, therefore, is with decision-making that stretches beyond phenomena that are essentially short-term in nature or linked to problems that originate in cyclical fluctuations. By its very nature, the building materials industry is susceptible to marked cyclical variation, yet it is also an industry undergoing important structural change. This paper by Prof G S Andrews, Dean of the Wits Business School, and Carl Grim, summarises the findings of recent research concerning the industry and comes to conclusions that will be of interest even to those not directly involved with its changing fortunes.

The reasons and objectives for accounting standards as perceived by users, providers and regulators of accounting information

Accounting information, its availability and reliability, is the very substance of financial analysis. However, availability and reliability in themselves are not enough. Because security evaluation necessarily involves inter-company comparisons, information that is published needs to be homogenised so that comparisons can be facilitated and made more reliable. However, deciding on reporting practices and standards is a complex matter because different users of accounting information have different needs and requirements. In this paper, D K Flynn reports on a study undertaken to identify and examine the views of three primary constituencies in the South African financial system regarding accounting information and the uses to which it is put.

A gold share evaluation model

The subject of this paper by D J Bradfield and G D I Barr is the often erratic relationship between changes in the gold price and changes in the prices of gold shares. Clearly, any "under" valuation or "over" valuation of gold shares in relation to the gold price may create opportunities for profitable arbitrage by traders. However, "under" or "over" valuation may be difficult to determine without a share valuation model, and it is this which the paper sets out to examine. Initial results indicate that the model can be used to beat a naive "buy-and-hold" strategy but any firm conclusion on this needs to be reserved until the model's testing has been extended to include all gold shares quoted on the JSE.

Hedging and regret minimisation: a policy for the management of foreign currency exposure

This is another paper by G T D Jones concerning trading in speculative markets. In a previous note he dealt with the role of hedging in the marketing of gold. Here his concern is the management of foreign currency exposure. The matters of both risk and uncertainty are examined in the article and insights are provided which might suprise those whose decision-making is based purely on the use of technical analysis. It is an article, however, all those concerned with the management of corporate funds in today's world will find useful to read.

The analysis of bank shares

Richard Jesse has an established reputation as an analyst of banking shares. In this Investment Basics article he deals with a number of important matters that will be of interest to veterans as well as beginners.

The following firms have, in addition to our advertisers, assisted in the financing of this issue of the journal and thanks are due to them for their kindness.

Bo en behalwe ons adverteerders, het die onderstaande maatskappye hulp verleen met die finansiering van hierdie uitgifte van die tydskrif en hulle bedank vir hulle vriendelikheid.

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To many opponents of apartheid abroad, and it would be quite wrong to lump them all together as a homogeneous group, the idea of economic sanctions against South Africa has a persuasive logic. It would represent an ultimate step, short of military intervention, in the application of political pressure to bring about constitutional change, and political pressure is seen as being necessary (indeed, as being the only effective way) to the achievement of such an objective. Moreover, it would demonstrate, on the part of Western governments, a willingness at least to act consistently with frequently repeated declarations of moral revulsion at a particular racism that refuses to hide its ugly side. Even in South Africa, slogans such as "Apartheid is Evil" and "Apartheid Kills", seen with increasing frequency on our television screens, have become discomforting and not just because the slogans are beginning to exercise their emotive power within the council chambers of governments with which this country has had its traditional and most important links. The slogans, sadly, happen to ring true. This notwithstanding, it is a tragedy that as this issue of the Investment Analysts Journal goes to press, the Congress of the United States is mobilising itself to take its first steps down the sanctions road.

However, for a lot of people who like to think of themselves as fair-minded, the real tragedy lies elsewhere. The Bill now before Congress is more dangerous for what it threatens in the way of future action than for what it contains in the way of its immediate provisions. South Africa will survive embargoes on the sales of Krugerrands and on the flights of the national airline, and the Government itself will be little more than inconvenienced by restrictions on loans and the supply of computer equipment. The real tragedy resides in the fact that at the very time the South African Government has itself come publicly to acknowledge the errors of its former policies and to move, albeit cautiously, away from apartheid, it is being damned more vociferously than ever before.

For those who know South Africa, the actions in the direction of reform already adopted by the National Party have not been easy and have not been pursued without cost within the constituency of the Afrikaner community. This is not to say that all Afrikaners are, or always have been, nationalists, nor is it to say that there has not been significant English-speaking support for successive National Party governments. But in the main, the National Party, until comparatively recently, has been the senior guardian of Afrikaner group interest and has relied for most of its support on Afrikaners who have viewed it as such. A lot of this support has now been forfeited and Mr P W Botha has done what none of his predecessors would have dared to do. For this he deserves praise, not censure, and that remains so despite the controversy which still surrounds the new constitutional dispensation that he has put in place.

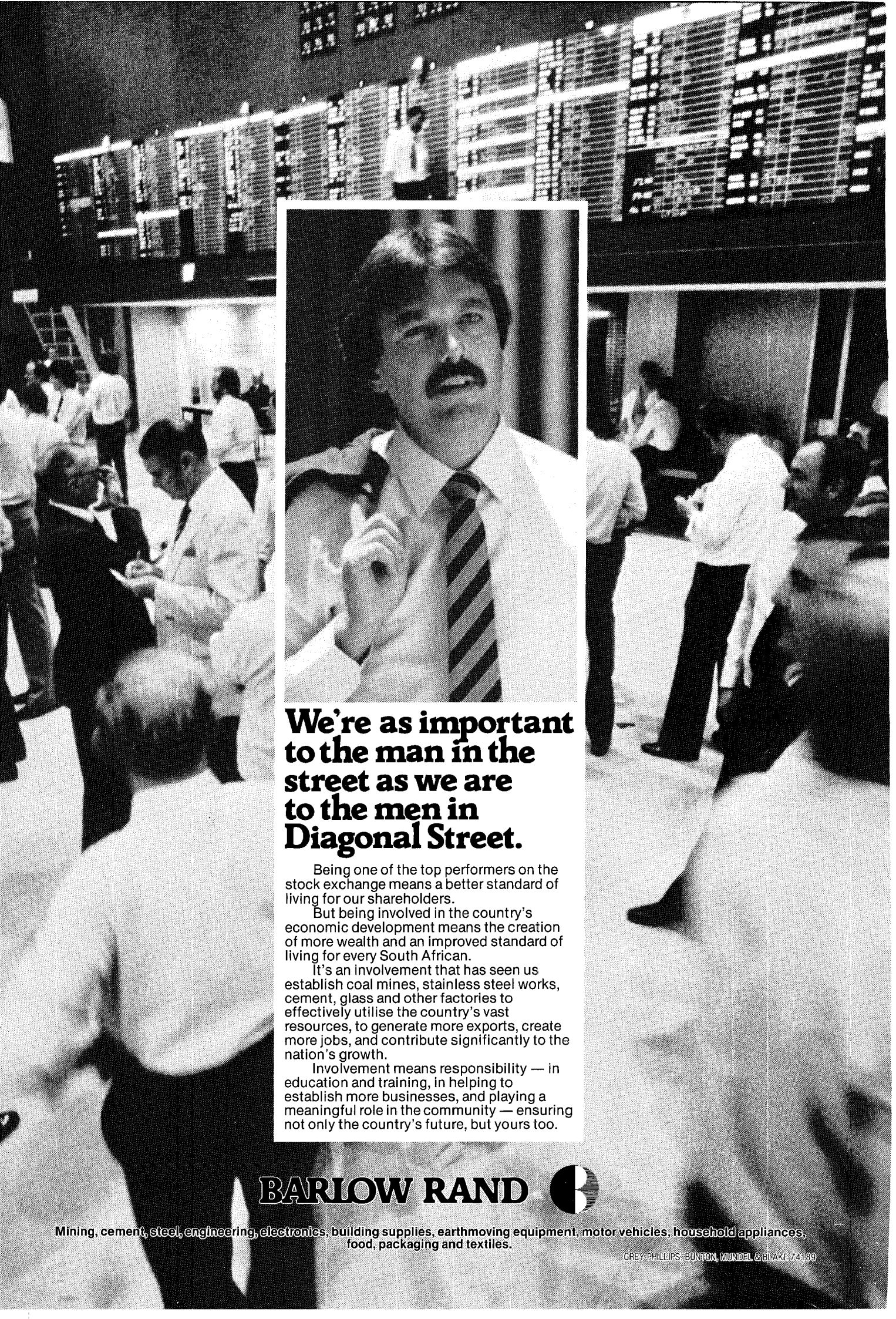
Die Beleggingsontleders Tydskrif

Vyf en twintigste uitgawe
Mei 1985

Vir baie teenstanders van apartheid in die buiteland (en dit sou heeltemal foutief wees om hulle almal as homogene groep saam te gooi) hou die ekonomiese sanksies teen Suid-Afrika 'n oorredingslogika in. Dit sou 'n uiterste stap, buiten militêre ingryping, in die uitoefening van politieke druk verg om grondwetlike verandering teweeg te bring, en politieke druk word nodig geag (inderdaad, as die enigste doeltreffende manier) om dié doelstelling te bereik. Boonop sou dit 'n bereidwilligheid van die kant van Westerse regerings aandui om minstens konsekwent op te tree deur die gereelde herhaling van uitsprake van morele afkeer van 'n besondere rassisme wat verseg om sy afstootlike gesig te verberg. Selfs in Suid-Afrika het slagspreuke soos 'Apartheid is Boos' en 'Apartheid Maak Dood', wat al hoe meer gereeld op ons televisieskerms gesien word, verontrustend geword, en nie bloot omdat die slagspreuke hulle emosionele beweegkrag begin uitoefen binne die raadskamers van regerings waarmee dié land nog altyd sy tradisionele en belangrikste verbintenisse gehad het. Dis jammer om te sê dat die slagspreuke waarheid inhou. Nietemin is dit 'n tragedie dat, by die ter perse gaan van hierdie uitgawe van Die Beleggingsontleders Tydskrif, die Kongres van die Verenigde State besig is om hom slaggereed te maak om sy eerste stappe langs die weg van sanksies te neem.

Vir talle mense wat glo dat hulle 'n billike uitkyk handhaaf, lê die werklike tragedie egter elders. Die wetsontwerp wat nou voor die Kongres lê, se grootste gevaar lê in die bedreiging wat dit in die vorm van toekomstige optrede inhou, eerder as in die vorm van die onmiddellike bepalings wat dit bevat. Suid-Afrika sal die verbod op die verkope van Krugerrande en op die vlugte van die staatsbeheerde lugdiens oorleef en die Regering self skaars verontrief word deur die beperkings op lenings en die verskaffing van rekenaartoerusting. Die werklike tragedie lê in die feit dat, juis op die tydstip wat die Suid-Afrikaanse Regering sover gekom het om die tekortkominge van sy beleid in die verlede in die openbaar te erken, en om, al is dit behoedsaam, weg te beweeg van apartheid, hy luidrugtiger as ooit tevore verdoem word.

Vir diegene wat Suid-Afrika ken, was die stappe in die rigting van hervorming wat reeds deur die Nasionale Party gedoen is nie maklik nie en het dit geskied met verliese binne die Afrikaanse kiesergemeenskap. Dit wil nie sê dat alle Afrikaners Nasionaliste is of nog altyd was nie, en dit wil ook nie sê dat daar nie aansienlike Engelssprekende steun vir opeenvolgende Nasionale Partyregerings was nie. Maar in hoofsaak was die Nasionale Party tot betreklik onlangs toe die vernaamste bewaker van Afrikanergroepbelange en het hy vir sy ondersteuning grootliks staat gemaak op Afrikaners wat hom as sodanig beskou het. Baie van dié ondersteuning is nou verbeur en mnr P W Botha het gedoen wat nie een van sy voorgangers sou gewaag het om te doen nie. Hiervoor verdien hy lof, nie veroordeling nie, en dit hoort so, ongeag die onenigheid wat nog steeds heers rondom die nuwe grondwetlike bedeling wat hy daargestel het.



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As nice as it would be to move **immediately** to a situation of full political participation for all people in South Africa, irrespective of race etc, that is not going to be possible. We live in a real world, not in an ideal one, and the futures which different people imagine for the country often diverge considerably. They have to be reconciled, but reconciliation is not going to be easy without increasing the risk of conflict. We do not want a Northern Ireland in South Africa. Nor do we want a Lebanon. Yet our demographic circumstances are more pregnant with the possibilities of disruption than are the internecine squabbles of both these countries.

Congressman Stephen Solarz, of the House of Representatives' Committee on Foreign Affairs, said recently on television that he thought the majority of blacks in South Africa were supportive of sanctions because they knew that they were intended, ultimately, for their own benefit. This must be seriously questioned. It would be quite wrong to deny that support amongst blacks for the ANC is not widespread, but that should not be taken to mean that the same blacks would go along with ANC sponsored actions that led to the destruction of their jobs. The problem in South Africa today is a shortage of jobs, and this shortage, the rapidly growing black population feel the most keenly. Only a steadily growing economy can have any chance of meeting the challenge it presents. At the bottom line, therefore, the call for sanctions reduces to the advocacy of revolution as an instrument for effecting a transfer of political power because it would envisage putting blacks under such severe economic pressure as to cause them to rise up in rebellion. But there can be no assurance what the consequences of a revolutionary process, once initiated, would be. The example of Cuba, and of Iran also, must warn that the consequences could be quite different from what even Congressman Solarz would intend.

It is worth recording the main measures of reform that have been adopted by the P W Botha government since its assumption of office in 1978. The following can be cited from an investment point of view although not all have a direct investment bearing:

1 the scrapping of sports apartheid (important to the changing of inter-group perceptions);

2 the removal of job reservation and the institution of legitimate black trade unions and the right to strike;

3 the institution of a free foreign exchange market in terms of the recommendations of the De Kock Commission;

4 the removal of exchange control on non-residents;

5 the acceptance of urban blacks as permanent residents and the institution of a system of 99 year leasehold (now under review for extension);

6 the institution of black local authorities and the holding of elections in respect thereof;

7 the abrogation of the 1909 constitution which entrenched a white monopoly in the legislature and the institution of a tricameral parliament including Coloured and Asian representation and the appointment of two non-whites to the Cabinet;

8 the Nkomati Accord which restored normal relations with Mozambique;

9 The Lusaka Agreement, reached with the cooperation of President Kaunda of Zambia, which achieved a phase of direct cooperation between South Africa and Angola;

Hoe gaaf dit ook al sou wees om **onmiddellik** te beweeg na 'n situasie van volle politieke deelname vir almal in Suid-Afrika, ongeag ras, ens, gaan dit nie moontlik wees nie. Ons leef in 'n werklikheidswêreld, nie 'n ideale een nie, en die toekoms wat verskillende mense hulle vir die land voorstel is dikwels taamlik uiteenlopend. Daar moet 'n versoening bewerkstellig word, maar dit gaan nie maklik wees sonder om die risiko van konflik te verhoog nie. Ons wil nie 'n Noord-lerland in Suid-Afrika hê nie. Ons wil ook nie 'n Libanon hê nie. Tog is ons demografiese omstandighede swaarder gelaai met die moontlikhede van uiteenskeuring as die broedertwis van albei dié lande.

Kongreslid Stephen Solarz van die Huis van Verteenwoordigers se Komitee insake Buitelandse Sake het onlangs op televisie die mening uitgespreek dat die meeste swartes in Suid-Afrika sanksies steun omdat hulle weet dat dit uiteindelik tot hulle eie voordeel is. Dit moet ernstig bevraagteken word. Dit sou heeltemal foutief wees om te ontken dat die ANC nie groot aanhang onder die swart gemeenskap geniet nie, maar dit beteken nie dat dieselfde swartes sal saamstem met ANC-ondersteunde optrede wat aanleiding gee tot die verlies van hulle werk nie. Suid-Afrika se huidige probleem is 'n werktekort, en dié tekort tref die snelgroeiende swart bevolking die swaarste. In wese kristalliseer die aandrang op sanksies dus uit as die bepleiting van rewolusie as 'n middel om politieke mag in ander hande te plaas, omdat dit daarop gemik is om swartes onder so 'n geweldige ekonomiese druk te plaas dat dit hulle tot rebellie sal aanspoor. Maar daar kan geen versekering wees van wat die gevolge van 'n rewolusionêre proses, wanneer dit eers ontketen is, sal wees nie. Die voorbeeld van Kuba, en ook van Iran, moet dien as waarskuwing dat die gevolge grootliks kan verskil van wat selfs Kongreslid Solarz in die vooruitsig stel.

Die vernaamste hervormingsmaatreëls wat die P W Botharegering sedert sy bewindsaanvaarding in 1978 ingestel het, dien hier vermeld te word. Die volgende kan uit 'n beleggingsoogpunt aangestip word, hoewel nie al dié punte betrekking het op belegging nie:

1 die afskaffing van sport-apartheid (belangrik vir die verandering van onderlinge groepsbegrip);

2 die uitskakeling van werkreservering en die instelling van wettige swart vakbonde en die reg om te staak;

3 die instelling van 'n vrye valutamark volgens die aanbevelings van die De Kock-kommissie;

4 die afskaffing van deviesebeheer oor buitelanders;

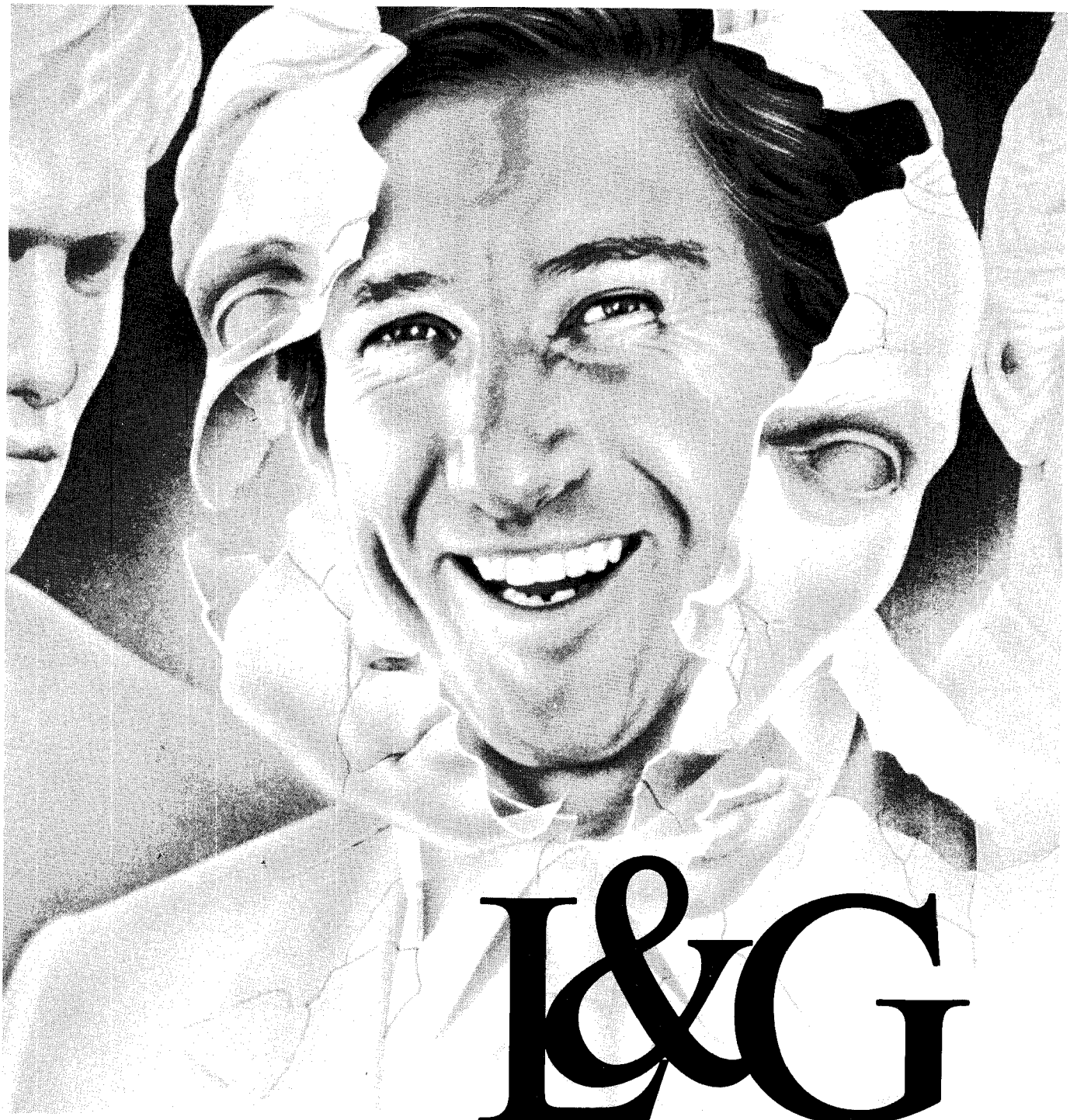
5 die aanvaarding van stedelike swartes as permanente inwoners en die instelling van 'n stelsel van 99-jaarhuurpag (wat tans met die oog op verlenging hersien word);

6 die instelling van swart plaaslike besture en die hou van verkiesings ten opsigte daarvan;

7 die herroeping van die 1909-grondwet wat 'n blankemonopolie in die wetgewing gevestig het en die instelling van 'n driekamerparlement wat Kleurling- en Asiërverteenwoordiging en die aanstelling van twee nie-blankes in die Kabinet ingesluit het;

8 die Nkomati-verdrag wat normale betrekkinge met Mosambiek herstel het;

9 die Lusaka-ooreenkoms, aangegaan met die samewerking van president Kaunda van Zambië, wat 'n fase van regstreekse samewerking tussen Suid-Afrika en Angola bewerkstellig het;



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10 the modifying of the Group Areas Act to permit the ownership of commercial property and trading by all race groups in central business districts (CBDs);

11 the suspension of a quota system in respect of the registration of black students at "white" universities and the scrapping of the need for ministerial permission regarding their admission except in the cases of faculties of medicine and dentistry, and departments of surveying;

12 the re-examination of influx control with a view to a better planning of urbanisation and increasing the scope for black permanent residence;

13 the offer of freedom to Nelson Mandela and other imprisoned ANC leaders, subject only to their renunciation of the use of violence, and the setting up of an informal forum for the discussion of political problems with black leaders;

14 the institution of regional councils that will include, via local government participation, representation **by** people of all race groups;

15 the scrapping of the Mixed Marriages Act and section 16 of the Immorality Act which, respectively, barred marriage and sex across the colour line;

16 the scrapping of the Prohibition of Political Interference Act which now allows all political parties to open their membership to people of all races;

17 the redefining of a "scheduled person" in terms of the Mines and Works Act, which will remove a last remaining job reservation provision and will pave the way for blacks to perform some of the functions of blasting certificate holders in the mines;

and

18 the repealing of section 3 of the Physical Planning Act which will permit factory owners in future to employ as many black people as they wish without having to obtain the prior permission of the Minister of Constitutional Development and Planning.

These measures are not mentioned here as paragons of liberal acceptability. One is aware of the controversy that still surrounds many of them. Yet in their totality they amount to much more than change which can be contemptuously dismissed as being only cosmetic. Some of the changes will, almost certainly, have a profound effect, and for the better, on the quality of life and on the widening of the opportunities, political as well as economic, of millions of people. Yet they represent only the beginning of a process that still has a long way to go.

It is very sad that all that has been achieved since 1978 can so quickly be outweighed, in the scale of popular impression, by events such as those at Langa in the eastern Cape which have occurred in recent months. "Apartheid Kills" has become a slogan terrible in its reality, and the country is reaping the consequences. Such events could not have been better executed by official recalcitrants deliberately bent on embarrassing the Government because of their opposition to its policies. But at the end of the day, any government must carry responsibility for its own agents. It would serve President Reagan no use to claim that the fault for the breakdown of a disarmament agreement with the Soviet Union was not his when high-ranking officers in the Pentagon had deliberately sabotaged his undertakings.

Men of goodwill can only hope, with the unfortunate events of recent days, that an early settling of the political dust will allow a better view of what really *important* is happening. Poverty, and even inequality, in

10 die wysiging van die Groepsgebiedewet om die besit van handelseiendom en handel deur alle rassegroepe in sakebuurte toelaatbaar te maak;

11 die opskorting van 'n kwotastelsel ten opsigte van die registrasie van swart studente by 'blanke'-universiteite en die wegdoen met die vereiste van ministeriële toestemming met betrekking tot hulle toelating, in die gevalle van mediese en tandheelkundige fakulteite en landmeetkunde-departemente;

12 die herondersoek van instromingsbeheer met die oog op beter beplanning van verstedeliking en beter vooruitsigte vir permanente inwoning deur swartes;

13 die aanbod van vrylating aan Nelson Mandela en ander ANC-leiers wat gevangenes is, slegs onderworpe daaraan dat hulle die gebruik van geweld afsweer, en die daarstelling van 'n informele forum vir die bespreking van politieke probleme met swart leiers;

14 die instelling van streeksrade wat deur middel van die deelname van plaaslike besture verteenwoordiging **deur** mense van alle rassegroepe sal insluit;

15 die afskaffing van die Wet op Gemengde Huwelike en artikel 16 van die Ontugwet wat onderskeidelik huwelike en geslagsverkeer oor die kleurskeidslyn verbied het;

16 die afskaffing van die Wet op die Verbod op Politieke Inmenging, wat alle politieke partye nou toelaat om hulle lidmaatskap aan mense van alle rasse oop te stel;

17 die heromskrywing van 'n 'geskeduleerde persoon' ooreenkomstig die Wet op Myne en Bedrywe, wat die laaste oorblywende werkreserveringsbepaling sal laat wegval en die weg sal baan vir swartes om sommige van die funksies van Skietsertifikaathouers in die myne te vervul;

en

18 die herroeping van artikel 3 van die Wet op Fisiese Beplanning wat fabriekeienaars in die toekoms sal toelaat om soveel swart mense in diens te neem as wat hulle wil sonder die nodigheid om vooraf die toestemming van die Minister van Staatkundige Ontwikkeling en Beplanning te verkry.

Dié maatreëls word nie hier genoem as toonbeelde van liberale aanvaarbaarheid nie. Ons is terdeë bewus van die geskilpunte wat nog rondom baie van hulle heers. Nietemin verteenwoordig hulle in die geheel veel meer as verandering wat minagtend as bloot vir die vertoon afgemaak kan word. Sommige van die veranderings sal byna sekerlik 'n diepgaande uitwerking hê, en dit ten goede, op die lewensgehalte van en die oopstel van geleenthede, politiek sowel as ekonomies, vir miljoene mense. Maar hulle verteenwoordig nog slegs die begin van 'n proses wat nog ver moet vorder.

Dit is betreurenswaardig dat alles wat sedert 1978 bereik is so gou te lig bevind word wanneer dit opgeweeg word teen die openbare mening wat geskep word deur gebeure soos dié in Langa in die Oos-Kaap wat die afgelope maande voorgeval het. 'Apartheid Maak Dood' het 'n slagspreuk geword wat vreesaanjaend is omdat dit so werklik is, en die land is besig om die wrange vrugte te pluk. Dié gebeure kon nie beter uitgevoer gewees het deur offisiële weerspanniges met die voorbedagte opset om die Regering in die verleentheid te stel omdat hulle sy beleid teenstaan nie. Maar op die ou end moet enige regering verantwoordelikheid aanvaar vir sy eie agente. Dit sal president Reagan niks in die sak bring om te

South Africa are not going to be abolished by edict any more than they were abolished in India, or in other countries of Asia or Africa, in the post-colonial period. South Africa, however, is a rich country, generously endowed with resources that are the envy of the rest of the world. This is one reason why it succeeds in remaining so controversial. It has the capacity not only for survival but for greatness, and this greatness can be realised to the advantage of all its inhabitants. It will only be, if economic growth and development are given maximum encouragement by all those who proclaim their concern for its future.

beweer dat die rede waarom 'n ontwapeningsooreenkoms met die Sowjet-Unie skeef geloop het nie sy fout was nie, omdat sy hooggeplaaste amptenare in die Pentagoon opsetlik sy ondernemings gesaboteer het.

In die lig van die ongelukkige gebeure van die afgelope tyd, kan alle welwillendes maar net hoop dat 'n spoedige bedaring van die politieke onrus 'n beter beeld van werklik belangrike ontwikkelings moontlik sal maak. Armoede, en selfs ongelykheid, in Suid-Afrika kan nie deur middel van verordening uitgewis word nie, net so min as wat dit in die na-koloniale tydperk in Indië of in ander lande van Asië of Afrika uitgewis is. Suid-Afrika is egter 'n ryk land wat mildelik bedeeld is met hulpbronne wat deur die res van die wêreld beny word. Dit is een rede waarom dit so 'n omstrede land bly. Hy het die vermoë om nie net te oorleef nie, maar om grootheid te verwerf, en dié grootheid kan tot voordeel van al sy inwoners verwesenlik word. Dit sal slegs teweeggebring kan word as ekonomiese groei en ontwikkeling die maksimum aanmoediging geniet van diegene wat hulle besorgdheid oor sy toekoms te kenne gee.

G T D Jones

Hedging and regret minimisation: A policy for the management of foreign currency exposure

Introduction

The marked depreciation of the rand against the US dollar since June 1983 has been a source of acute embarrassment for many companies. Importers with dollar liabilities have suffered where they have failed to take out adequate forward cover. On the other hand, exporters who have sold forward dollar receivables have suffered too. Reports of listed companies in recent months suggest that exchange losses have been considerable and in some cases could even threaten the survival of the undertakings concerned. These are matters of considerable moment to the financial community, not only because of the actual or opportunity losses that have already been sustained but also because lack of information as to the foreign currency management policies being adopted by companies introduces a significant element of additional uncertainty into the process of share evaluation for market participants.

Decisions regarding the management of foreign currency exposure are taken under conditions of both risk and uncertainty as those terms are defined in decision theory. Decision theory, a branch of operations research, may be used to derive a rational and consistent policy for foreign currency management. The purpose of this article is briefly to outline such a policy. At the same time, the article is in the nature of a postscript to an article by the writer concerning the role of hedging in the marketing of gold that appeared in a recent issue of the Investment Analysts Journal.

Efficiency in the dollar-rand market

A fundamental assumption is made at the outset that the dollar-rand market is approximately efficient in the semi-strong sense, meaning that the market includes a number of influential participants who are as a body fully acquainted with all public information relevant at any time to the determination of spot and forward dollar-rand exchange rates. A further assumption is made that today's forward rate for, say, a year hence is, because of arbitraging, the average or expected value of all possible spot rates a year hence. These assumptions, which require to be tested by means of the appropriate statistical techniques, are adopted here as a reasonable working hypothesis that has credibility on *a priori* grounds and is not obviously contradicted by common observation.

Some startling conclusions flow from acceptance of the hypothesis:

1 The forward price at any time impounds all relevant public information at the time of its determination.

2 The forward price changes as the set of relevant information changes.

3 Changes in the forward price are random and unpredictable because they are responses to relevant news, which obviously must be unpredictable otherwise it would not be news.

4 Spot and forward prices are characterised by random walk behaviour and, because they have no memory, the methods of technical analysis and mechanical trading rules based on past prices have no inherent predictive power.

5 At the end of any given period the prevailing spot price will almost certainly deviate, and may well deviate markedly, from the forward price established at the beginning of the period and the direction of the deviation is completely unpredictable.

Random walk behaviour needs to be better understood by those who have to take decisions relating to efficient, speculative markets, such as the gold and foreign exchange markets, as its implications are often quite contrary to what one would expect intuitively. Assume, for example, that A and B each have R100 and that they engage in a game of repeatedly tossing a perfectly unbiased coin, with A paying R1 to B when the coin shows heads and receiving R1 from B when the coin shows tails. When asked to predict the eventual outcome of such a game, most persons reply that the parties will end up more or less where they started. The correct, mathematically demonstrable answer, however, is that either A or B will bankrupt the other party. Most persons also take the view that each party would be in the lead about half the time, whereas it is mathematically demonstrable that the odds overwhelmingly favour one player being in the lead the vast majority of the time and that for each player to be in the lead about half the time is the least likely outcome.

An elementary but comprehensive account of random walk theory is given by Feller (1). The paradoxical proposition concerning the duration of leads, known in probability theory as the arc sine law, has the paradoxical consequence that random price behaviour can confer a prolonged but essentially impermanent and spurious validity upon mechanical trading rules. As stated by Dale and Workman (2) in a study of the American futures market for Treasury bills: "According to the so-called arc sine law, mechanical trading rules applied to financial assets will result in long periods of cumulative success, but equally long periods of cumulative failure. The long periods of success will tempt investors to apply trading rules to actual decisions. The long periods of failure will eventually blow them out of the market. As long as trading rules produce a consistent profit over long time periods, however, its advocates are unlikely to be dissuaded by theoretical arguments about random walks." To quote other examples, Arditti and McCollough (3) have shown that a group of experienced analysts was unable to distinguish between real and randomly generated stock prices and Goodman (4) has discredited so-called momentum analyses for the prediction of foreign exchange rates.

Decisions under conditions of risk

Let F denote today's forward dollar rate for a future point of time, t, and S* the spot rate that eventuates at t. Even though F may be today's best estimate of S* – which may be expressed in mathematical notation as $F=E(S^*)$ – it is virtually certain that S* will be greater or less than F. For present purposes, these two cases are defined as dollar appreciation and depreciation respectively. Fur-

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thermore, let E(U) and E(D) represent the dollar's upside and downside potential relative to F. In other words, E(U) equals the expected value of S* if S* is greater than F and E(D) equals the expected value of S* if S* is less than F.

Consider now the circumstances of an exporter to whom $x are due a year hence. Assume these dollars may be sold forward for R100, which implies F = R100/$x. Assume further that there is a 50% chance of dollar appreciation or depreciation and the expected value of the upside potential, E(U), is R120 and the expected value of the downside potential, E(D), is R80. As a first approach to the question of managing foreign currency exposure, it is proposed to analyse this simple model. Before the analysis is proceeded with, however, it should be noted that the particular values specified for E(U) and E(D) and their probability of occurrence involve certain conceptual difficulties that will be referred to at the end of this section. It should also be noted that the model is characterised by conditions of risk, as that term will be defined shortly, and that the question of decision-making under conditions of uncertainty is deferred to the next section.

What action should the exporter take? It will be helpful in seeking an answer to set out the problem in a decision matrix (Figure 1), which is in the form conventionally used in decision theory. The available strategies, which are within the exporter's control, are listed on the left hand side. The possible states of the environment – namely, dollar appreciation and depreciation – are listed at the top, together with their respective probabilities. These states are, of course, outside the exporter's control. For each combination of strategy and state there are certain monetary outcomes and corresponding regrets, which are shown in the body of the matrix.

Figure I: Decision-making under conditions of risk

		Dollar appreciates	Dollar depreciates
Probability of environmental state		0,5	0,5
Outcomes			
Spot strategy	R	120	80
Forward strategy	R	100	100
Regrets			
Spot strategy	R	0	20
Forward strategy	R	20	0

The above matrix represents a case of decision-making under conditions of risk, meaning that the decision-maker has complete knowledge of all possible environmental states and of the outcome and regret associated with each possible combination of environmental state and strategy. In the simplified model considered in Figure 1, the expected value of the upside potential, E(U), is R120 and the expected value of the downside potential, E(D), is R80. An exporter with $x of receivables can guarantee a receipt of R100 by selling forward whereas, if the $x are left uncovered, he can expect to receive R120 if the dollar appreciates and R80 if it depreciates, these outcomes being equally likely. Should the dollar appreciate, the exporter will experience no regret where his dollars are left uncovered but he would regret an opportunity loss of R20, E(U)–F, had he sold them forward. On the other hand, should the dollar depreciate, the exporter will not regret a forward sale but he would regret an opportunity loss of R20, or F–E(D) had his dollars been left uncovered.

The pure spot and forward strategies listed in Figure 1 each have expected and maximum regret values of R10 and R20 respectively and, thus, there is no reason for preferring one strategy to the other. But pure spot and forward strategies are not the only available courses of action: the exporter may adopt a mixture of the two, selling forward some proportion of the $x and leaving the balance uncovered. Listed below are the regrets associated with a few of the infinite number of possible strategic mixtures.

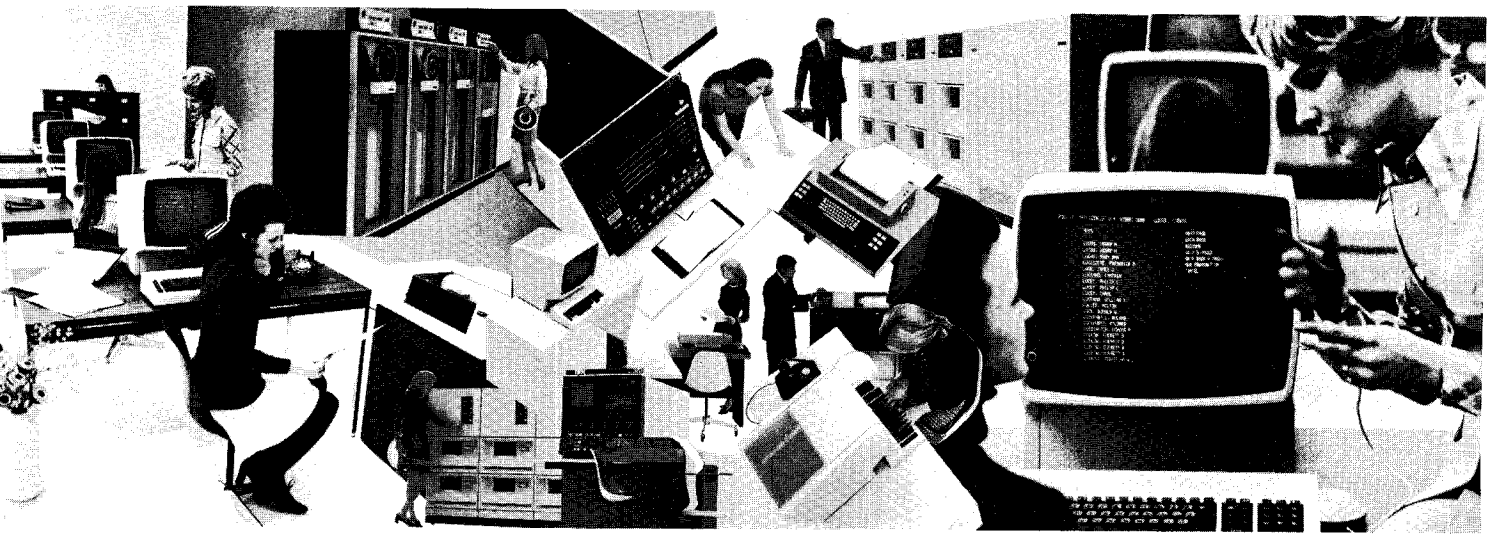
Figure 2: Regrets associated with alternative strategies

		Regrets (in rands)			
Proportion of dollars sold spot	Proportion of dollars sold forward	If dollar appreciates p=0,5	If dollar depreciates 1–p=0,5	Average regret	Maximum regret
1,00	0,00	0	20	10	20
0,75	0,25	5	15	10	15
0,50	0,50	10	10	10	10
0,25	0,75	15	5	10	15
0,00	1,00	20	0	10	20

From Figure 2 it may be seen that although all strategic mixtures have an identical mean or expected value, the same cannot be said of the maximum regrets. These are symmetrical with respect to variations of the strategic mix, their maximum values coinciding with the two pure strategies and their minimum with a 50:50 mixture of those strategies.

The exporter may believe that he can predict whether the dollar will prove to be stronger or weaker than the current forward rate. If he predicts that it will be stronger, he will be tempted to adopt a pure spot strategy. Should he be correct, he will achieve a payoff of R120 and experience a regret of R0 in terms of Figure 1. If the foreign exchange market is efficient, however, the exchange rate fluctuates randomly and it is impossible to predict whether the spot rate at some future date will be above or below the current forward rate for that date. In deciding on a pure spot strategy, therefore, the exporter inevitably exposes himself to a potential regret of R20. Similarly, the exporter who is tempted to use a pure forward strategy in the belief that the dollar will prove to be weaker than the current forward rate also exposes himself to a potential regret of R20. In these circumstances, it would seem rational for the exporter to minimise his maximum potential regret by means of a 50:50 mixture of spot and forward strategies, which mixture may be termed the minimax strategy. The same conclusion, given efficiency in the foreign exchange market, must apply *mutatis mutandis* to those with dollar liabilities, be they importers or borrowers.

It may be helpful at this point to restate the argument thus far. It is intuitively reasonable to suppose, but necessary to demonstrate by means of statistical tests, that the foreign exchange market is characterised by semi-strong efficiency and that today's forward rate for some future date is the mean or average value of possible spot rates on that date. A fundamental implication of efficiency in the foreign exchange market is that the exchange rate is a random variable and that it is impossible for exporters, importers or borrowers to predict whether, from their respective standpoints, the spot rate will prove to be more or less favourable than today's forward rate. Pure spot or forward strategies maximise the potential regret to which the decision-maker is exposed. A well-established result of decision theory – as may be gathered from the elementary treatments pres-



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ented in Miller (5) and Richmond (6) – is the minimax criterion, which holds that the most rational course of action open to the decision-maker is that which minimises the maximum regret that can eventuate. In the context of managing foreign currency exposure, the minimax strategy is a 50:50 mixture of the pure spot and forward strategies.

A corollary of the argument is that the management of foreign currency exposure must relate to the net exposure – dollar assets net of dollar liabilities, or vice versa. Assume, for example, that a company has both receivables and payables of $x due on a certain date. According to the minimax criterion, 50% of both receivables and payables should be sold forward – but this action must have the same expected outcome as would result from leaving both wholly uncovered.

It should be noted that an important exception to the minimax criterion arises when it is necessary for a company to make sure of a certain level of rand cash flows. The decision-maker should then take out forward cover to the full extent necessary as, in such circumstances, the opportunity losses that might arise as a result of forgoing any alternative strategic mixture would be irrelevant and the corresponding regrets meaningless.

It is appropriate at this stage to draw attention to certain implicit assumptions that have been taken for granted thus far in order to simplify the presentation of the argument. The first of these concerns the validity of the so-called expectations hypothesis, in terms of which $F=E(S^*)$. According to Black (7) and Sharpe (8), there is justification for regarding the hypothesis as an adequate model for the real world even though iit would appear to be strictly correct only in a risk-neutral world. Granted the hypothesis, it follows that the expected mean regrets for pure spot or forward strategies, or any mixture of these, are the same. The case for the particular minimax strategy advocated in this article, however, depends not only on the expectations hypothesis but also on the assumption that E(U), the expected value of the upside potential given $S^* > F$, equals E(D), the expected value of the downside potential given $S^* < F$, and that the probability of E(U) occurring (ie p) equals the probability of E(D) occurring (ie $1-p$).

This last assumption has the appearance of being a special case. The expectations hypothesis, $F=E(S^*)$, implies that $p\,E(U)=(1-p)\,E(D)$, which can obviously be satisfied when E(U) is unequal to E(D) provided p varies accordingly. The 50:50 minimax strategy applies only in the special case. If, for example, E(U), E(D) and p were R130, R90 and 0,25 respectively, the minimax strategy would be to sell 25% spot and 75% forward. As will be discussed below, however, there is a reason why the special case represented by the 50:50 strategy should be adopted as a general solution.

Decisions under conditions of uncertainty

Risk connotes a set of circumstances in which strategies have quantifiable outcomes or payoffs corresponding to exogenously determined states whose probability of occurrence is known. Risk, in other words, is calculable. Uncertainty, on the other hand, signifies at the very least that the probabilities of the exogenous states are unknown and, in its most general sense, that the outcomes of strategies are also unknown. Uncertainty is, thus, not amenable to the calculus of probability: it is *incalculable*.

The sweeping advances in finance theory of the past two decades – the capital asset pricing model, arbitrage pricing theory and option pricing models – are founded on the supposition that economic phenomena are characterised by risk rather than uncertainty. For instance, option pricing models assume that the forces governing the price of the underlying asset manifest themselves in a stable stochastic process of either the Wiener (diffusion) or the Poisson (jump) variety (9,10). The expositors of these risk-based theories have had to grapple with serious problems of non-stationarity, however, and it is well to recognise that the comfortable assumption that economic phenomena can be adequately described in terms of risk has not gone unchallenged by a minority that includes such distinguished voices as those of Shackle (11) and Lachmann (12). Both adduce cogent arguments in support of their contention that prediction has, at best, an extremely limited role in economics, a view that is neatly expressed in Lachmann's dictum that "the future is imaginable but unknowable".

If the views of Shackle and Lachmann are correct it would appear that the search for a rational basis for action in speculative markets is doomed to failure because, under conditions of uncertainty, E(U), E(D) and p are meaningless and irrelevant notions and a minimax solution cannot exist. There are, however, two good reasons for rejecting so bleak a conclusion. The first is that although, as a matter of common observation, economic phenomena may not be perfectly well-behaved in a statistical sense, their behaviour is not totally chaotic. The second, which stems from Laplace, is that it is reasonable, even if one supposes conditions of uncertainty to apply, to treat the decision problem under uncertainty as though it were governed by conditions of risk. Laplace's argument for cutting the Gordian knot of uncertainty is closely related to what Keynes (13) described as the principle of indifference. In terms of this principle, it is rational to assume two quantities to be equal if one has no reason to suppose them unequal. In the present context, therefore, the principle of indifference implies that it would be justifiable to assume that $E(U)=E(D)$ and $p=1-p$, from which the 50:50 minimax solution may be derived.

Conclusions

The arguments advanced in this article depend upon two fundamental assumptions. The first is that the foreign exchange market – in common with other well-organised, speculative markets – is characterised by semi-strong efficiency. The behaviour of prices in this type of market tends to conform to random walk theory. Prices are determined at any point of time in accordance with the set of information available at that time and they change through time in response to news. Prices in speculative markets are unpredictable because, by definition, news is unpredictable. The second fundamental assumption is that today's forward rate for some future date is the mean or expected value of possible spot rates at that date – or, in notation, $E(S^*)=F$.

The foreign exchange market is often compared to a casino and the comparison has a certain aptness although many market participants would appear to be unaware of its full implications, such as the fact that speculative prices have no more memory than a fair roulette wheel has for number or colour. To the writer it seems both useful and important to regard the foreign exchange market as akin to a game of chance in which a wager on "spot" or "forward" have, near enough,

similar expectations and probabilities of success. Moreover, it is a game that most businesses are compelled to play, the wagers made depending on the risk-profiles of the players. The only way to minimise the regrets that could arise from these compulsory bets seems to be the minimax strategy, namely 50% on "spot" and 50% on "forward". A pure spot or forward strategy would maximise the prospect not only of spectacular gain but also of spectacular loss.

There are, of course, those who would dispute the analogy between foreign exchange market and casino. On the one hand, there are those of a seemingly deterministic persuasion who believe that by one means or another they can identify the forces at work in the market and, significantly more often than not, predict correctly the future course of events. The writer would view such claims with considerable scepticism and certainly it would be interesting to put predictive models to the test to see how well they fare. On the other hand, there are those who, with Shackle and Lachmann, would say that the foreign exchange market is neither deterministic nor governed by the laws of risk and chance but subject, very largely, to uncertainty. This view is so nihilistic, in an economic sense, as to preclude any basis for rational decision and, in the writer's opinion, is as much an unjustified extreme as the deterministic view.

In conclusion, the foreign exchange market is best regarded as an efficient market in which decisions are taken under conditions of risk rather than of predictability or uncertainty. The need for decisions cannot be avoided. The minimax regret strategy for the management of foreign currency exposure is, in the writer's opinion, encompassed by the following rules:

1. The exposure to be managed is the net exposure. If foreign currency assets and liabilities cancel each other out in a given period, there is no net exposure and, hence, no hedging action is called for.
2. When the net exposure coincides with a need for insurance, the entire net exposure should be hedged by means of forward contracts.
3. In all other cases, net exposure should be managed by means of an equal weighting of spot and forward strategies.

Appendix

This appendix contains some further comments on certain propositions of probability theory that were touched on in section 2 of the article. The comments are developed with reference to the fair coin model, in which the probabilities of tossing a head or a tail are equal to 1/2. If such a coin is tossed n times the expected number of heads is n/2 and the standard deviation of all possible outcomes is $(n/4)^{1/2}$.

Assume that two gamblers, A and B, each have an initial capital of k units, A paying B a unit in the event of a head and receiving a unit from B when a tail shows. Evidently either A or B is bankrupted if the cumulative difference between heads and tails is equal to k. The probability that the cumulative difference is not greater than k may be expressed as follows:

$$p < \frac{2k+1}{(2\pi\sigma)^{1/2}} = \frac{2k+1}{(\pi n/2)^{1/2}}$$

For any given k, p becomes indefinitely small as n increases. In other words, if the players continue the game for long enough one or other must certainly be bankrupted.

The arc sine law concerning the duration of leads in the fair coin model and other stochastic processes is associated closely with the names of Levy, Andersen and Feller. A change in lead from one player to the other requires that the initial position of zero net winnings must occur first, which can come about only if the coin has been tossed an even number of times. The probability of equalisation, U_k, after k(=2j) tosses is:

$$U_k = \frac{2j!}{j!j!2^k}$$

The probability that the last equalisation during a game of given length n will occur at time k is given by:

$$P_{k,n} = U_k, U_{n-k}$$

This equation is closely approximated by the trigonometric arc sine function and this aspect of the stochastic process is known as the arc sine law for last equalisations.

The arc sine function is U-shaped and, thus, has its smallest value at the midpoint. With reference to the abovementioned coin-tossing game, the shape of the probability distribution is such that the odds greatly favour one of the parties being in the lead most of the time and the least likely outcome is that each player leads for exactly half the time.

Dale and Workman (2) draw an analogy between individual futures contracts and the coin-tossing game. The nature of the stochastic process is such as to greatly favour a net upward or downward drift in prices for individual futures contracts. Hence, although a stochastic process is operational, mechanical trading rules applied to such contracts appear to work for a while. They have no real validity, however, and persistent application of trading rules may generate profits for quite lengthy periods but must lead eventually to losses. In their study, which covered the period from March 1976 to December 1978, Dale and Workman applied trading rules based on moving averages to 90-day Treasury Bill futures. They concluded that their theory was confirmed by the results of the study because the trading rules resulted in lengthy runs of both profits and losses.

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D K Flynn

The reasons and objectives for accounting standards as perceived by users, providers and regulators of accounting information

The nature of the problem

Accounting has been defined in a variety of ways over the years. Perhaps the most appropriate definition which has emerged as currently acceptable, is that accounting is a process of recording and communicating financial data. The corollary to this, is that financial data is recorded through the process of accounting and communicated as financial information through many media. Financial information and accounting are therefore inextricably linked, accounting being the process and financial information being the output of the recording and communication system.

The recording activity of accounting includes data collection, classification and summary. There is an established framework for recording financial transactions and the value measurement is, appropriately, the rand value of the exchange transaction at the transaction date. The results of the recording process, however classified or arranged, are available to managers and serve as management financial information to be used together with all other available information to formulate objectives and determine strategy.

The dissemination and communication of financial information outside of the entity has long been a contentious issue. It has often been lamented that there is no conceptual framework for financial reporting. Recent efforts by the international accounting community to resolve the issue by establishing such a framework is still in a stage of infancy and considerable effort and resources are being applied to this end. The most notable example of this effort is that of the Financial Accounting Standards Board (FASB) in the USA. This body has to date issued four major statements relating to financial reporting, these being part of "a series of new pronouncements which are intended to represent a step-by-step construction of the conceptual framework of financial reporting".[1]

The most fundamental question relating to financial reporting, namely "what is the purpose of producing financial information?" has been answered largely on intuitive grounds. Nevertheless there appears to be considerable consensus that the purpose is to aid in economic decision making.[2] If an effective information system is present, decision making based on relevant and reliable information should result. This in turn should lead to more efficient allocation of resources which is a fundamental objective of any rational economic system.

The more penetrating but equally important questions as to what information should be reported, as well as the question of how such information should be reported, remain unresolved. The technical expertise required to capture, collate and translate data using a broad range of alternative methods does exist. However, the problem of selecting the information to be disclosed and the manner of disclosure becomes a human, social and political problem. This problem has to contend, not unexpectedly, with the self-interest motivations of the groups of people or constituencies in the financial reporting environment.

Objectives of the study

This research study, aimed to identify the views and perceptions of three primary constituencies in the South African financial reporting environment with regard to investment objectives, sources of information, quality of information and the need for regulation of financial reporting. The three constituencies canvassed were the generators of financial information (company financial managers), selected users of financial information (institutional investors, financial analysts) and the regulators of financial information (the Accounting Practices Committee (APC), the Accounting Practices Board (APB)). This article focuses on the issues relating to regulation of financial information which formed a significant part of the whole study.

Research methodology

Data collection

The data for the research was acquired through a questionnaire mailed on 23 June 1983 to random samples of 200 listed industrial companies; 85 institutional investors who are pension funds, insurance companies and banks, and 125 individual investors, whose names were randomly selected from the most recent dividend list of 5 listed industrial companies. In addition, 310 questionnaires were mailed to the Investment Analysts Society of Southern Africa who, because of the confidentiality of their membership, undertook the mailing themselves to all their members. The APC consisting of 18 members each received a questionnaire as well as the 38 members and alternate members of the APB.

The questionnnaire, with minor modifications depending on the recipient group, contained 10 questions. A covering letter explained the nature of the study and stated that anonymity would be maintained. Detailed instructions were provided with the questionnaire, as well as a glossary of terms, to assist respondents in understanding the nature of the information they were to provide. Perceptions of the importance of the items in each question were measured on a 9 point scale from 1 to 9, with 1 indicating that the item is not important and 9 indicating that it is very important. The questionnaire was pre-tested to improve its clarity. Because of the resource and time constraint, a follow-up letter was not mailed.

Final usable response rates for the research were as follows: company financial managers – 37 per cent (74 replies); individual investors – 36 per cent (45 replies); institutional investors – 40 per cent (34 replies);financial analysts – 29 per cent (91 replies); the APC – 67 per cent (12 replies); the APB – 47 per cent (18 replies).

The possible existence of bias

Some bias may be present on three counts, which are mentioned to indicate awareness, but should then be

considered as a constraint on the statistical rigour of the methodology rather than detracting from the exploratory nature of the findings. Firstly, a sample bias may have been introduced in the selection of investors, as only 5 industrial company dividend lists were used and the first name on each 20th page was selected. The same dividend list was used for selection of institutional investors who were selected by scanning the list. Although the full population of the other constituencies was used, the financial analysts circularised may not include all analysts, as only those who are members of the Investment Analysts Society were canvassed, there being no other immediately apparent method of identifying financial analysts.

Secondly, no follow-up mail-shot was undertaken. As a result, it was not possible to apply a T-test in order to establish the existence of a non-response bias. Finally, although a total of 274 responses were analysed, when considered within their individual constituency, the number of responses could introduce a sample size bias.

The statistical package

The Statistical Package for the Social Sciences (SPSS), a system of computer programs was used to manipulate and analyse the data. This computer package requires the input of data files which can be processed in accordance with a number of available statistical procedures. Separate data files were opened for each of the five groups canvassed.

The sub-program DISCRIMINANT was applied to the questions relating to the regulation of financial information reported. This sub-program performs discriminant analysis using two basic methods, directly entering all discriminating variables or by selecting the best discriminating variables first and then proceeding in stepwise fashion. The objective of discriminant analysis is to statistically distinguish between two or more groups of cases. This is achieved through selecting a collection of discriminating variables, in this case the variables used in each question, that measure the characteristics on which the groups are expected to differ. A minimum level of significance of ,01 was required in this study in order to support the existence of a discriminating function.

The following null hypotheses were formulated and tested:

H1: There are no significant differences among the constituencies in the financial reporting environment regarding the reasons perceived as important for standard setting and other regulation of disclosure in the annual financial statements.

Rejection of H1 could indicate that there is no generally recognised rationale or underlying concepts which motivate the activity of regulation. The perceptions of company financial managers will also be an indicator of their predisposition to adoption of additional reporting standards and other reporting innovations.

H2: There are no significant differences among the constituencies in the financial reporting environment regarding the objectives perceived as important in establishing statements of generally accepted accounting practice.

It is possible that conflict of interests and other political factors strongly influence desired accounting practices. Rejection of H2 will serve to underline this fact and indicate the extent of compliance which can be expected.

Characteristics of the South African financial reporting environment

The financial reporting environment in South Africa is a complex real world environment within a geographic and political setting. In the context of this study, investors in listed companies are seen as a constituency who sacrifice present consumption in exchange for shares, which are "claims to future, uncertain cash flows".[3] The investor has a demand for information in order to assess the amount, timing and certainty of those cash flows.

The environment also has a number of other constituencies with whom the investor interacts. The characteristics of the environment, are now summarised by drawing from a framework developed by Beaver [4]:

- ☐ Investors who may have limited understanding of financial matters may use financial intermediaries such as investment companies to manage all or a part of their investment process or they may use informational intermediaries such as analysts to process the relevant information.
- ☐ Investors have the opportunity to diversify their portfolio thereby reducing the risk attached to holding shares in only one company.
- ☐ Information intermediaries compete with one another for the clientele of investors.
- ☐ Managements compete with one another for the funds of investors and thus have an incentive to provide financial information.
- ☐ Information is publicly available, sometimes at a cost which is more comprehensive and often more timely than the annual report.
- ☐ There is inconclusive evidence as to the efficiency of the JSE. Based on available research findings, however, it can be stated that the share prices do reflect a comprehensive information system.

Many of the characteristics of this financial reporting environment apply in varying degrees to all western countries. The common factor in many of these characteristics is the competitive nature of the financial environment, with companies competing for the funds of the investors, informational intermediaries competing for the clientele of investors and investors competing for superior information. This being so, a question as to the reasons for regulating accounting practices and disclosure arises when it seems feasible that competitive forces would ensure equilibrium.

Regulation procedures in South Africa

The situation in South Africa is comparable with the UK in that minimum disclosure requirements are also prescribed by legislation in the Companies Act of 1973. This Act goes further than the British Companies Act in that it makes specific reference to generally accepted accounting practice with a clear injunction that financial statements must be prepared "in conformity" with such practice.

The accounting profession took the initiative in establishing a body of generally accepted accounting practice and the APC functions as a committee of the South African Institute of Chartered Accountants (SAICA), making recommendations to the APB, a corporate body established in terms of a constitution, with the specific objective of establishing and procuring recognition for generally accepted accounting practice.

When the establishment of the board was proposed in 1972 by the National Council of Chartered Accountants, as it was then known, it was stated that it, "set out to make the Board as widely representative as possible of all three classes, the preparers, the auditors and the users".[5] It is notable, however, that of the representation,

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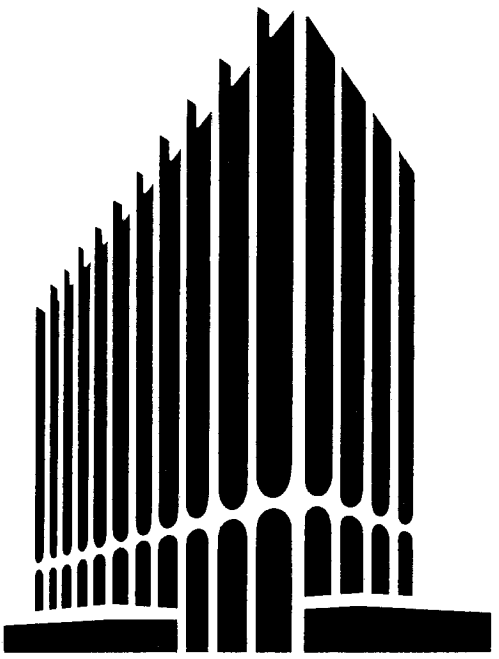

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only one member, namely the JSE, can be considered to represent the user. While this imbalance is difficult to understand, South Africa is no exception, the trend being to have representation primarily from the accounting profession, with preparers serving more in order to lend credibility and users having only token representation.

Literature overview of the rationale for standards

This section reviews the major reasons which could be forwarded for justifying the existence of standard setting as discussed in the current literature. The traditional but somewhat general reason of "public interest" is usually seen as the starting point. Public interest is often measured in terms of the economic concept of Pareto optimality, which in its simplest form holds that "a regulation would be in the public interest if it improved at least one person's condition without worsening any other person's condition".[6]

A less strict application of the Pareto criterion has been suggested by Falk who states that "under the potential Pareto criterion a standard is considered desirable if the sum of the benefits it generates for all individuals exceeds the sum of all their costs".[7] While these definitions are appealing they suffer from the problem of measurability. They both rely on the notion of costs and benefits and until such time as it is possible to test these criteria empirically, they serve only as intuitive benchmarks against which to evaluate the rationale for standard setting.

A more manageable method is to identify the common arguments forwarded as a rationale for standard setting. They have been divided into four categories, each of which was used in the questionnaire in order to establish their perceived importance in the SA reporting environment.

Firstly, there are those who believe that management would abuse the absence of regulation by manipulating numbers and the use of "cosmetic" accounting. As with the other reasons to be discussed, questions are raised as to objective empirical evidence to support these claims. Even if the claim were true, the effect on financial information as a commodity made available to the market through a number of different channels would be uncertain. Moreover, "it is not clear that there has been a decline in the frequency of abuse since the inception of the Acts and the presence of increased regulation".[8]

The second reason relates to the economic theory of market failure. "A market failure is said to occur when either the quantity or the quality of a good produced in an unregulated market differs from what is purported to be the social optimum".[9] This implies that both an underproduction as well as an overproduction could be less than optimal. While both of these possibilities warrant closer examination, a popular complaint by management is that certain prescribed disclosure leads to competitive disadvantage. Another argument is that accounting information prepared for consumption by certain individuals, namely shareholders who claim to bear the cost, becomes a "public good", available to "free-riders", who enjoy the use of the information at no apparent cost to themselves. Leftwich[10] builds a sound case for rejecting this reason arguing that market failure theories contain a fundamental flaw. However, the issue is still subject to debate. This possible reason was included in the questionnaire in order to gauge perceptions of those active in the market.

A third reason uses the legal imperative of fair presentation as a basis for insisting that all investors should have equal access to information. It is argued that there is incentive to trade on information which is not made available publicly and that regulation to promote disclosure reduces the set of potential privately held information, thus reducing the possibility of information asymmetry.

A final reason proposed for standard setting is that management may wish to suppress unfavourable information. This would lead to an imbalance in demand and supply, as "there may be greater gains to managers who have information, from withholding it than from disclosing it, so supply may . . . be depressed".[11]

Perceptions of constituencies as to the reasons for standards

The four major reasons commonly identified as contributing to the rationale underlying the standard setting and regulation of disclosure in financial statements formed the basis of the question posed to the constituencies. As this area was considered to be too esoteric for individual investors, the two questions relating to standards were not included in their questionnaire.

In order to address the hypothesis H1 the question, "What importance do you attach to the following reasons for standard setting and other regulation of disclosure in annual financial statements?", was posed to the user groups' institutional investors and financial analysts as well as to the company financial manager and accounting regulator group. The results obtained are summarised in Table 1 in terms of means and rankings of each group. In addition, the overall weighted means of group responses is indicated.

The reason, "To prevent reporting abuses such as the manipulation of numbers", was ranked as the most important variable overall. The variable "To ensure that management does not suppress unfavourable information", ranked second overall, with only the regulator group relegating this reason to third position.

Applying multiple discriminant analysis, a discriminating function was evident at the 0,01 level of significance with a Wilks' lambda of 0,8662 and a chi-squared score of 31,447 with 12 degrees of freedom. The function weighed most heavily on the reason relating to the suppression of unfavourable information by management. Using the stepwise procedure this result was verified. Referring again to the univariate statistics it is evident that this variable had both the widest range of rankings as well as the widest range of mean scores. Institutional investors perceive this to be the most important reason, while regulators consider it to be preceded in importance by two other reasons. Based on these results, the hypothesis H1 is rejected.

The institutional investors and financial analysts were combined to form the "user" constituency and further discriminant analysis was applied to the constituencies by pairing them into the three combinations of User-Companies, User-Regulators and Regulators-Companies. Only two pairings produced a significant discriminating function. They were the User-Company pair and the User-Regulator pair. The User-Company pair analysis resulted in a Wilks' lambda of 0,9183, a chi-squared score of 16,202 with 4 degrees of freedom and was significant at the 0,01 level of significance. The discriminant function weighed most heavily on the reason relating to coercion of management to disclose information, with users viewing this as a more important reason than company management.

The User-Regulator pair resulted in a Wilks' lambda of 0,9030, a chi-squared score of 15,004 with 4 degrees of freedom and was significant at the 0,01 level. The discriminant function weighed most heavily on the reason relating to information asymetry, with regulators viewing this as more important.

These results indicate that differing perceptions or motives are apparent between the communicators, who are the source of information and users of information regarding the reasons considered as important for standard setting. With the exception of the reason "To promote even distribution of information", users placed less importance on all reasons than did the other two constituencies. This is difficult to interpret intuitively as it would be expected of users to feel more strongly about the possible injustice of information asymmetry.

Each of the three constituencies was analysed on the basis of three further characteristics, namely, their beliefs as to the efficiency of the JSE, their beliefs as to whether it is possible to consistently earn superior returns on the JSE and their beliefs as to whether standard setting has a benefit to society in excess of the costs involved. Not one of the resulting nine discriminant analysis tests which were performed produced any significant discriminating function. It has thus not been possible in this study to identify characteristics within a given constituency which may cause differing perceptions as to the reasons for standard setting. This is not an unexpected result, having found in the descriptive statistics that the standard deviations of the groups when responding to the questions were seldom large, indicating a fairly homogeneous response within groups.

It may seem possible when scrutinising the means and ranks that the institutional investors and financial analysts hold significantly different beliefs as to the reasons for standard setting. However, a discriminant test was run on these two groups and no significant discriminating function emerged.

The objectives of a standard as perceived by the constituencies

There are numerous references in the literature which indicate that, "a primary goal of accounting theory is to explain which accounting alternatives should be used".[12] Both in South Africa and overseas, the emphasis given by standard setters is that the primary objective is to limit the number of feasible alternative treatments of a given situation. The chairman of the FASB is on record as saying that, "our standard is now published and, in my view, it reduces the diversity in accounting. This, I feel, is our primary role".[13] The present chairman of the APB in South Africa has stated that, "If I were to try and define our criterion here, I would say that the APB, where it is faced with a choice of practices, must choose and firmly stand by the one which it believes will best serve the purpose of fair presentation in normal circumstances".[14]

Both of these views as to the primary objectives of a standard were included in the questionnaire. In addition, a very broad objective, namely to "describe the methods being currently used in practice and attempt to standardise their use", as well as an objective which focused on disclosure prescription and an objective relating to elimination of undesirable methods were included. The list is exploratory and aimed to capture the perceptions of the constituencies against the background of a number of unresolved issues which are being currently debated in the literature.

The results in terms of mean scores and rankings are documented in Table 2. It is significant that all constituencies ranked the elimination of undesirable methods as the most important objective, while the other objectives were ranked differently by all constituencies. The overall weighted mean, however, ranked the variable, "Isolate a 'best' accounting treatment out of the available alternatives, as the required practice" in second position. The overall means, with the exception of the item ranked first, were within a very narrow range of 5,90 to 5,70 which lies within only 2,2% of the total spectrum from 1 to 9.

Discriminant analysis was applied in order to test H2.

A discriminant function with a Wilks' lambda of 0,8628, a chi-squared score of 31,519 and 15 degrees of freedom at a level of significance of 0,01 resulted from the analysis. The function weighed most heavily on the objective, "describe the methods being currently used in practice and attempt to standardise their use". The importance of this objective as a discriminator, resulted similarly when the stepwise method of analysis was used. The means of the constituencies indicate a wide range of rating, from 4,40 for the regulator group to 6,16 for the analyst group. The rankings of importance are also widespread, from second ranking by the institutional investors, but regulated to the lowest ranking of importance by both company management and regulators. As a result of these findings, the hypothesis H2 is rejected.

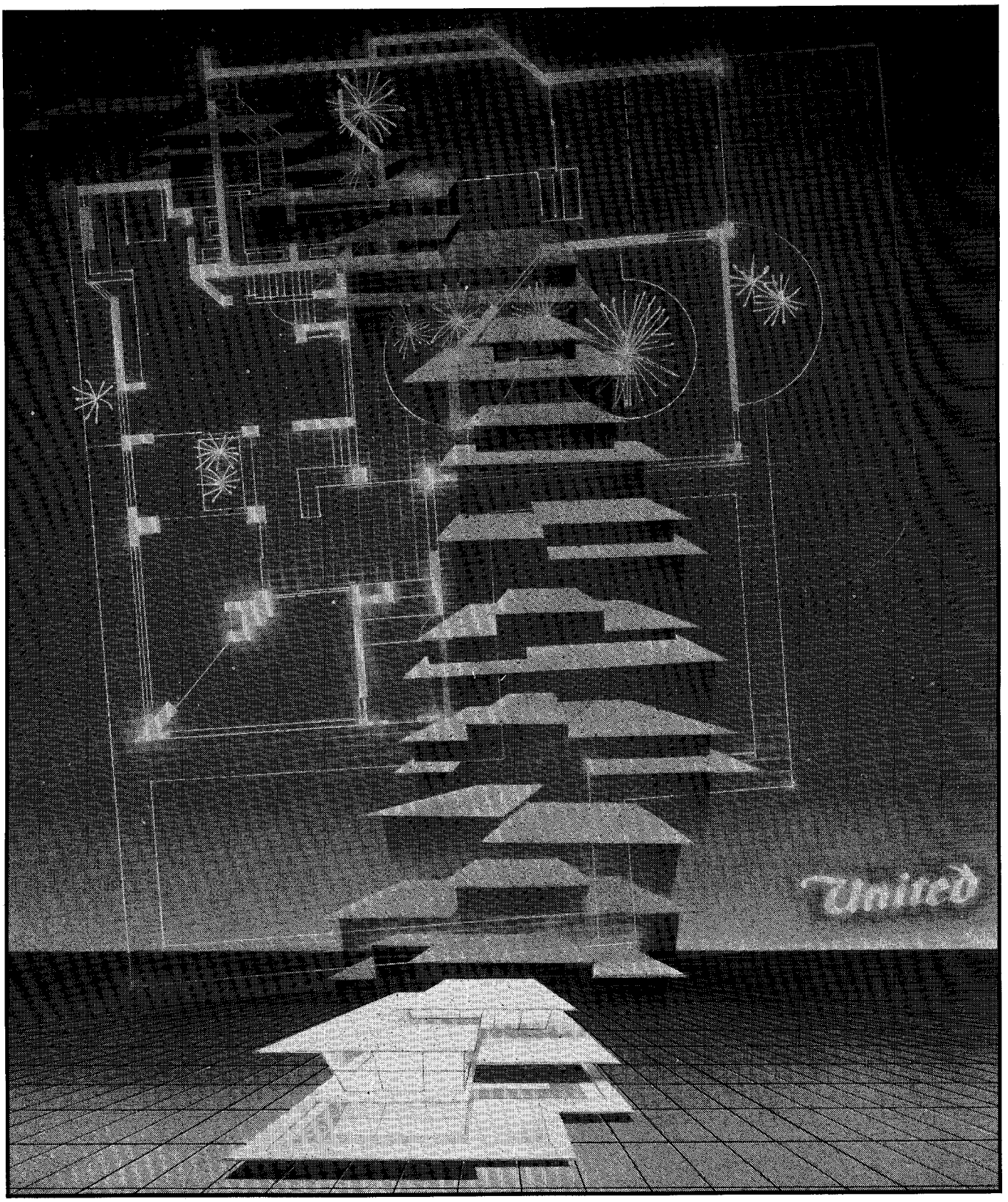
As in the previous question, the three primary constituencies were paired and discriminant analysis applied. The only significant discriminating function which resulted was between the User-Regulator pair. The results indicated a Wilks' lambda of 0,8379, a chi-squared score of 25,196 with 5 degrees of freedom at a significance level of 0,01. The same objective, relating to description of methods weighed most heavily on the discriminating function. However, the objective "Prescribed disclosure required, irrespective of the method adopted" also made a significant contribution to the function.

The three primary constituencies were again tested for within-group discriminators on the bases of the three characteristics considered in the previous question as being likely to cause differing perceptions of importance. None of the nine resulting discriminant analysis tests, however, produced any within-group significant discriminating function. It is, thus, not possible in this study to identify any discriminating characteristic within a given constituency which results in the differences of importance placed on the objectives for establishing statements of generally accepted accounting practice, as perceived by the individuals within that group.

It is apparent from these results that the regulator group has a different view on the objectives to be used when establishing a statement of generally accepted accounting practice than do the users of financial information. As there is no conclusive evidence as to how objectives can be established for the process of standard setting, or what objective is appropriate, the findings may be more of academic interest than of use to initiate action. It may be, for example, that users are not aware of the complexities in achieving the objectives which they consider important. These questions, however, require further in-depth study of the process of standard setting in a complex environment.

Implications for regulation

The results indicate that all constituencies perceive regulation in the financial reporting environment to be a legitimate and necessary activity. The fact that there is



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some significant disparity between the constituencies regarding the reasons for the activity of regulation is of secondary importance. Rational and compelling arguments against regulation, however intuitively appealing, must be seen as abstractions into an environment describing situations as they should be, rather than descriptions of real-world complexities and relationships. In particular, company management who would be the most likely contender for the abolition of any regulations hold similar views to the other constituencies.

Implications for standards in South Africa

Regulators who determine accounting policies to be used must, at least implicitly, consider the objectives which their statements are to achieve. Such objectives define the orientation adopted when resolving an issue and also require the standard-setter to make a value judgment. The changes which result in financial reporting practices are sought by regulators in order to correct situations perceived as undesirable. However, as there are other interest groups, the acceptance of standards becomes a complex issue.

The question posed in this research was motivated by the belief that regulators will benefit from an understanding of how the other interest groups perceive the objectives of the regulating activity. In addition, it is likely that by exposing differences in perceptions, evidence will be provided which may assist in predicting barriers to the change process which will inevitably be required by the publication of new standards.

It is evident from these results that there is disparity between constituencies with regard to the perceived importance of the specified objectives in standard setting. It is particularly relevant that the user constituency and the company constituency hold views which are not significantly different. However, the regulators differ significantly from the user constituency and to a lesser extent from the company constituency. If the regulators have themselves devoted time and research to ensure that they have established objectives which best serve the public interest, then they can expect to meet some resistance from company management in the future. In addition, users of financial information will be dissatisfied with the output of the APB unless they are educated to understand the objectives which the APB perceive to be most important and are convinced as to their appropriateness.

Table 1: Perceived importance of reasons for standard setting

Responding constituency	Prevention of reporting abuse		Coercion of management to disclose		Promotion of even distribution of information		Prevent suppression of unfavourable information	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Institutional investors	7,76	2	6,56	4	6,73	3	7,82	1
Financial analysts	7,48	1	6,63	3	5,98	4	7,36	2
Company management	7,14	1	5,63	4	6,11	3	6,78	2
Information regulators	6,97	1	5,80	4	6,47	2	6,27	3
All groups (weighted)	7,34	1	6,18	3	6,20	4	7,09	2

Scale: Most important = 9
Least important = 1

Table 2: Perceived importance of objectives for statements of generally accepted accounting practice

	Isolate a 'best' accounting treatment		Recommend a limited number of acceptable methods		Describe the methods currently used		Prescribe disclosure irrespective of method		Eliminate undesirable methods	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Institutional investors	5,91	3	5,63	5	5,97	2	5,75	4	7,69	1
Financial analysts	5,88	4	5,67	5	6,17	3	6,35	2	7,28	1
Company management	5,71	4	5,93	2	5,57	5	5,88	3	7,18	1
Information regulators	6,43	2	5,73	3	4,40	5	4,63	4	7,93	1
All groups (weighted)	5,90	2	5,76	4	5,70	5	5,87	3	7,40	1

Scale: Most important = 9
Least important = 1

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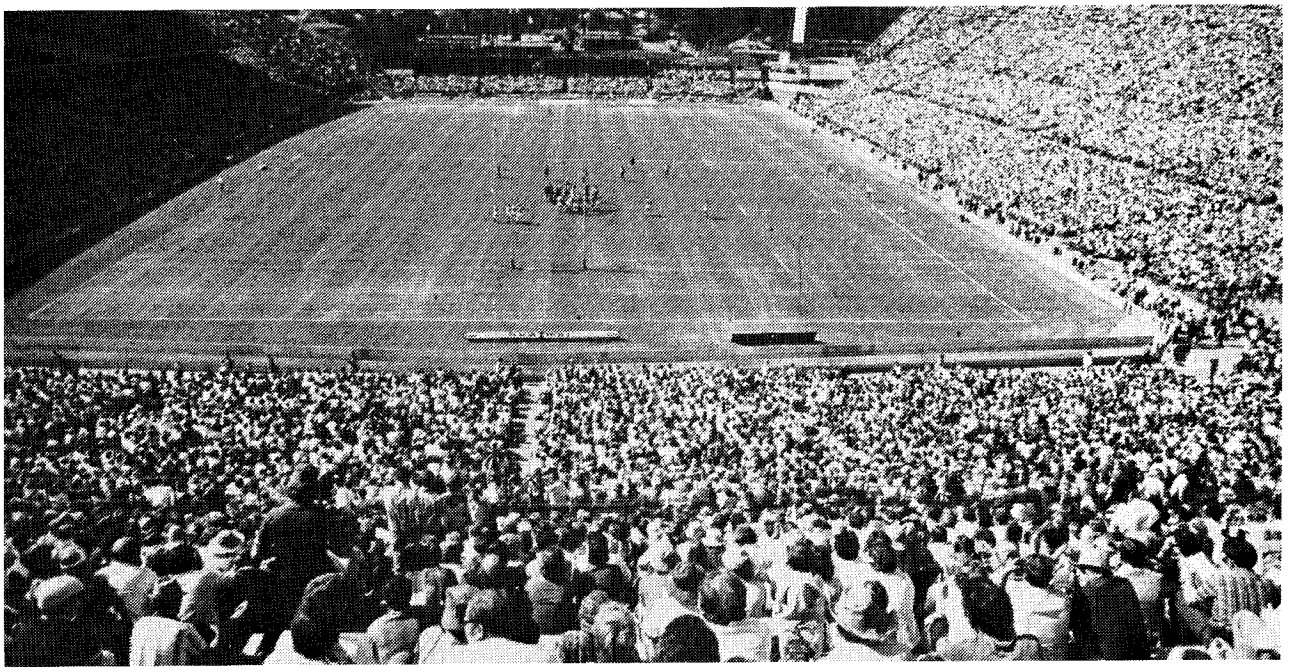

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A gold share evaluation model

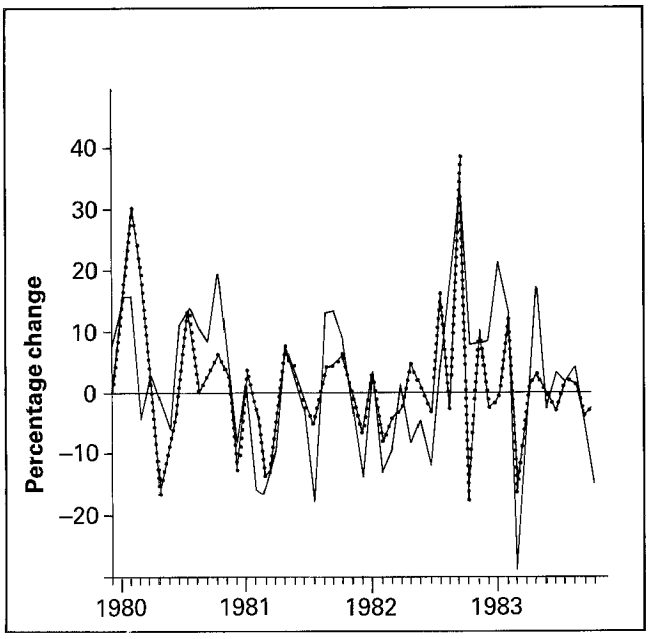
1 Introduction

The unstable relationship between changes in the price of gold and the price of gold shares has been a subject of much interest to financial analysts and to writers in the financial press.

It is evident that the gold share market reacts differently to movements in the gold price at different times. This can be seen from Figure 1 below showing the month to month percentage changes of the gold price and the JSE Actuaries All Gold Index. It can be seen that movements in the gold price sometimes have very little impact on the gold index whereas on other occasions large percentage changes in the gold index are associated with relatively small percentage changes in the gold price.

Figure 1

% change of gold price ·····
% change of JSE Actuaries All Gold Index ——



Owing to this rather erratic relationship, reference is often made to the "under-" or "over-" valuation of shares relative to the gold price, a situation which may provide an opportunity to arbitrage profitably between gold above the ground – in the form of gold coin or bullion, and gold under the ground – in the form of an equity stake in a gold mine.

It is difficult, however, to quantify the degree of over or under pricing of shares relative to the gold price unless one has an idea of the return required from gold shares.

This paper examines this problem by proposing a gold mine earnings model and applying this model to a set of gold mines to obtain earning estimates over times of known gold prices.

The issue is then considered from two perspectives. In the first, it is assumed that the required rate of return is constant over the period of analysis and, thus, knowledge of the share price of the gold mine in question enables one to calculate a so called "implicit gold price", ie a gold price reflected by the gold share. In the second, it is assumed that the gold share and gold bullion markets are efficient, thus the actual and implicit gold prices are the same and that apparent differences between the actual and implied gold price are due to changes in the required yield from the gold share in question. It will be shown that in the short term there are sharp changes in the required yield which are unrelated to changes in the yield environment of alternatives, and these may represent buying or selling opportunities.

2 The model

Since gold shares, unlike industrial shares, are dependent on a continuously changing but observable factor – the gold price, one is able to compute estimates of earnings on a continuous basis.

Barr (1982) proposed a simple dividend yield model in order to examine the relationship between the actual gold price and the gold price implied by gold share prices. This model made a number of restrictive assumptions regarding the cost and tax structure as well as the dividend/profit relationship of a gold mine and, thus, the interpretation of these results had to be viewed in that restricted framework.

It is, however, evident that the treatment of many variables used in the estimation of earnings require further sophistication as they respond to changes in the gold price as well as changes in inflation. It is known that the working cost variable, for example, generally increases after a sustained increase in the gold price as gold mining companies generally mill lower grade ore to avoid higher tax rates during higher gold prices.

In order to view these results in a more realistic framework, therefore, a model of gold mine earnings is proposed below which attempts to incorporate all measurable factors which impinge upon production,

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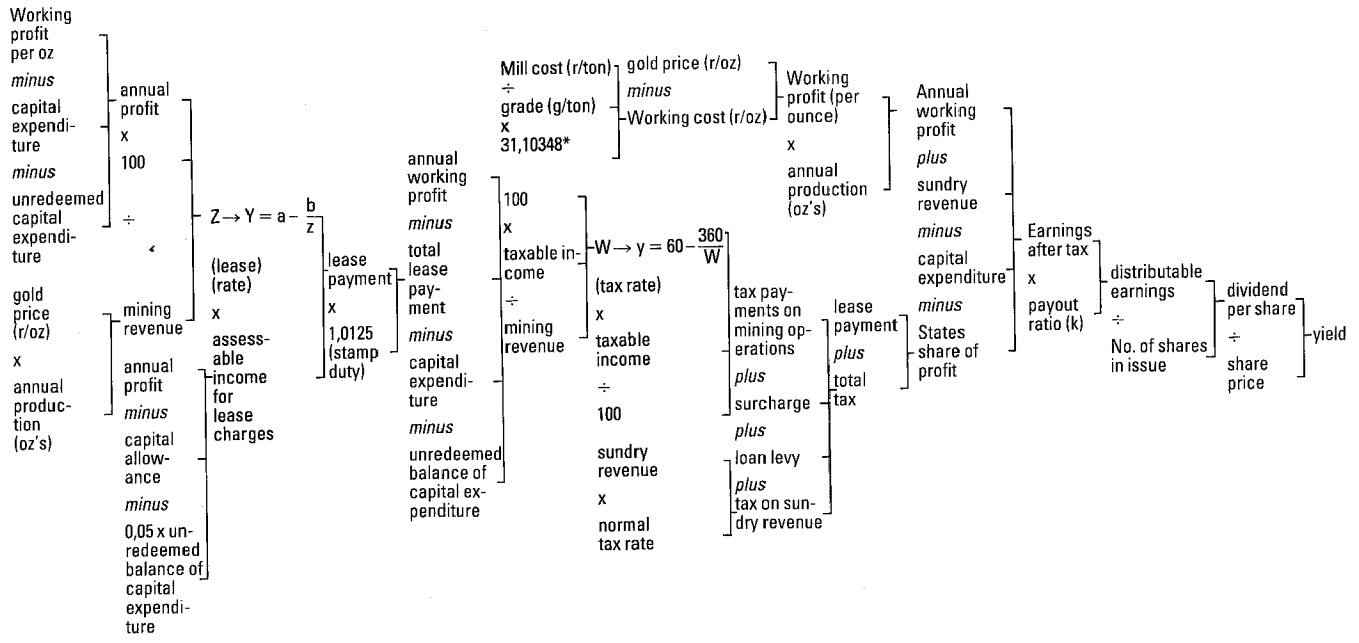
costs, taxes and capital expenditure and, therefore, on overall earnings. A flowchart showing the structure of the model which estimates gold mine earnings and, hence, dividend yield is shown in Figure 2.

Figure 2



Incorporating these factors leads to a yield model of the following form:

$$\text{Yield}_t = \{[\text{Implicit Gold Price}_t\ (\text{r/oz}) - \text{Cost}_t\ (\text{r/oz})].\ \text{Annual production}_t\ (\text{oz's}) + \text{Sundry Revenue}_t - \text{Tax}_t - \text{Lease}_t - \text{Capital Expenditure}_t\} \times \frac{k}{\text{No. of shares in issue}_t \times \text{Share price}_t} \quad (1)$$

where $k = \dfrac{\text{dividend per share}}{\text{earnings per share}}$

The expression enclosed by square brackets in the above equation, is the working profit per ounce of gold mined. This becomes the total annual working profit when multiplied by the annual production. The expression enclosed by braces is, thus, an estimate of the total earnings which becomes the earnings per share when divided by the number of shares in issue. Finally, an estimate of the dividend per share is obtained by multiplying by k (the payout ratio) and, hence, the dividend yield is obtained after dividing by the share price.

In order to establish a suitable form for the estimation of the various components, it should be noted that the components (cost, production and capital expenditure) will themselves be functions of the gold price. A range of different equation specifications were researched for these variables, the most satisfactory of which are listed below.

2.1 Cost equation

$$\text{cost(r/oz)}_t = ß_0 + ß_1 e^{ß_2 t} + ß_3 \sum_{k=t-4}^{t-1} \frac{\text{gold price}_k\text{(r/oz)}}{4} \quad (2)$$

The form of equation (2) can be justified by considering, firstly, the lagged gold price variable. During times of higher gold prices the tax structure (discussed later) creates an incentive to mine lower grade ore implying that more ore has to be milled to produce the same quantity of gold, thus causing the cost to mine an ounce of gold to increase, and vice versa. It should be noted that this effect would not be immediate since the decision to mine different grades would only be made after a sustained change in the gold price. The exponential time variable was included to proxy inflation over the period during which this model was estimated.

2.2 Production equation

$$\text{Annual production}_t\ (\text{oz's}) = ß_0 + ß_1 \sum_{k=1}^{4} (5\text{-}k)\ \text{gold price}_{t-k}\ (\text{r/oz})/10 + ß_2\ \text{gold price}_t + ß_3 t \quad (3)$$

Clearly, the gold price in the immediate past has an effect on current production, while the contemporaneous gold price influences mining decisions as well. Lower ore grades become payable during higher gold prices, justifying the inclusion of these variables in equation (3). Further, the time variable included here measures the fall-off in production due to the mines exhausting their higher grade resources over time.

2.3 Capital expenditure equation

$$\text{Capital expenditure}_t = ß_0 + ß_1 \sum_{k=1}^{4} (5\text{-}k)\ \text{gold price}_{t-k}\ (\text{r/oz})/10 + ß_2\ \text{gold price}_t + ß_3 e^{ß_4 t} \quad (4)$$

The level of capital expenditure is dependent on expected rates of return and on the availability of projects. As the expected rates of return are closely related to the present gold price both from the point of view of the additional cash flow and the tax advantages, capital expenditure is explained primarily by contemporaneous and lagged gold prices. Further, an exponential time variable is included in equation (4) to proxy inflation over the period researched here.

The above cost and gold price variables are required to be quarterly observations in units of rands per ounce, thus avoiding the variable influence of the exchange rate.

The annual production variable consists of moving annual totals expressed in ounces. The coefficients of the above equations can be estimated by least squares regression techniques on suitably transformed data.

2.4 Tax and lease payments

The formula for the lease payments is based on a sliding scale and has the general form:

$$y = a - \frac{b}{z}$$

where
y is the percentage of profits payable to the State after deducting the capital redemption allowance and capital allowance; $z = \frac{P}{R} \times 100$, where P is the profit less capital redemption allowance only, and R is the mining revenue; the prespecified constants *a* and *b* are unique to each mine and the choice of *a* depends on the return of capital invested using estimates of grade, costs, and the amount of risk involved. The value of *a* is generally between 10 and 30. However, a return of 10% to 15% is often considered reasonable.

Mining taxation is calculated according to the age of a mine and is also based on a sliding scale.

$$y = 60 - \frac{480}{w} \text{ for post-1966 mines}$$

or

$$y = 60 - \frac{360}{w} \text{ for pre-1966 mines}$$

where
y is the percentage of taxation on taxable income and w is the ratio of taxable income less the lease payment to mining income and multiplied by 100.

2.4.1 Calculation of taxable income

Gold mines are allowed to deduct 100% of current capital expenditure and 100% of unredeemed balance of capital expenditure from assessable income. In addition, special capital allowances are permitted on the unredeemed balance of capital expenditure. Further, a special capital allowance on current capital expenditure is deductible if a mine has an assessed loss during the tax year (see Figure 1). Clearly, the above formulae encourage lower grade ore to be mined in times of high gold prices, thus extending the life of the mines.

The sundry revenue variable in equation (1) generally has little impact on earnings and is, therefore, computed to be the average sundry revenue over the previous three years. The value of k is simply the payout ratio and as gold mines tend to distribute most of their earnings, it does not exhibit much variability – it is calculated as the average payout ratio over the previous three years.

2.5 Assumptions

The assumptions of the model proposed here are simply:

(i) changes in cost, annual production and capital expenditure can be explained by equations (2) (3) and (4) respectively;

(ii) sundry revenue is constant (at the average of previous levels);

(iii) the dividend/earnings ratio is constant (at the average of previous levels).

It should be noted that the above equations were formulated so that the available quarterly data, ie costs, production and capital expenditure, could be interpolated to obtain weekly estimates of these variables. Although, theoretically, the use of an inflation variable would have been preferable to the time variable used here to proxy inflation, the time variable enables weekly estimates or even daily estimates of the variables to be attained and bears an extremely close relationship with the Wholesale Manufacturing Price Index for Basic Metals and Products over the period examined.

3 Determination of implicit gold prices using the model

Four gold mines, namely, Kloof, Western Deep Levels, Grootvlei and Blyvooruitzicht, were chosen on the basis of their various risk classes. The risks of the four mines were viewed in terms of their estimated life and mining costs at a gold price of $400/oz. Table 1 below shows these estimates.

Table 1

Mine	Estimated life (years) at a $400/oz gold price	Estimated costs ($/oz) at a $400/oz gold price
Kloof	20	132
Western Deep Levels	20	176
Grootvlei	10	264
Blyvooruitzicht	7	208

Source: Quarterly Gold Review (August 1983), Issue 17 published by Simpson, Frankel, Kruger Inc.

Equation (1) was rearranged so that the implicit gold price becomes the subject of the formula. For the sake of visual comparison only, a constant annual dividend yield of 10% was used in the model. Figures 3 to 6 show the graphs of the weekly implicit gold price compared to the actual gold price from the first week in 1979 to the ninth week in 1983 at the 10% yield.

Figure 3

Kloof

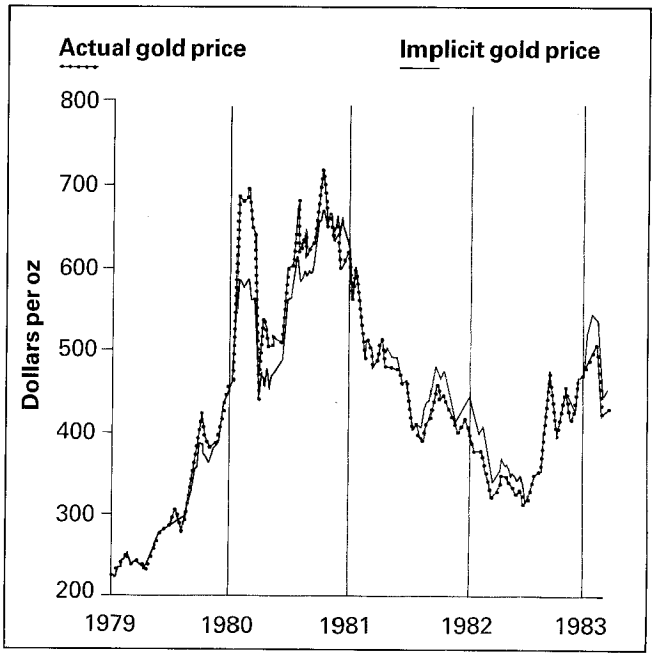


Figure 4

Western Deep Levels

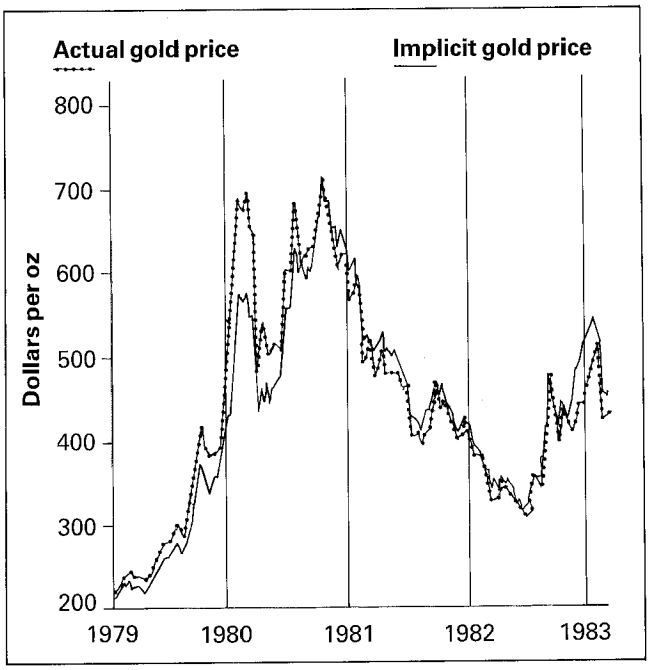


Figure 5

Grootvlei

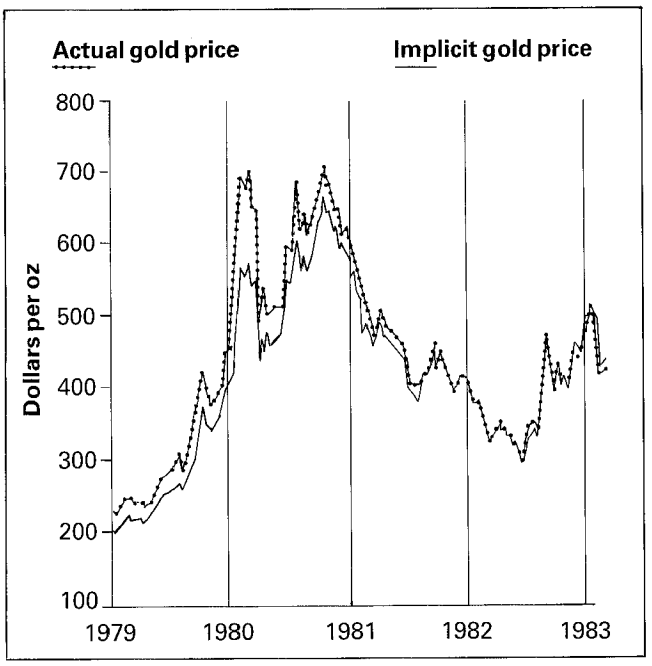


Figure 6

Blyvooruitzicht

An inspection of Figures 3 to 6 suggests the following:

(a) The implicit gold price computed using the model proposed here follows the actual gold price closely.

(b) The sharp increase in the gold price in January 1980 was not followed to the same extent by the implicit gold price.

It could be argued that in this instance investors in the gold share market were correct in their pricing of the gold shares as the gold price declined shortly afterwards. Viewed in another light, it could be argued that investors were attaching a very high expected yield (higher than the 10% used in the model) to the gold shares at that time due to the risk associated with the volatile gold price at the time. In addition, there may have been an expectation of further appreciation in the rand against the dollar which would dilute rand receipts for the gold mines.

4 Determination of required return using the model

An alternative approach to the above, is to assume that shares do in fact reflect the actual gold price – ie that the actual gold price replaces the implicit gold price in equation (1). Under this assumption, equation (1) can be used to derive the expected yield of a gold share at each point in time for which gold price and share price data values are available.

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Figures 7 to 10 below show the graphs of the weekly yields determined by the model over the past four years.

Figure 7

Kloof

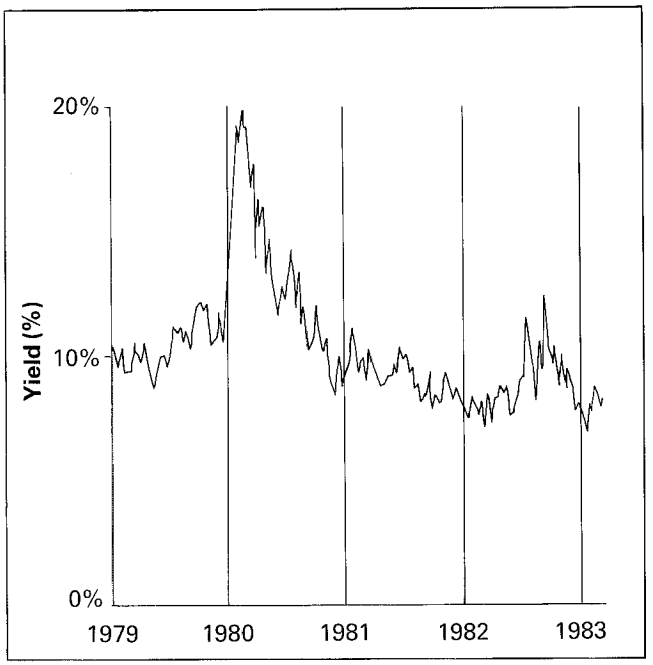


Figure 8

Western Deep Levels

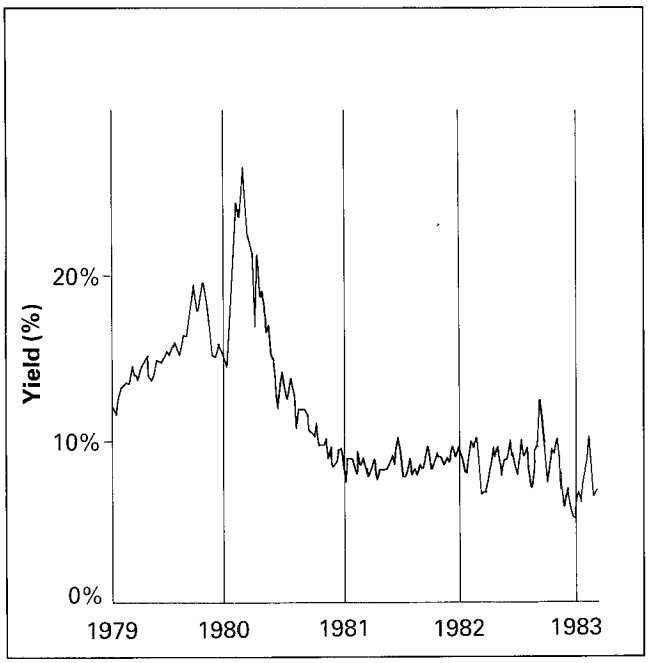


Figure 9

Grootvlei

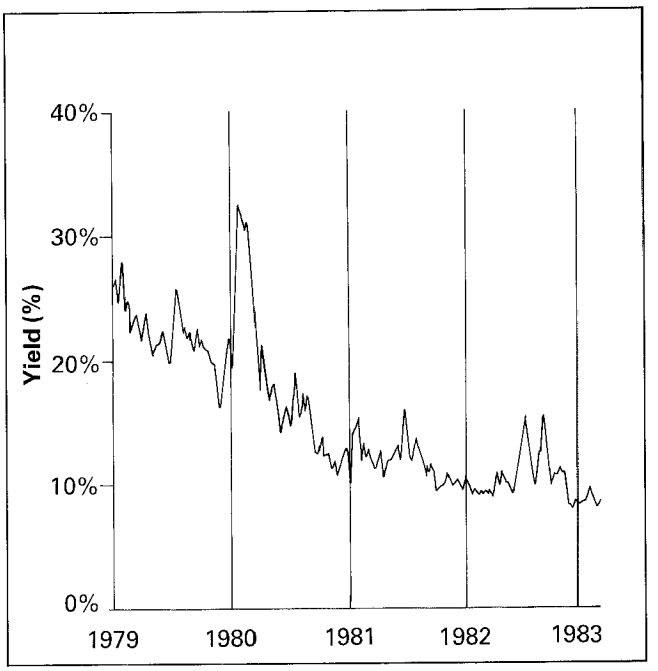
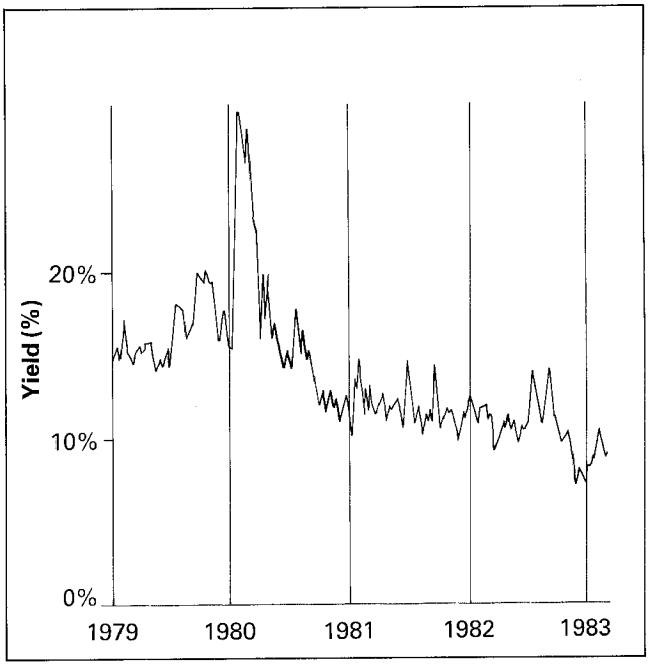


Figure 10

Blyvooruitzicht



The following comments can be made in respect of the yields shown in Figures 7 to 10:

(a) There are many short-term yield fluctuations of reasonably small magnitude present in all graphs

with sharp movements in one direction often being associated with a sharp compensating reaction. These fluctuations, which are unrelated to the yield environment, tend to imply that short-term inefficiencies exist in the gold share market.* If this is the case, then these fluctuations in yield may represent short-term trading opportunities – this idea is the subject of Section 5 below.

(b) In January 1980, a large upward fluctuation in yield was present in all graphs, a plausible cause of which has been considered above in Section 3.

(c) There is an indication of a decreasing trend in the yields through time. This could be due to either
  (i) decreasing rates of return on similar risk class assets which would tend to be associated with falling risk free rates;
  (ii) re-rating of the risk profile of gold shares from being more risky to less risky over the period.

As risk free rates have not indicated a steady downward trend, it is suggested that the phenomenon was due to a general re-rating of gold shares based to some extent on increasing confidence regarding South Africa's political future.

5 Trading rule based on short-term inefficiency in the gold share market

If the short-term yield fluctuations mentioned in (a) above were caused by short-term inefficiency in the gold share market, there exists a possibility that this could be exploited so that returns superior to those of a naive "buy and hold" policy might be attained. Accordingly, a trading rule based on these yield fluctuations obtained by the model is considered here.

In order to formulate "buy and sell" signals it is necessary to firstly discuss the major cause of short-term increases and decreases in the yield obtained by the model. It is evident that an increase in the yield of a gold share found using equation (1) can be attributed mainly to two major causes: firstly, a situation where the gold price is rising but the price of the gold share is either not rising or rising at a slower rate than expected or, secondly, where the price of a gold share is declining and the gold price is either constant or declining at a slower rate than expected relative to the share price. In both cases, one might consider the share a good prospect to purchase since relative to the gold price it is reflecting good value in terms of expected yields in the immediate past. Further, a decrease in the yield of a gold share found by using equation (1) can also be attributed to two major causes: firstly, a situation where the gold price could be declining but the share price is either constant or declining at a slower rate than expected relative to the gold price, or secondly, the share price is rising but the gold price is either constant or rising at a slower rate than expected relative to the share price. In the first instance, where the gold price is declining, one might consider the share a bad prospect to hold since relative to the gold price it is reflecting poor value in terms of expected yields in the immediate past. In the second instance, where the share price is rising, one might consider holding the share for a capital gain before selling it when the price starts to decline. In terms of the higher yields associated with the lower share price in the immediate past, however, one should not consider purchasing the share in this instance as the yield is decreasing.

It should be noted that the above "buy" and "sell" situations cannot be found by considering only the gold price and share price alone, but need to be considered in relation to the yield as well since the yield, as determined by the model, takes into account all the components of earnings which are in turn affected by the gold price.

The cost component, for instance, has varying influences on the share price over different ranges of gold prices. For example, when the gold price is close to the cost of mining an ounce of gold, a small percentage increase in the gold price could imply a major percentage increase in earnings. It should be noted, however, that the yield as determined by the model may still remain unchanged if the increase in earnings has been correctly assessed by the market and, hence, reflected in the share price. In this instance, the share reflects no better value than before.

It is, thus, possible that sharp increases or decreases in yield as determined by the model could be due to the market either underestimating or over-estimating the increase in earnings of a gold share, as the case may be, and vice versa.

In view of the above discussion "buy" and "sell" signals will be formulated for the trading model.

5.1 Formulation of buy and sell signals

Since it is felt that sudden increases in yield are considered to be a "buy" situation, a "buy" signal was formulated so that a share would be purchased when the yield rose through a 15-week moving average yield by more than 6% (of the moving average yield).

Following the above discussion, a "sell" signal should only be given when both the yield and the share price decreased. Accordingly, it was felt that a share should be sold when the yield dropped by more than 4% of a 15-week moving average yield and the share price dropped by more than 2% of a 15-week moving average share price. It should be noted that the percentage decrease for a sell signal was formulated to be less than a buy signal since the added share price constraint was included for the sell signal.

The trading policy assumed an initial sum of R10 000 available for investment in the following manner:

(a) For a buy signal, as many shares as possible are to be purchased from available funds.

(b) For a sell signal, all shares held are to be sold, and in addition one share is to be sold short. For every sell signal encountered thereafter a further one share is to be sold short.

(c) If a buy signal is encountered during a negative holding of shares then all outstanding bear sales are to be neutralised.

All current brokerage and tax rates were included for each transaction. Further, any shares held or outstanding were sold or bought, whichever was the case, at the prevailing share price on the last week of the period.

The trading policy suggested above was tested over four overlapping periods all ending in March 1983: the first beginning in January 1982, the second in January 1981, the third in January 1980 and the fourth in January 1979.

Figure 11 displays the buy and sell decisions arising from the above-mentioned trading policy for the share Blyvooruitzicht over the interval January 1982 to March 1983. Considering both the yield and the share price graph, it can be seen that the first four signals encountered were bear sales corresponding to sharp

*See Appendix A for a study which lends further weight to the proposition that the gold share market is not fully efficient.

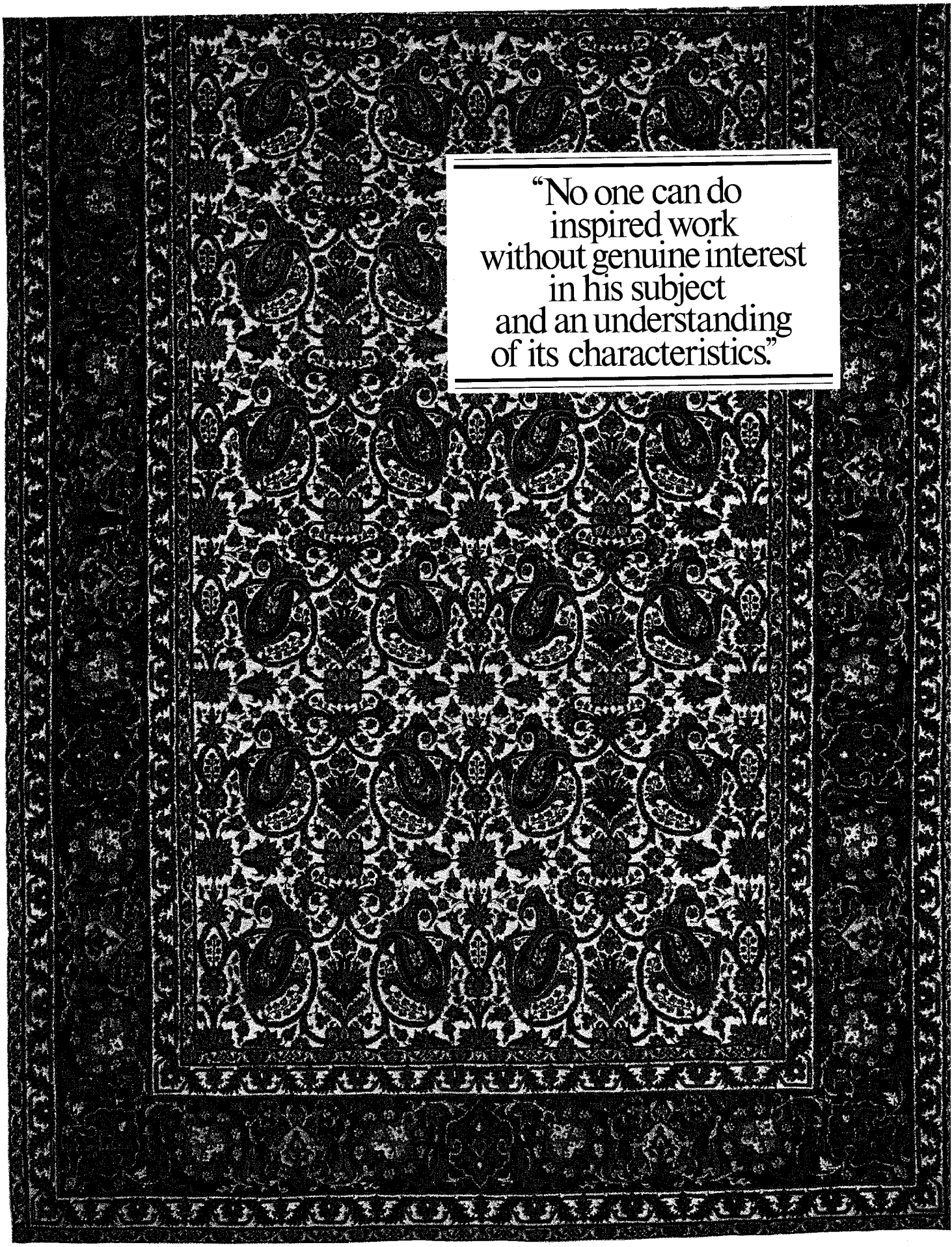
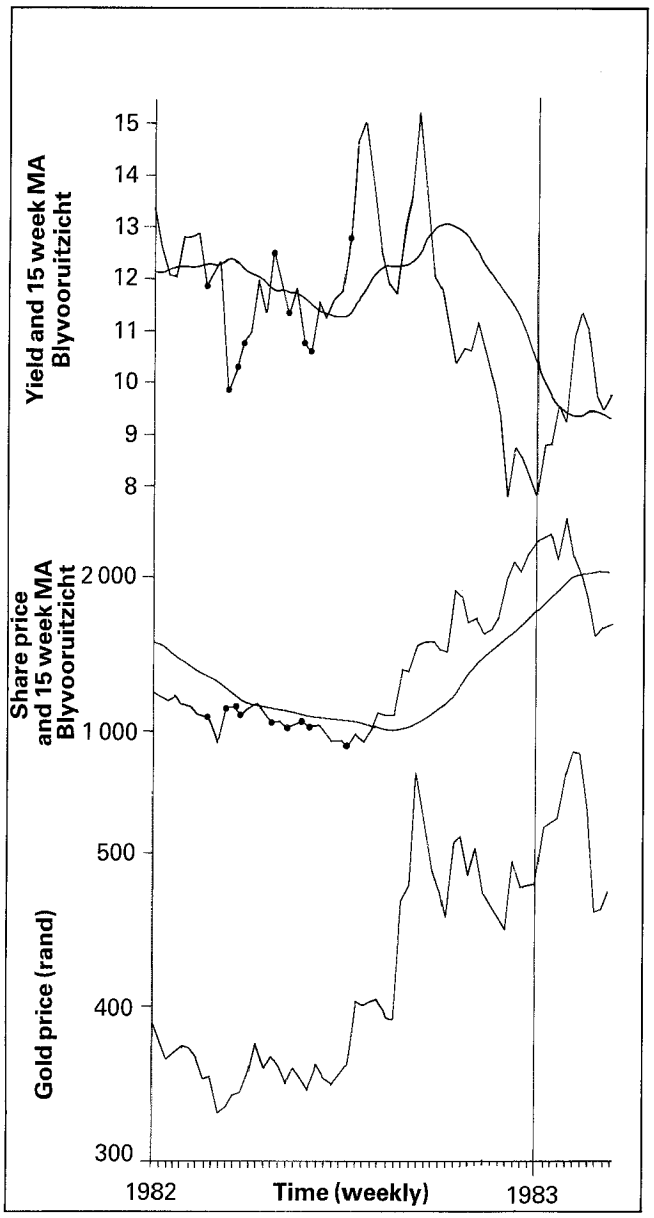


Figure 11

Blyvooruitzicht



decreases in yield occurring simultaneously with a decrease in the 15-week moving average share price. Thereafter, a buy signal was encountered indicating that all bear sales were to be neutralised and all available funds were to be expended on purchasing shares. The buy signal was encountered due to a sharp increase in yield caused by the share failing to respond to an increase in the gold price as shown in Figure 10. Three further sell signals were encountered; the first signal indicated that all Blyvoor shares held were to be sold as well as one additional bear sale. Two further bear sales were indicated corresponding to a decreasing yield due mainly to the gold price decreasing at a faster rate than the share price at the time. The last buy signal was encountered in 1982 when the yield rose sharply due to a small increase in the gold price and a decrease in the share price. It should be noted that further buy signals were indicated but were not acted upon since the policy required that all available funds were to be invested when the first signal was encountered. Further, it is worth mentioning that, although the yield declined sharply in the 4th quarter of 1982, no sell signals were given as the additional conditions for a sell signal were not met, ie that the share price was required also to decline to below the 15-week moving average share price. This condition was included so that a share would be held while the share price was increasing even though the share was overvalued as indicated by a lower yield. A further point that warrants explanation is that no sell signal was given around the 6th week of 1983 where the share price declined further than the 15-week moving average. This is explained by the fact that the yield reached a peak caused by a fairly low share price compared to the gold price at the time. It should be noted that the trading policy employed represented an attempt to mechanise the decision-making process and, therefore, excludes any subjective influence. In December 1982, for example, the yield reflected by the model was extremely low, so much so that any investor having access to the information and holding the share would have been very nervous about continued retention, and would have made a very good decision had he sold at the time. Unfortunately, the specific trading policy used did not produce a sell signal as the share price was still increasing at the time.

It should be noted that the trading policy researched here is only one of thousands that could have been investigated. Different moving average lengths and percentage filters on both share and yield values could have been employed. It is, thus, possible that some other trading policy (using the same yield model) might have shown better results.

The results of a trading model based on the above discussion should, however, still be considered cautiously. Obviously the trading model represented here can only make decisions on the basis of the current gold price. Clearly, no trading model can foresee any sharp fluctuations in the gold price. For example, a situation may arise where a "buy" signal is given immediately prior to a sharp drop in the gold price. In this case, the share would have been reflecting good value at the time the signal was given. Thus, the share price would decline due to the unexpected fall in the gold price. Such a situation can clearly not be arrested by the trading model.

An example of the sequence of "buy" and "sell" signals generated by the trading rule is shown in Table 2, where the gold share, Blyvooruitzicht, is viewed over the period January 1979 to March 1983. Tables 3 to 6 show the summarised results of the trading policy for the four chosen mines over the four different periods where the total sums accrued from the proposed trading policy are compared to a naive "buy and hold" policy after an initial investment of R10 000.

Table 2

Blyvooruitzicht

Share price	Running total	Holding	Action	Date
	10 000			
1 250	1 084	7	BUY	80 01 04
2 350	17 391	0	SELL	80 12 19
2 350	19 720	–1	SELL	80 12 19
2 375	22 075	–2	SELL	80 12 24
1 950	18 103	0	BUY	81 01 09
1 950	224	9	BUY	81 01 09
1 775	16 059	0	SELL	81 02 06
1 775	17 818	–1	SELL	81 02 06
1 700	16 087	0	BUY	81 02 13
1 700	500	9	BUY	81 02 13
1 825	16 781	0	SELL	81 02 20
1 825	18 590	–1	SELL	81 02 20
1 625	16 935	0	BUY	81 02 27
1 625	380	10	BUY	81 02 27
1 775	17 974	0	SELL	81 03 13
1 775	19 733	–1	SELL	81 03 13
1 775	21 493	–2	SELL	81 03 20
1 775	23 252	–3	SELL	81 04 16
1 400	18 976	0	BUY	81 06 26
1 400	433	13	BUY	81 06 26
1 450	19 116	0	SELL	81 07 10
1 450	20 553	–1	SELL	81 07 10
1 575	22 114	–2	SELL	81 07 17
1 500	23 601	–3	SELL	81 07 24
1 475	25 063	–4	SELL	81 08 07
1 425	19 259	0	BUY	81 09 18
1 425	385	13	BUY	81 09 18
1 510	19 842	0	SELL	81 11 13
1 510	21 339	–1	SELL	81 11 13
1 460	22 786	–2	SELL	81 11 20
1 520	24 292	–3	SELL	81 12 18
1 275	20 398	0	BUY	81 12 31
1 275	912	15	BUY	81 12 31
1 100	17 264	0	SELL	82 02 23
1 100	18 354	–1	SELL	82 02 23
1150	19 492	–2	SELL	82 03 16
1 160	20 643	–3	SELL	82 03 23
1 100	21 734	–4	SELL	82 03 30
1 050	17 458	0	BUY	82 04 27
1 050	339	16	BUY	82 04 27
1 020	16 512	0	SELL	82 05 11
1 020	17 523	–1	SELL	82 05 11
1 065	18 579	–2	SELL	82 05 25
1 030	19 599	–3	SELL	82 06 01
900	16 851	0	BUY	82 07 06
900	342	18	BUY	82 07 06
1 685	30 405			83 03 15

Total R10 000 investment at end of period = R30 405,86
Buy and hold investment of R10 000 at period end = R12 775,87

Table 3

January 1982 – March 1983

Shares	Proposed trading policy	Number of buy signals	Number of sell signals	Buy and hold policy
Blyvoor	17 530,96	2	7	12 918,46
Grootvlei	17 452,50	2	15	14 879,01
Kloof	29 951,24	3	8	11 872,25
Westdeep	25 507,66	3	10	13 501,47

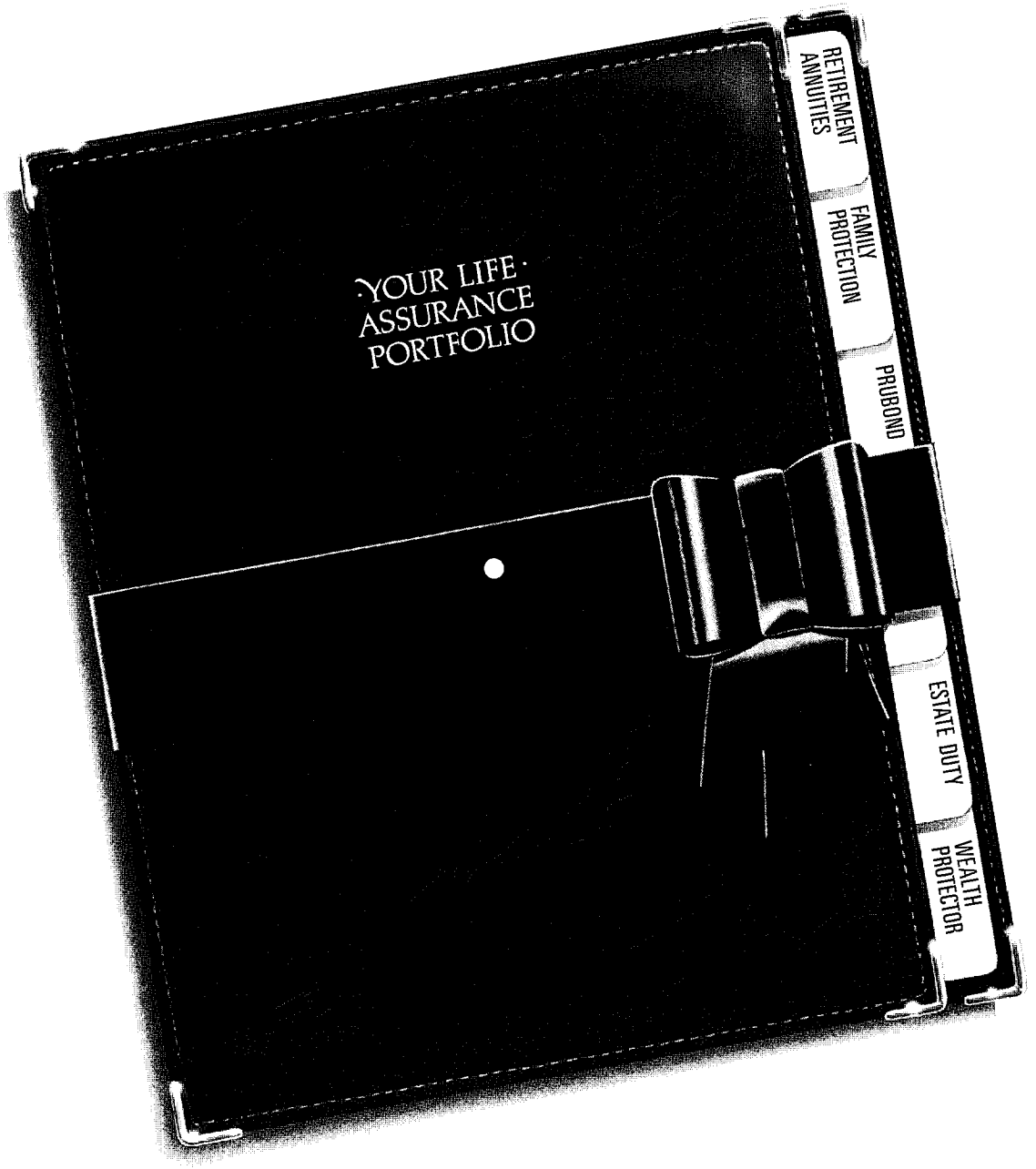


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Table 4

January 1981 – March 1983

Shares	Proposed trading policy	Number of buy signals	Number of sell signals	Buy and hold policy
Blyvoor	18 445,76	8	19	8 418,01
Grootvlei	18 496,58	7	24	14 237,36
Kloof	31 679,26	7	14	10 293,57
Westdeep	25 194,68	6	28	8 898,94

Table 5
January 1980 – March 1983

Shares	Proposed trading policy	Number of buy signals	Number of sell signals	Buy and hold policy
Blyvoor	30 405,86	9	21	12 775,87
Grootvlei	26 495,26	7	26	19 328,41
Kloof	31 816,52	9	19	15 103,80
Westdeep	19 135,16	7	34	13 700,25

Table 6

January 1979 – March 1983

Shares	Proposed trading policy	Number of buy signals	Number of sell signals	Buy and hold policy
Blyvoor	49 280,70	9	21	27 018,72
Grootvlei	66 201,45	7	26	64 088,35
Kloof	50 184,52	9	20	38 958,98
Westdeep	41 919,98	8	34	36 210,92

Conclusion

From the above tables it can be seen that the proposed trading policy beat a naive "buy and hold" policy over all four periods for the shares researched here. It should, however, be noted that in order to confirm the superiority of the proposed trading model to a "buy and hold" policy, different gold shares should also be researched over different periods.

As regards the trading policy researched here, it should be noted that this was an attempt to systematically formalise investment decisions based on the yields computed by the model proposed here and that these decisions still require further research and sophistication. It is, however, evident that the yields obtained by the model would be invaluable to the investor in the gold share market *per se*.

A suite of programs is currently being developed so that the entire universe of gold shares quoted on the JSE can be analysed using the model discussed. These programs will operate interactively so that all current information will be used to re-estimate not only the variables in the model, but also to re-estimate the regression coefficients used. The output will be in the form of expected yields reflected by the gold shares at any point in time. Clearly, as new information becomes available, eg latest costs, production, grades and capital expenditure, the data bank will be up-dated so that an input of a current gold price, and exchange rate, will be the only information needed to obtain current expected yield estimates for all gold shares.

The model discussed here is also easily adaptable to obtain estimates of future mine earnings under various future gold prices, exchange rates and inflation scenarios.

APPENDIX A

Efficiency tests

The data consisted of the change in the logarithm of weekly prices of a sample of thirty-seven gold shares quoted on the JSE during the period 2 February 1973 to 31 December 1981.

Three statistical tests were used to test the data, namely:

1. The runs test (Wallis and Roberts (1956)).
2. The autocorrelations test (Malinvaud (1966)).
3. The Q-statistic test (Box and Pierce (1970)).

Consideration was also given to testing the degree of efficiency over the various periods where changes in the dual exchange rate system occurred.

For a review of the management of the dual exchange rate system from 1976 to 1978, see Gidlow (1979). On the basis of this review, the following partitions were considered:

2/2/73 – 6/2/76 blocked rand market (157 observations)
6/2/76 – 19/12/78 securities rand market (151 observations)
2/1/79 – 31/12/81 financial rand market (155 observations)
2/2/73 – 29/12/78 blocked rand and securities rand
2/2/73 – 31/12/81 entire period.

Table A1 displays a summary of the number of shares (out of thirty-seven) that exhibited significant non-random behaviour for local investors only at the 10% level of significance using the three statistical tests.

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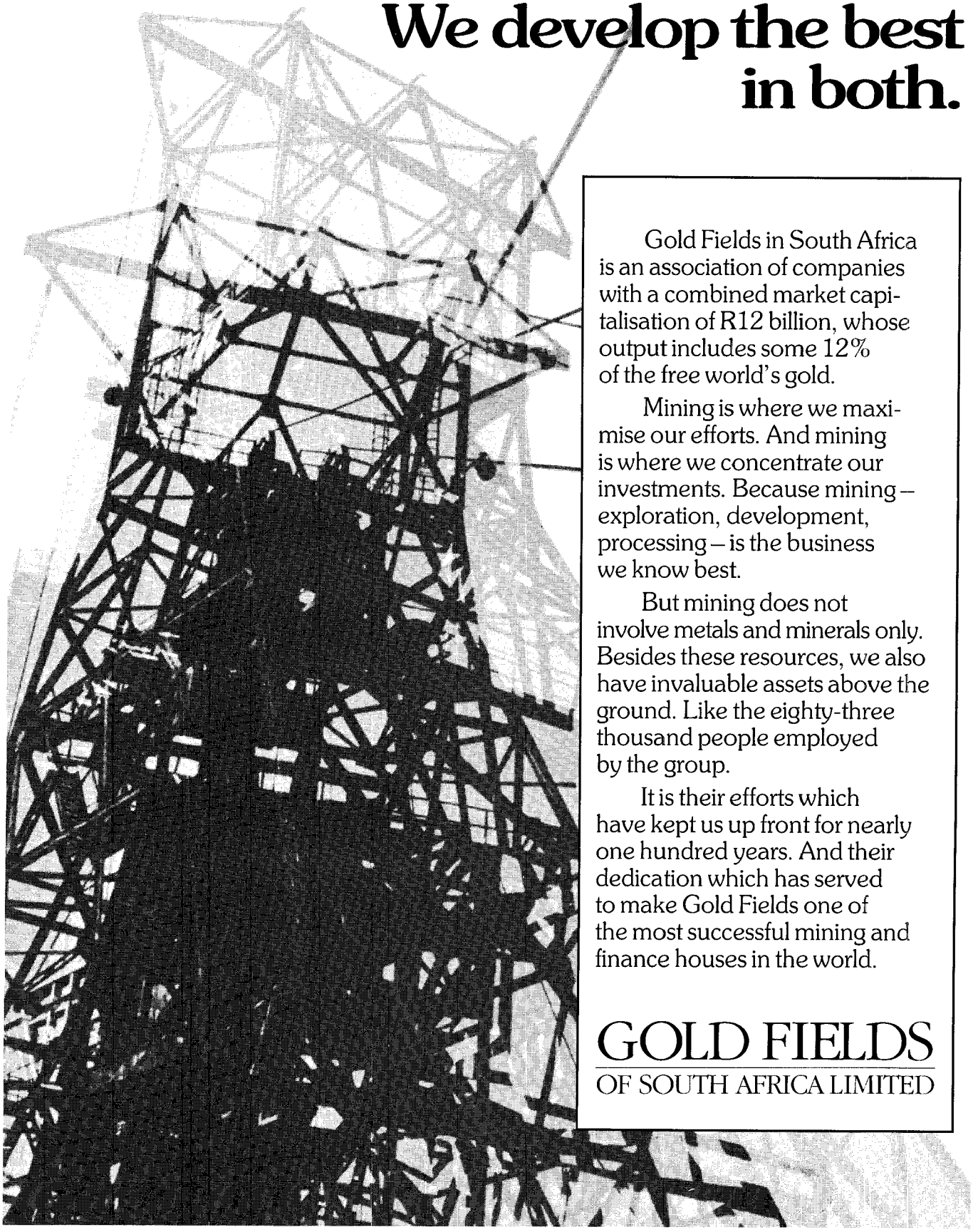

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Table A1

Period	Number of obs.	Number of shares exhibiting significant non-random behaviour: Runs test	Auto-correlation test	Q-statistic test
Blocked rand	157	7	6	7
Securities rand	151	2	12	7
Financial rand	155	7	8	7
Blocked rand and Securities rand	308	6	12	13
Entire period	463	6	13	16

A test statistic* based on the binomial distribution yielded critical values of 6,693 and 7,277 at the 5% and 2½% significance levels respectively. Table A.1, thus, shows that eleven and six out of the fifteen cases considered exceeded the critical limits at the 5% and 2½% significance levels respectively. Further, there was no discernable evidence indicating that any of the first three periods shown in Table A1 exhibited any different levels of efficiency.

It should be noted, however, that in the last two partitionings (ie blocked rand and securities rand and the entire period) both tests based on the autocorrelations had a higher number of rejected cases than all other periods.

The reason for this is that the estimated standard deviation of the autocorrelation coefficients is a function of the sample size, hence the larger the sample size the smaller the standard deviation. However, the auto-correlations are of similar magnitude and since the critical value of the test statistic is based on the standard deviation, the larger samples tend to have more securities being rejected.

Table A2

Period	Average autocorrelations of the thirty-seven shares: Lag 1	Lag 2	Lag 3	Lag 4	Lag 5	Lag 6	Lag 7
1 Blocked rand	,04753	,06067	,03566	–,04642	,03812	–,02531	–,00441
2 Securities rand	,06824	,02140	–,04557	–,08576	–,00818	–,00818	,00428
3 Financial rand	,03570	,01408	,03370	,02363	,12486	–,04331	–,00659
4 Blocked rand and securities rand	,05900	,04065	–,00178	–,06454	,00292	–,01974	–,00181
5 Entire period	,05323	,03312	,01232	–,03497	,04064	–,02194	–,00247

The averages shown in Table A2, while of interest, are not completely meaningful since it can be argued that each share should be viewed separately as they are individual entities. Secondly, no attempt was made to compute the average standard deviation, since the thirty-seven series of price changes are obviously not independent. Nevertheless, the results displayed in Table A1 are consistent with the earlier findings, ie that there is slightly more non-random behaviour than sampling theory suggests. This is evident by noticing that all the average autocorrelations for the various periods are positive for both lag 1 and lag 2, also they are all negative for the 6th lag. Since efficiency implies that there should be no discernible systematic behaviour of the autocorrelations, the above table shows further evidence implying that there is slightly more non-random behaviour than would be expected if the market were totally efficient. It should, however, be noted that in all cases the magnitude of the autocorrelation coefficients of the shares exhibiting significant non-random behaviour was found to be relatively small.

*This is a binomial process with n=37 and p = 0,1 which can be approximated by the normal distribution with $\mu=np$ and $\delta^2=npq$. At a 5% significance level the test statistic becomes
$np+1{,}64\sqrt{npq} = 6{,}693$

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C Grim and G S Andrews

The impact of strategic planning on corporate performance in a turbulent environment

Synopsis

This paper summarises the findings of recent research carried out into the effectiveness of strategic planning in the South African building materials industry. There appear to be four reasons why companies in the industry should urgently reassess their attitude towards the practice of strategic planning:

1. The present openness amongst authorities in accepting new and innovative building materials.
2. The change in Government policy towards housing urban blacks.
3. The increased concentration and sophistication of customer groupings.
4. The demise of price control over building materials.

These developments are believed to be changing the traditional rules of the game, making the industry far more competitive. Formalised strategic planning might have been a luxury in the past. It is, however, an imperative for the future.

Introduction

The broader building and construction industry, of which the building materials sector forms a part, is concerned with financing, designing, constructing, modifying, operating and maintaining structures to accommodate humans and their possessions. The industry is undergoing significant changes and important developments are affecting corporate performance and profitability. For example:

- Building costs are rising by about 26% a year on average.[1]
- Investment in the building/construction sector in 1980 was approximately R6 000 million or about 52% of South African gross domestic investment.[2]
- The average annual growth rate of the industry is 4,2% having decreased by 35% over the last fifteen years.[3]
- The real annual growth rate of investment in the industry may change by as much as 40% in a single year and these changes may not coincide with changes in overall economic activity.[4]

This is descriptive of the relatively harsh environment within which the building materials industry has to function. It is, therefore, clear that long term strategic planning is important to at least the major companies in the industry. However, the severe shortages experienced periodically in the supply of building materials such as bricks and cement, raise special questions with respect to the nature and quality of planning practised. For example:

1. What proportion of the industry practises planning in any depth?
2. Are there any characteristic differences between companies that are heavily involved in planning, those less involved and those companies that do not plan at all?
3. Does planning lead to improved performance?
4. Is there any optimal approach to planning in the industry?

In this paper the boundary conditions are defined, then the research methodology is outlined and finally, answers to the above questions are discussed, based on a recent study of the industry.[5]

Limitations of the study

Planning may be classified across three dimensions:

(i) *Time horizon:* Traditionally understood as long term (five years or more), medium term (about three years) and short term (one year). This research excludes short term planning as it is inconceivable that such planning would help a company prepare for the cyclic savings in the industry alluded to earlier.

(ii) *Planning focus:* Anthony[6] differentiates between strategic planning, managerial control and operational control. As the Profit Impact of Market Strategy (PIMS) research[7] programme has suggested that 80% of a company's performance stems from decisions of a strategic nature, only strategic planning is investigated.

(iii) *Formality:* Woodburn[8] introduces a useful method of classifying planning as being formal, semi-formal or informal – a classification adopted in this research. As the nature, approach and level of involvement in informal or semi-formal planning would be difficult to gauge, making statistical analysis impossible, this study restricts itself to formal planning.

The type of planning examined in this research is therefore limited to "Formalised Long and Medium Term Strategic Planning", illustrated by the shaded area of the "Planning Cube" in Figure 1.

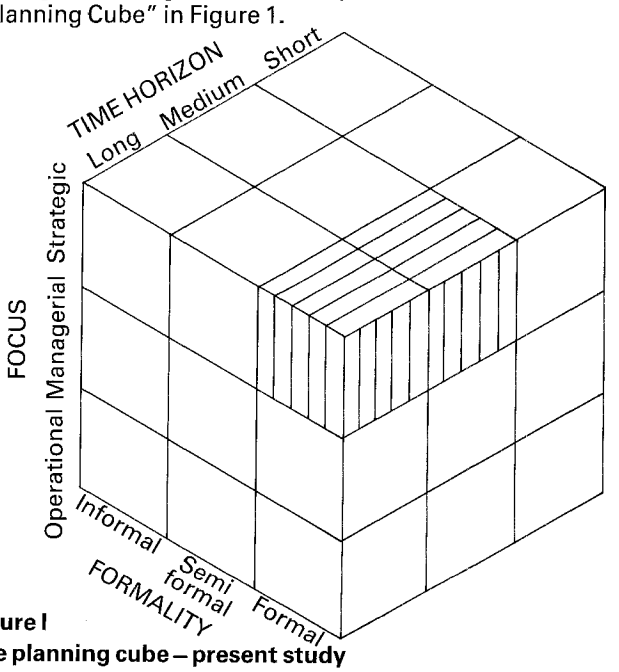


Figure 1
The planning cube – present study

Definition of strategic planning

The focus of this study, strategic planning, needs to be defined further. The four point definition combining Ansoff's concepts in strategy[9] with those of Ackoff[10] and Steiner[11] has been adopted. It is sumarised in Table 1.

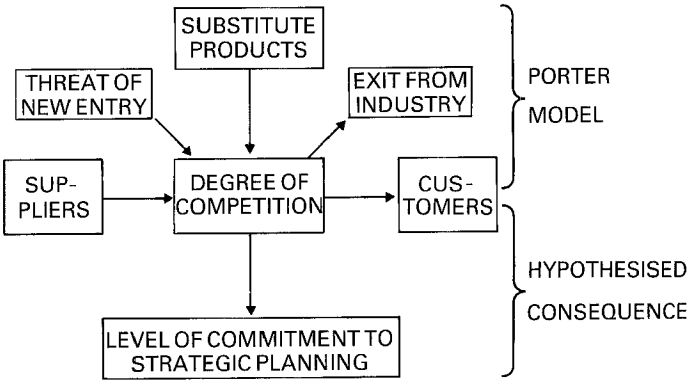
Table 1: Various definitions of strategic planning

	Concepts in strategy (Ansoff[9])	Concepts in planning (Ackoff[10])	Definition of stategic planning (Steiner[11])
1.	Present product/market positioning.	Anticipating decision making before the event.	An analysis of the chain of cause and effect over time of a decision affecting any of the components of strategy.
2.	Growth vector towards future product/ market positioning.	Integrated and inter-dependent systems of decisions.	A continuous process over time comprising a range of activities from environmental analysis to process evaluation.
3.	Understanding source of competitive advantage.	Process of creating future states that would not normally occur.	An intellectual exercise going beyond a prescribed set of processes, procedures or techniques to apply concepts of strategy to best effect.
4.	Achieving synergistic capabilities in new ventures.		A formalised structure that links many components and processes in a systematic way.

A theoretical analysis

Porter hypothesises that the level of competitiveness within an industry is dictated by a complex interaction between suppliers, customers, substitute products and the threat of new competitive entry into the market[12]. This paper hypothesises further that the need for, and therefore level of, commitment to the practice of strategic planning in any particular segment of the industry, is dictated by the level of competitiveness existing within that segment. Companies in a highly competitive situation are forced to find some competitive edge to survive, others are not.

Exhibit 1: The theoretical framework



Using this theoretical framework, the following hypothesis was proposed:

> ". . . Strategic planning is likely to be widely practised in the brick manufacturing companies, to a lesser extent in those firms producing aggregates, and not at all in the cement manufacturing companies."

This preliminary conclusion, based on a theoretical analysis of the interactions between suppliers, customers, substitute products and threat of competitive entry in three major sections of the industry, is substantiated, with only one exception, by empirical research.

Data collection and analysis

A judgemental sampling technique was used because of the imbalance that exists between company sizes in the industry. A sample of twenty-one companies was selected on the basis that these were the most important companies in the industry. These firms produced seventy per cent of the building materials comprising seventy per cent of the materials in a typical building[13]. Theoretically, therefore, companies in the sample would produce approximately half (70% x 70% = 49%) of all building materials used in South Africa. When actual market shares of the sample companies were ascertained later, it was found that companies producing fifty-two per cent (measured in rand values) of all South African building materials are represented in the study.

The questionnaire was designed to collect the data required to answer the four basic questions posed in the introduction to this paper. It contained extracts from questionnaires drawn up by Woodburn[14], M Steiner[15], and Wood and La Forge[16]. To facilitate its administration and analysis, extensive use is made of two dimensional multiple choice, semantic differentials and priority ranking.

During October 1981, a letter was sent to the chairman/managing director of the twenty-one sample companies requesting their participation in the study. All agreed and the interviews took place during February and March 1982 in the PWV and Durban areas. Generally, the respondents were found to be very co-operative, supplying all the information that was required for the

study. Table two gives a profile of these respondents. The final phase in the data collection process was the gathering of detailed information from past annual reports and JSE publications.

Table 2: Profile of the executives interviewed

Position	Managing director	Financial manager	Marketing manager	Corporate planner	
Number[21]	9	5	3	4	

Experience in that position	Less than one year	1–2 years	3–5 years	6–10 years	10 years +
Number[21]	4	4	6	5	2

Back-ground	Finance	Engin-eering	Econo-mics	Sales	Trade
Number[21]	11	5	1	2	2

The statistical analysis of the data collected followed a three step process. Firstly, the four basic questions (see introduction) setting out the rationale for this study were formalised into research objectives. Next, hypotheses were generated to test the different facets of each objective and, finally, a formal statistical analysis was carried out on each hypothesis.

Research findings

What proportion of the industry practises strategic planning?

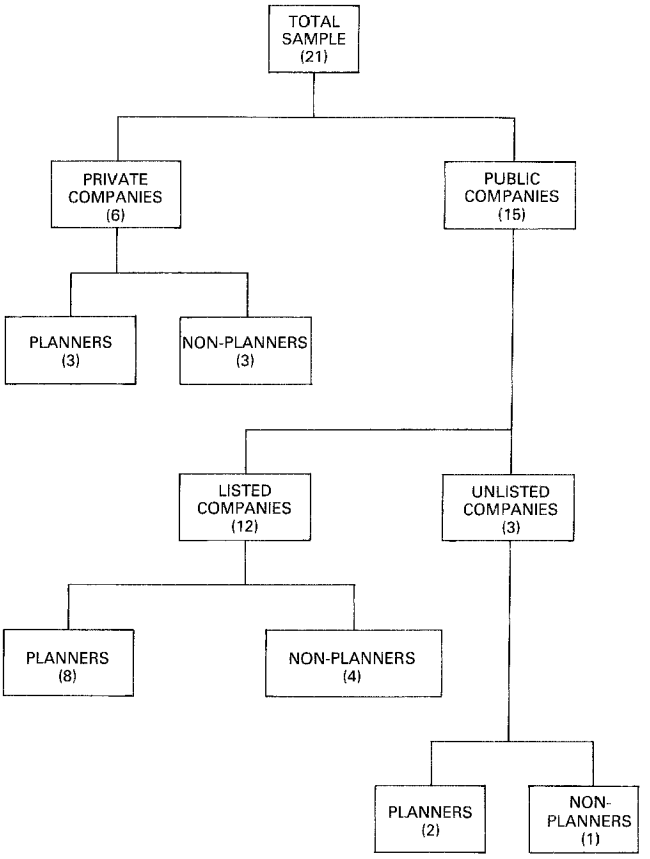
A breakdown of the twenty-one sample companies researched is given in Figure 2.

It can be seen that half of the private companies and two thirds of the public companies practise "formalised long or medium term strategic planning" giving an overall result of sixty-two per cent. Strategic planning is therefore fairly well, but by no means universally, accepted by the industry.

It is interesting to compare this finding with earlier studies of a similar nature. Denning and Lehr[17] found in 1967 that only 25% of British companies in the Times Top 300 practised some form of strategic planning. However, Taylor and Irving[18] in a detailed study two years later of twenty-seven of these "planners", showed that most of the planning systems were still in an evolutionary stage. Rinbakk[19] came to the same conclusion in a study he carried out amongst USA companies in 1970. By 1976 Higgins and Finn[20] found that long range strategic planning had become extremely popular amongst UK businesses, with 51% classifying it as being of "great benefit". Aug and Chua[21] came to the same conclusion in their study of large USA businesses in 1978.

From the above it seems that South Africa is about 10 years behind its counterparts in Britain and the USA in the implementation of a strategic planning process. This is borne out by the Management and PE Consulting Group Study[22] of 1974 amongst the Financial Mail Top 100 Companies which found that the majority of these businesses seem to have introduced some form of planning around 1970, ten years after the USA and Britain[23]. It appears, therefore, that strategic planning is going through the introduction/growth phase in South African businesses at present and will be far more universally practised in the future.

Figure II
Nature of the sample companies



Are there any characteristic differences between companies that are heavily involved in planning, those less involved and those companies that don't plan at all?

Using the Woodburn planning scale to classify companies as high-level or medium-level planners, the sample is split into nine high-level planners, four medium-level planners and eight non-planners. Using contingency table analysis and Spearman ρ correlations, no statistically significant relationship is found between the practice (or non-practice) of planning and company size (measured by both turnover and number of employees), company status (relationship to remainder of organisation) or the number of operating divisions.

Testing for characteristic differences between high-and medium-level planners at the one per cent level of significance, yields three statistically significant results:

1 High-level planners give significantly greater emphasis to environmental scanning (market audit), vis-à-vis other aspects of the planning process.
2 High-level planners involve the board of directors fully in the planning process, with other line managers in a definite supportive role.
3 High-level planners exclude the corporate and divisional planning departments from participation in the actual process of planning. These planning departments would only do preparatory backroom work or act as catalysts.

These results are augmented by the following findings at the ten per cent level of significance:

1 High-level planners spend more than one per cent of turnover on planning activities.

2 High-level planners formulate strategy under leadership of the chief executive through a systematic analysis of problems and opportunities.
3 High-level planners tend to see planning as more of a continuous process with planning activities being carried out at regular intervals.

Does planning lead to improved performance?

The hypothesis generated to answer this question is tested in two ways. The first is by executing the Mann Whitney U Test in the way suggested by Ansoff et al[24]. Thirteen performance measures – Sales, EBIT, EPS, total assets, ROE, dividends/share, share price, debt/equity, equity, ROI, P/E ratio, dividend cover, price/equity ratio – are developed into twenty-two ratios using Ansoff's integrating formulae for the period 1978 – 1980. No significant difference is found between the planners and non-planners in the sample. The second test carried out is methodologically superior as it uses the Wilcoxon matched pairs test on related samples. The same financial data is collated for each company for the three years prior to, and for three years after, that company's introduction of planning. The "after" data was adjusted to take account of movements in the economy over the comparison period. Of the nine matched pairs analysed, four are found to have significantly improved their performance (at the one per cent level of significance) after the introduction of planning.

Further analysis of the interview data taken with these companies showed that all four companies not only paid attention to the strategy formulation and planning aspects but had also broadened their focus to include strategy implementation aspects as well – defined on the planning cube as Managerial and Operational Control.

The conclusion drawn from these findings is that the focus of any study of this nature, as defined by the planning cube, must be broadened to include both Managerial and Operational Control aspects before any correlation with performance is likely to be found.

The inconclusive and contradictory results of planning versus performance studies in the past (Table 3) reveal the weakness of focusing too narrowly to exclude implementation aspects. Future studies should take cognisance of this weakness.

Table 3: Summary of studies examining the effects of strategic planning on performance

	Researchers	Year	Sample size	Does planning pay?
1	Stanford Research Institute[25]	1957	379	Yes – better growth
2	Thune & House[26]	1970	18	Yes – in 3 out of 5
3	Herold[27]	1971	5	Yes, but other factors such as R & D exp also affect performance
4	Ansoff et al[28]	1970	93	Yes, probably
5	Fulmer & Rue[29]	1974	386	Yes in durable industry No in service industry Maybe in non-durable industry
6	Karger & Malik[30]	1975	38	Yes
7	Grinyer & Norburn[31]	1975	21*	No
8	Burt[32]	1977	14	Yes, for high quality planning
9	Kudla[33]	1979	328	No
10	Leontiades & Tezel[34]	1979	61	No
11	Wood & La Forge[35]	1979	41	Yes – Banking industry
12	Woodburn[36]	1979	515	Yes – not statistically significant

*91 interviews

Is there any optimal approach to planning in the industry?

An attempt was made to answer this question by asking the respondents to react to forty questions on the perceived effectiveness of the different aspects of their planning systems. A scale of semantic differentials with a priority rating of the different questions was used.

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However, no significant relationship could be found between the planning scores or any other measurable aspect of planning and the perceived effectiveness scores.

It seems that planning remains a highly complex and individualistic activity with different approaches being perceived as being most effective for different companies and for different individuals.

Clearly, a "contingency-effectiveness" relationship exists and future research will have to develop more refined classification systems in order to test this relationship more rigorously.

Conclusions

This study does produce interesting findings as well as some valuable building blocks for future research in strategic planning:

- The industry (and perhaps South African firms in general) appears to lag behind the more developed countries in the introduction of formal strategic planning.
- Only half of the companies sampled practice formal strategic planning.
- Those firms that do perform "high-level" planning pay considerable attention to the environmental situation, involve the board of directors and senior line executives in the process, and use planning departments as catalysts. They also ensure full participation by the chief executive in the process and plan on a continuous rather than sporadic basis.
- Strategic planning does appear to improve financial performance but only when considerable attention is paid to the implementation phase of planning.
- Whether strategic planning is effective or not appears to depend on the contingencies of the situation.

The research also has significant practical application for firms in the building materials industry. There are four reasons why this research is relevant to the industry. Firstly, it seems that South Africa is on the brink of a building boom for residential housing units. A conservative estimate, made by the CSIR, suggests that at least six million housing units will be required for the black population group alone over the next eighteen years, giving an average of 333 000 housing units per year[37]. This compares with a figure of 12 000 housing units per year that were actually built over the 1976 – 1979 period[38]. Such an escalation in demand holds great opportunities for the building materials industry; but a high level of strategic planning will be required by the individual companies within the industry to be able to meet the challenge and to benefit from it.

Secondly, the era of traditional building methods to the exclusion of all others seems to be passing. There is an openness amongst authorities to alternatives and innovation not experienced before. The timber frame and space frame building techniques are examples which offer many economic and other advantages over bricks and mortar. Manufacturers of the conventional building materials, therefore, need to assess their future direction critically – an urgent need for in-depth strategic planning is obvious.

Thirdly, customer groupings are becoming increasingly more concentrated, better managed and therefore more powerful. The building/construction industry is rapidly moving away from its "artisan and shovel" image of the past. It is becoming more sophisticated and making greater demands of its suppliers.

Finally, price control has been lifted after an almost continuous period of thirty-five years. As the industry becomes profitable, it will become more competitive. Long established rules of the game have changed overnight, greatly enhancing the potential value of strategic planning to companies in the industry.

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Investment basics XVI
The analysis of bank shares

There are certain distinguishing features of banks, particularly in South Africa, that make them different to other commercial and industrial undertakings. Because banks occupy a pivotal position in the monetary economy (in a sense, with the building societies, they *are* the monetary economy) their balance sheets and income statements are strongly determined by the actions and monetary control techniques of the authorities, particularly the Central Bank. Shareholders in a large bank (unlike other investors) have the ultimate protection that the authorities cannot afford to allow such a bank to go under. See, for instance, the arranged 1977 rescue of Trust Bank.

The accounts

A very major problem in South Africa, as far as the analyst is concerned, is the ability of the banks not to disclose "true" financial information. Only Barclays and Standard of the major five banking groups publish "true" accounts.

See, for instance, note 1.1 to the Nedbank 1984 financial statements:

1.1 "In view of the fact that banking subsidiaries, which are exempt from disclosing certain information in terms of the Companies Act, 1973, constitute the major part of the Group's operations, the Group financial statements are presented in the form applicable to banking companies and in particular: internal reserves and movements therein are not disclosed; taxed income has been arrived at after making transfers to internal reserves."

These inner or contingency reserves will have been built up over the years to substantial proportions. Published balance sheet *totals* are not understated because the inner reserves are buried in the category "deposit, current and other accounts". Transfers to, and in some cases from, inner reserves can be varied to "programme" taxed profits disclosed in the income statement. Most bank managements would claim that profit smoothing is not taken to extremes: thus, if actual profits are down 50% an *increase* of 15% would not be reported but perhaps a fall of 20%. In financial 1984 Trust Bank's income statement showed an increase of 24% in disclosed taxed profit. Separately in the annual report it was stated that actual profits before transfers were up 53%.

The difference between the financial statements of banks on full disclosure is very great. In the latter case three line income statements are presented. See Nedbank:

Rm	1984	1983
Taxed income after transfers to inner reserves	105,0	121,5
Less dividends paid and proposed	61,1	60,3
Retentions	43,9	61,2

The Barclays income statement is substantially more illuminating:

Rm	1984	1983
Operating income (1)	2 669,6	1 853,6
Operating expenditure (2)	(2 466,7)	(1 614,0)
Operating profit	202,9	239,6
Doubtful debt provision	(87,1)	(41,2)
Pre-tax profit	115,8	198,3
Less tax	39,0	74,5
Profit after tax	76,8	124,8
Add associates	9,9	1,9
Earnings	86,7	125,7

References

(1) Notes to the accounts give details of interest income on investments and advances (86% of operating income in 1984), jobbing profits and commission and exchange earnings (12%).

(2) Notes give interest paid over a range of deposits (74% of 1984 operating expenditure), staff costs (16%), depreciation, etc.

Interbank ratio comparisons

The fact that some banks disclose "true" earnings and equity while others do not makes comparisons between banks in terms of ratio and profitability analysis largely misleading. For instance, Barclays taxed profits to total assets ratio of 0,81% in 1983 is not analogous to Nedbank's 1,15% because Nedbank's profits are understated. Dividend cover comparisons are not valid for the same reason.

Statutory returns

Ironically, in view of the poor standards of disclosure in many of the published accounts, various documents that have by law to be submitted to the Financial Institutions office in Pretoria for public inspection offer a very wide range of balance sheet data. The BA7 return, submitted monthly, gives a comprehensive breakdown of bank liquid and prescribed assets; the BA8 return, submitted quarterly, monitors the statutory equity position (see comment below); the voluminous BA9 return, also a quarterly document, breaks down balance sheet liabilities and assets in enormous detail. Several hundred asset and liability items can be monitored from the BA9 returns.

Examination of these returns enables the analyst to keep an eye on emergent liquidity or equity strains via the BA7 and BA8s. The BA9 allows liability management to be monitored (including the length of the deposit book) and market penetration trends to be discerned. For example, a particular bank may be falling behind its competitors in current accounts, corporate deposits, HP lending, etc. The exposure to offshore guarantees, where exchange rate movements introduce risk, can be picked up. Bad

debts can sometimes be anticipated by looking at the percentage of advances that are being classified as "overdue".

All in all, these three statutory returns are essential study for the bank share analyst.

Equity ratios

The banks are unlike ordinary commercial or industrial companies in that they are compelled by law to maintain certain minimum balance sheet ratios. Apart from Reserve Bank cash and liquid asset ratios (traditionally imposed by the authorities to prevent excessive bank lending), which apply to the asset side of the balance sheet, minimum equity ratios – currently applying to the liabilities – have to be maintained. Roughly speaking, equity amounting to at least 6% of deposit liabilities and 4% of acceptance and bill liabilities has to be maintained. Other things being equal, this places a limit on banks' ability to expand their balance sheets. If they are at or near their equity minima, they cannot attract new deposits unless they increase their retained earnings or make rights issues. It is important for the analyst to anticipate forthcoming rights issues.

Forecasting earnings

This is not easy, particularly in the case of banks with three line income statements. It is convenient to think of earnings as a function of two things: *volume* and *margin.*

Growth in volume (which means balance sheet quantities such as total funds or total assets) correlates strongly with growth in the overall monetary aggregates or gross domestic expenditure. Individual banks may, of course, be losing or gaining market share in the various categories: hence the importance of the BA9s.

Margin is determined by the ability to generate, amongst other things, profitable fee and forex income, keep staff costs as low as possible (by, for instance, investment in automation), but perhaps most importantly by good liability management – having the right funding mix at the right time. For example, at a rate peak it is not smart to have a very long deposit book; just before rates begin an uptrend the bank should lock in as long as possible. On the lending side there is little scope for being clever on rate because of competitive forces – a bank charging 2% more on overdrafts than anyone else will soon lose a lot of business.

It is important to note that banking is a *low margin* business:

Earnings: total assets (1984)

Barclays	0,45%*
Standard	0,73%*
Nedbank	0,82%
Bankorp	0,49%
Volkskas	0,74%

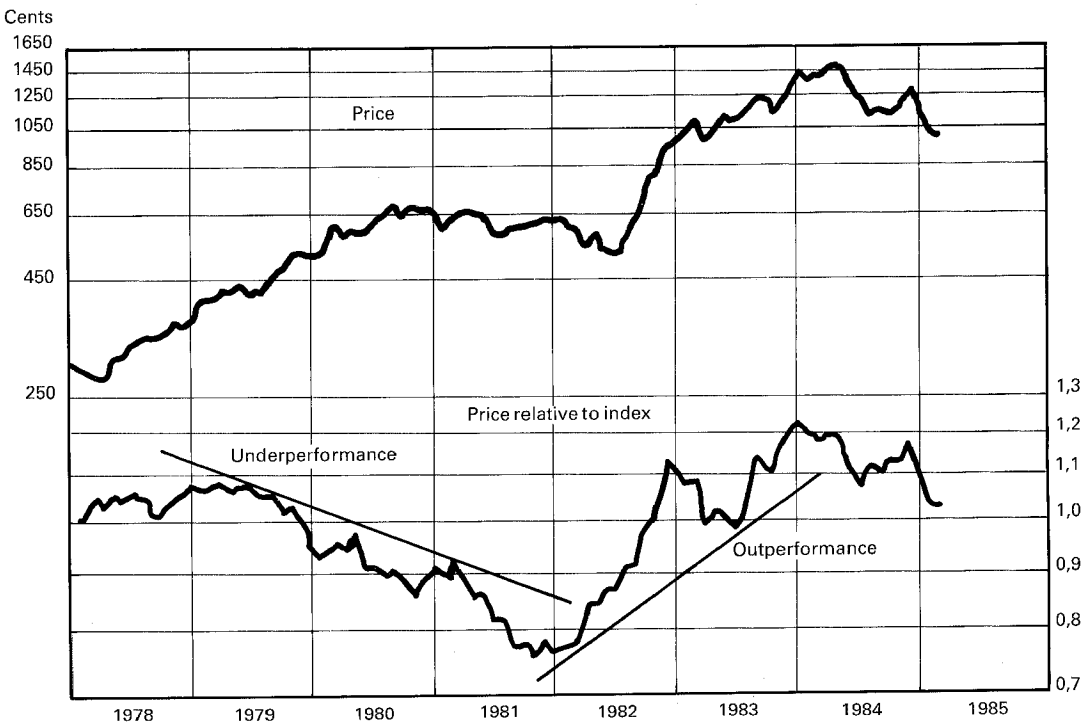
*Full disclosure.

Very small differences in margin can therefore gear profits sharply. For instance, if Barclays had achieved not 0,45% in 1984 but the Standard margin of 0,73%, its earnings would have been 62% higher. Underlying bank profits, particularly when market orientated control methods are being used, are likely to be inherently volatile.

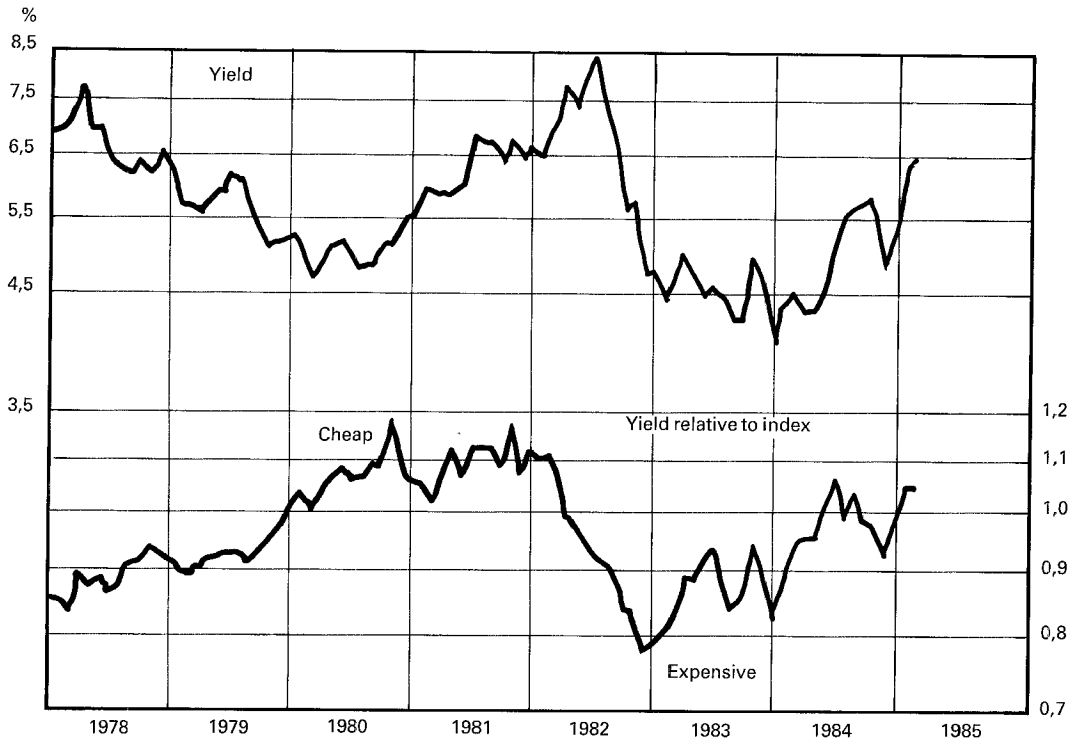
Ratings and relative performance

Bank share ratings, as measured by dividend yield relative to the market, have fluctuated between an optimistic low of just under 0,8 and a pessimistic high of about 1,2.

Banks price index



Banks dividend yield



Share price performance against the market is variable, and clear periods of underperformance (1980/81) and outperformance (1982) tend to be found. This means that portfolio managers, even in very large funds, must be prepared to vary their bank share portfolio weightings over time.

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