COMPANY FINANCIAL FAILURE AND DISTRESS:
A PERSPECTIVE

By

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ABSTRACT

This study had a two-fold purpose. Firstly, to establish whether a model utilising a number of non-financial variables in conjunction with a model based on financial variables is able to provide a more accurate company financial distress model than a model based on financial variables only. Secondly, to reinforce the theoretical foundation of company financial distress and failure through an examination of existing studies in order to enhance insight into the financial distress and failure phenomenon.

A phased approach was applied to identify a sample of 95 companies listed on the JSE. A questionnaire comprising 14 questions, divided into five broad categories based on the strategic capability of a subject company was employed. The published Director's Report was used to evaluate the questions on a zero to five-point scale over a 10-year observation period.

The relationship between the questionnaire test results and the De la Rey K-Score for the subject companies was tested utilising the Cramer's V statistical test. The Cramer's V test is a chi-square based measure of nominal association yielding a value between zero and one. A movement towards one indicates a strengthening relationship, in this instance, between the non-financial test result and the De la Rey K-Score. A movement towards zero is an indication of a weakening relationship.

A limited test result in favour of a strengthening relationship was insufficient to prove that the primary objective of this study has been achieved. The secondary objective was achieved in view that this was an exploratory study. It is, against this background, that empirical research is recommended in order to prove that a model combining financial variables with true non-financial variables should provide a more accurate company distress prediction model.

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CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The impact of company failures has far-reaching consequences for stakeholders, both directly and indirectly. Shareholders are one of the many stakeholders in a company standing to lose the most as the value of their investment deteriorates or potentially disappears entirely. Creditors may receive partial or no repayment of their initial loans advanced to the company, depending on whether their loans were secured or unsecured. The implication of a company failure is unfortunately not that simplistic and has serious consequences for many other stakeholders. To highlight a few, employees lose their jobs, the Government collects less company and employee taxes, and in addition, has to allocate additional funds to support the unemployed, in general affecting existing taxpayers.

To establish a company's financial health, stakeholders rely on published information to formulate decisions relevant to them. Investors rely on published financial statements or stockbroker reports and the daily press. Creditors rely on financial models to predict potential company failures. Each of these stakeholders uses the information in one or the other financial distress or failure prediction model to support their decision making process. Some of these models are more sophisticated than others.

Irrespective of a stakeholder's objective, the early prediction of company financial distress or failure is essential to protect their interests. As a point of departure, a distinction has to be made between company financial distress and company financial failure.

1.2 COMPANY FINANCIAL DISTRESS

Company financial distress can be described as a situation where the company experiences a cash flow constraint, for one reason or another. This constraint or cash flow

shortfall can be of a temporary nature, provided that company management has the capability and ability to take timely corrective action. An example of corrective action is to negotiate an increased or bridging funding facility without it necessarily having a negative impact on its longer term gearing. An alternative is for management to be able to successfully negotiate better supplier credit terms. Should negotiations be unsuccessful, the effect on the company's ability to honour its debt obligations can be detrimental to its long term survival. The company's inability to honour its immediate debt obligation, implying commercial insolvency, can ultimately result in the company becoming factually insolvent where its total liabilities exceed its total assets.

1.3   COMPANY FINANCIAL FAILURE

Company financial failure or factual insolvency results in the company's affairs being wound up, whereby its assets are sold in execution and the net proceeds, if any, distributed amongst creditors. Those creditors who have submitted claims against the insolvent estate could receive a liquidation dividend, partly or in full repayment of their claims. This, however, is dependent on the ranking amongst the creditors – a secured creditor has a higher ranking than a preferent creditor, who in turn is ranked higher than an unsecured or concurrent creditor.

The process where a company experiences financial distress over the short term and progresses over time into a situation of imminent failure is best demonstrated on a financial distress continuum.

1.4   FINANCIAL DISTRESS CONTINUUM

On a distress continuum (Cybinski 2001:29), financial distress can be of a temporary nature at the one end, or over time become more of a permanent nature at the other end (refer Figure 1.1 below). Temporary financial distress could potentially be the result of several factors. On the one hand, for example, delayed payment by a major debtor or the temporary suspension of an off take agreement. On the other hand, the company may have concluded a major new contract and experience temporary cash flow constraints due to the mismatching of working capital components during the project start-up phase. Long

term financial distress may inevitably lead to the company failing and its affairs being wound up.

Figure 1.1: Financial distress continuum
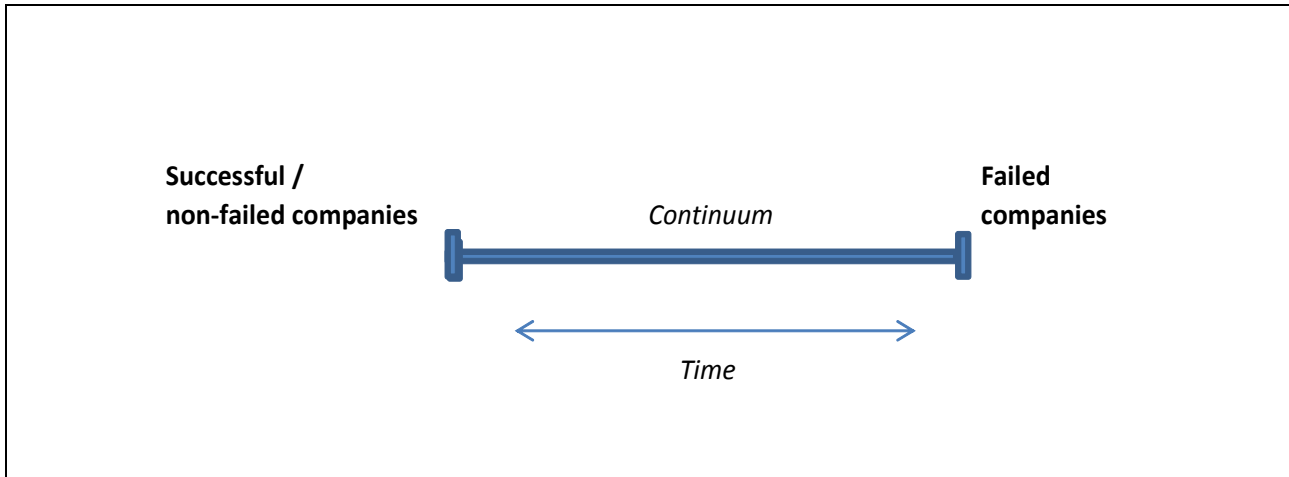
On the distress continuum, early detection of financial distress is crucial as it could potentially increase the likelihood of returning the company to financial health. The chances of returning the company to financial health diminish over time if inappropriate or no action is taken to remedy the distress situation.

1.5 PROBLEM STATEMENT

Numerous studies have been conducted in the field of company failure prediction since the mid sixties. (Refer Chapter 2 for detail). Various models evolved from these studies, each confident in predicting company failure *ex ante,* with reasonable accuracy. These models, representing financial variables based on audited financial results, typically utilise data-mining techniques including multivariate discriminant analysis, logistical regression analysis, probit analysis, genetic algorithms, neural networks, decision trees as well as other statistical and calculation methods (Wu 2004:194). Each model has its own strengths and weaknesses as well as unique industry and country application.

However, constant changing dynamics or variables affecting company financial results could have a detrimental effect on the validity of these models. It is doubtful whether a model based purely on historical financial variables would be able to predict company

financial distress with reasonable accuracy. An analysis to determine the company's position on the distress continuum should include non-financial variables as well.

Although there is no generally accepted listing of non-financial variables for use in forecasting company distress or failure, a limited number of studies have been conducted, each identifying a unique set of non-financial variables. Lussier (1995:8) identifies 15 major variables in 20 journal articles contributing to success *versus* failure. Some of these variables are: "financial control, industry experience, management experience, staffing, product/service timing, economic timing and marketing skills". Lussier assigns plus and minus symbols indicating the expected signs. In another study, Keasey and Watson (1987:338) identify the following main non-financial variables: "age of company, number of directors, any changes over the past three years, number of non-directors shareholders, has there been any change in auditors over the past three years and has the company received a going concern qualification".

1.6   RESEARCH OBJECTIVE

This study has two principle objectives. Firstly, to determine whether a model utilising a number of non-financial variables, either alone or in conjunction with a model based on financial variables is able to predict company financial distress more accurately than a model based entirely on financial variables.

For the purposes of this study, the dependent variable is financial distressed / non-distressed and the independent variables are based on the following:

- Scenario 1: Model based on financial variables only.
- Scenario 2: Model based on non-financial variables only.
- Scenario 3: Model based on a combination of financial and non-financial variables.

The second objective is to consolidate and reinforce the theoretical foundation of company financial distress and failure through an examination of existing studies in order to enhance insight into the company financial distress and failure phenomenon (Pretorius 2008:409).

1.7 DELINEATION OF THE STUDY

The unavailability of financial information on failed companies in the Republic of South Africa limits a comparison with non-failed companies utilising the proposed hybrid model. Instead, the study will be limited to companies, that are currently in existence and operational.

Financial information on private companies is not readily and publically available. Reliance is therefore placed on publically available information. Data for this study will be obtained from companies listed on the JSE.

Ninety-five companies have been identified as subjects for this study out of a population of 416 companies and trade securities listed on the Main Board, the Alternative Exchange ("AltX"), the Development Capital Market ("DCM"), and the Venture Capital Market ("VCM") as at 6 April 2010.

A phased approach is applied to eliminate traded securities and companies not regarded as suitable subjects for the purposes of this study.

- In phase one, all listed traded securities for example, debt instruments, preference shares and other trade instruments as well as suspended shares are eliminated.

- In phase two, the sample is limited to industrial, services, wholesale and retail sector companies. All mining and mining related companies, financial companies and financial service providers (banks, long and short term insurance companies), and property companies are excluded from the sample.

- In phase three, all companies not listed on the JSE are eliminated – the primary listing should be on the JSE.

- In phase four, only companies listed for more than ten years or listed prior to the year 2000 are retained. The purpose of this criterion is to obtain the most recent accounting period, which reflects the current economic environment and the changes that have taken place in accounting statements, which in turn have also changed certain financial requirements that exert a serious financial impact on the company.

- In the fifth and final phase, all companies who have changed their financial year-end in the ten-year observation period are eliminated.

This is an exploratory study and not intended to replace existing company financial distress models or to develop a working model that includes both financial and non-financial variables. The main purpose of this study is an initial exploration to establish whether there is scope to empirically prove the viability of a company distress model that incorporates both financial and non-financial variables.

An overview of the evolvement of major and more well-known distress models will be given in Chapter 2. A model based on financial variables only and unique to conditions in the Republic of South Africa will be identified. Thereafter a combination of non-financial variables will be tested on the 95 subject companies in conjunction with the identified distress model to determine at which point on the distress continuum a particular company is positioned. The position of each company will then be tested utilising its financial results over the ten-year observation period and the movement will be compared to strategies announced in the Directors' Reports and implemented by management.

1.8 DEFINITION OF KEY TERMS

1.8.1 Background

A concern in the field of financial distress, according to Muller, Steyn-Bruwer & Hamman (2009:22), is the lack of consensus on the definition of financial distress and corporate failure or default. The purpose of the section below is an attempt to distinguish between the terms company financial distress and company financial failure.

1.8.2 Company financial failure

Various commentators describe company financial failure in a number of ways (He 1994:12). To demonstrate the misapprehension between the terms "company financial failure" and "company financial distress", Muller *et al* (2009:22), describe "financial

distress" as: "the situation when a company cannot continue to exist in its current form and therefore includes: bankruptcy, delisting or a major organisational restructuring".

A clearer distinction between the two terms than the description furnished above is required. Within the context of this study, failure is described as factual insolvency as a result of a company's liabilities exceeding its assets, and when liquidation is unavoidable.

1.8.3 Company financial distress

Zapounidis and Doumpos (1999:1138) acknowledge that companies cannot be compartmentalised as either failed or non-failed. They introduce a third category as a "grey" area involving companies that are in a doubtful position. This study, however, also fails to acknowledge that there are any clear borderlines between the various categories.

The first study to acknowledge that a company can be positioned anywhere on a continuum is that of Cybinski (2001) where it is pointed out that "failed and non-failed firms do not lie in separate boxes, but rather lie on a continuum of failed and non-failed".

This continuum can be termed the "financial distress continuum". On this continuum, financial distress can be of a temporary nature at the one end, or of a permanent nature at the other (Cybinski 2001:29). Temporary financial distress could be the result of several factors, for example, delayed payment by a major debtor or the temporary suspension of an off take agreement. On the other hand, the company may have concluded a major new contract and experience temporary cash flow constraints due to the mismatching of working capital components during the project start-up phase. Long term financial distress may inevitably lead to the company failing and being liquidated.

Company financial distress will be regarded as a continuum occurrence – intensifying over time as no timely remedial action is taken, which will sooner or later lead to default and the winding up of the company's affairs.

Financial distress is defined by the Companies Act 71 of 2008, section 128 (f) (i – ii) as follows:

"... in reference to a particular company at any particular time, means that -

(i)   It appears to be reasonably unlikely that the company will be able to pay all of its debts as they become due and payable within the immediate ensuing six months; or

(ii)   I t appears to be reasonably likely that the company will become insolvent within the immediate ensuing six months."

For the purpose of this study the above definition of company financial distress will be preferred.

1.9   IMPORTANCE AND BENEFITS OF THIS STUDY

There are a number of stakeholders who can benefit from using a financial distress model based on a combination of financial and non-financial variables. However, using a financial distress model based on financial variables only, may limit the remedial action that could be taken to prevent eventual default. Financial results are usually published a number of months after the company's financial year end and by the time an evaluation is done and corrective action instituted, it may already be too late.

Combining non-financial variables with an existing financial distress prediction model may enhance the ability of a particular stakeholder to identify financial distress early, and where applicable take the appropriate remedial action to avoid default or failure. The earlier financial distress is detected, the better the possibility of avoiding default.

Investors can determine whether financial distress is of a temporary or permanent nature affecting the company's share price negatively. A temporary drop in the share price can be an opportunity to invest in the share in anticipation of an appreciation in the share price once the effect of remedial action has materialised. Should the investor determine that the

financial distress is more of a permanent nature, investment in this particular company can be avoided. Alternatively, the investor can decide to divest from the company entirely. Further, lenders can determine whether to provide new funding or increase their funding to the company. The outcome of the hybrid model (a model based on a combination of financial and non-financial variables) should provide an indication of the possibility to restructure existing loans. On the negative end of the distress continuum, where default is inevitable, the lender can respond early enough to maximise his or her loan recovery by timely perfecting his or her security and/or proceed with legal action.

Additionally, suppliers can utilise the hybrid model in negotiating payment terms with the company. The payment terms will depend on where the company is positioned on the continuum. Further to the right of the continuum, where distress becomes more permanent, the supplier may call in payment terms and even request the company to pay cash on delivery.

Furthermore, public policy makers such as the South African Reserve Bank and the South African Revenue Services can use the hybrid model to formulate future monetary and fiscal policy. The hybrid model can further be used as a guideline by policy makers to ease interest rate pressure and/or provide tax incentives to stimulate growth should there be a general distress situation as a result of recessionary conditions.

Moreover, labour unions can use the hybrid model in their annual wage negotiations. Negotiations can be fine-tuned and demands made more realistic in line with the company's results.

In addition, the Companies Act, 71 of 2008, in terms of Chapter 6, Section 129 (1) (a) allows the company board to resolve that the company voluntarily begin business rescue proceedings and place the company under supervision, if the board has reasonable grounds to believe that the company is financially distressed.

The proposed hybrid model should allow company management as well as other stakeholders (e.g. lenders) to determine when a company is in fact in financial distress, or

where on the distress continuum it is positioned. This will prevent any "affected person"[1] from having the company placed under supervision without reasonable grounds.

The flexibility of the hybrid model will allow each stakeholder to adapt the model according to his or her unique requirements. All stakeholders will utilise the same financial results, and the non-financial module will allow a particular stakeholder some flexibility to tailor the model to his or her unique requirements.

1.10 THE STRUCTURE OF THE STUDY

The study is organised in a number of chapters.

- Chapter 2 outlines research findings relating to the development of company distress models based on financial and non-financial distress models. This chapter is sub-divided into three sections: firstly, research based on financial distress models; secondly research based on non–financial models; and thirdly, a perspective on the limited research done on models combining financial and non-financial models.

- Chapter 3 discusses the methodology to be applied to determine the relative predictive content of financial variables and non-financial variables. This chapter describes the company database which is used to determine whether a model utilising a number of non-financial variables, either alone or in conjunction with a model based on financial variables is able to predict company financial distress more accurately than a model based entirely on financial variables.

- Chapter 4 presents the results of the study.

- Chapter 5 contains the concluding remarks and proposals for future research.

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[1] In terms of Clause 128 (a) of Chapter 6 of the New Companies Act No. 71, 2008 an affected person, in relation to a company, means –
    i. *A shareholder or creditor of the company;*
    ii. *Any registered trade union representing employees of the company; and*
    iii. *If any of the employees of the company are not represented by a registered trade union, each of those employees or their respective representatives.*

CHAPTER 2

LITERATURE REVIEW

2.1   INTRODUCTION

The purpose of this study is to examine several models that predict company financial failure and financial distress based on financial and non-financial variables.   The expectation is that a model that includes financial and non-financial variables will possess predictive values superior to models based on either financial or non-financial variables only.

The aim of this chapter is to provide a discussion of findings from previous studies about the topic of company financial failure or distress.   The review is divided into two sections.   The first section concentrates on key concepts of company failure prediction and the studies using financial variables to construct predictive models.   The second section reviews the evolvement of studies based on non-financial variables.

Although there were earlier attempts to predict company failure it was not until the mid to late sixties that the studies of Beaver (1966) and Altman (1968) inspired the development of many other statistical methodologies to more accurately predict company failure (Thevnin 2003:7).

The various failure prediction models have evolved from univariate ratio analysis, to multiple discriminant analysis ("MDA"), to logit and probit analysis, to recursive partitioning algorithm ("RPA"), and lastly to neural networks (Hanson 2002:30).   Of all these models, recursive partitioning, according to Hanson, has been used the least and neural networks has shown the largest amount of activity in recent years.

Wu (2004:194) broadly categorises failure prediction models utilising data mining techniques in seven areas: multivariate discriminant analysis, logistical regression analysis[2], probit analysis[3], genetic algorithms, neural networks, decision trees as well as other statistical and computational methods.

The study of Aziz and Dar (2006) narrows the techniques down to three broad categories: classical statistical models, artificially intelligent expert system ("AIES") models, and theoretical models. The Aziz and Dar study comprises an analysis of 46 articles reporting on 89 empirical studies of company failure. The more important studies have been categorised in the following three broad groups:

Table 2.1:   Three categories of company failure prediction studies

Classical Statistical Models	Artificial Intelligent Expert System Models	Theoretical Models
• Univariate Analysis	• Recursively Partitioned Decision Trees	• Balance Sheet Decomposition Measures (BSDM)
• Multiple Discriminant Analysis (MDA)	• Case-based Reasoning Models (CBR)	• Gambler's Ruin Theory
• Linear Probability Model (LPM)	• Neural Networks (NN)	• Cash Management Theory
• Logit Model	• Genetic Algorithms (GA)	• Credit Risk Theories
• Probit Models	• Rough Sets Model	
• Cumulative Sums Procedures (CUSUM)		
• Partial Adjustment Processes		

Source: Aziz & Dar (2006:19 – 22).

Aziz and Dar (2006:29) conclude that statistical models (MDA and Logit) are the most frequently used in predicting company failure. The AIES and theoretical models are less frequently used as it is relatively new and uncommon. The predictive accuracy of all the models is found to be generally good. Although the AIES and theoretical models reflect a slightly better predictive ability than the classical statistical models, this result is based on a smaller number of studies. This compared to the consistently higher accuracy of the MDA and logit models, was achieved through a larger number of studies with smaller

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[2] Sometimes called the logistic model or logit model.
[3] Probit analysis is a type of regression where the dependent variable can only take two values, for example (0) for "no" or (1) for "yes".

adjusted standard deviations. This suggests that the MDA and logit models may provide the most reliable methods of failure prediction.

The discussion in the following section is based on the three broad categories devised by Aziz and Dar: the classical statistical models, AIES, and theoretical models. The more significant developments in each main category are discussed in each subsection.

2.2   CLASSICAL STATISTICAL MODELS

2.2.1   Univariate analysis

Most statistical models originate from the Beaver (1966) univariate analysis where individual ratios are examined. The Beaver study investigates the ability of financial ratios, specifically those pertaining to cash flow, to predict company failure.

Beaver selected 30 financial ratios that best describe a company's financial health. These ratios are grouped into six groups: cash flow ratios, debt-to-total assets ratio, liquid assets to total assets ratios, liquid assets to current debt ratios, turnover ratios and net income ratios. This ratio selection is based on three criteria:

- The ratio has to generally be considered by the financial literature to be reflective of the significant relationships of a company's condition.
- The ratio has to perform well in one the previous studies of bankrupt companies.
- The ratio has to be defined in terms of a cash flow concept.

According to Hanson (2002:43), Beaver's model is based on four concepts, everything else being equal. Firstly, the more liquid a company's assets are, the smaller the possibility of failure. Secondly, the larger the net cash flow from operations, the smaller the possibility of failure. Thirdly, the larger the amount of debt within the company, the greater the possibility of failure. Lastly, the larger the amount of liquid assets required to fund operating expenditure, the greater the possibility of failure.

The Beaver study is based on 30 ratios utilising the data of 79 failed and 79 non-failed companies. The results of the study suggest that the ratios for failed companies are different from those of non-failed companies. To establish the extent of the difference, Beaver determined the relative frequency distribution of each ratio and identified the ratio value at which point the possibility of being classified in the appropriate group failed *versus* non-failed, is high or low for each ratio.

Beaver concludes that the predictive ability of specific financial ratios, especially cash flow to total debt, provide useful information in assessing the possibility of a company failing. The results indicate that failing companies have a lower cash flow and smaller amounts of liquid assets than non-failed or successful companies. Beaver was further able to accurately classify 78% of the sample companies five years before failure. In addition, the study reveals that failing companies have less ability to meet obligations and they tend to incur more debt than non-failed or successful companies.

The Beaver study (1966) concludes that financial ratios could clearly indicate the difference between failed and non-failed companies, but according to Thevnin (2003:31) does not explain the reason for this significant difference.

According to Thevnin, four key empirical experiments can be derived from Beaver's research. Firstly, dichotomous classification, secondly, comparison of means, thirdly, industry effects and fourthly, analysis of the likelihood that financial ratios or accounting data could predict companies that are susceptible to failure for at least five years prior to failure.

In addition, Beaver found that ratios tend to be more successful in predicting companies that are not susceptible to failure, without any uniformity in their level of accuracy. Ratios in general do not predict equally. This result was expected by Beaver – the ratio for net income was found to be the second best predictor because its correlation with the best ratio was much higher than the other ratios.

Other studies that followed Beaver's study argue that ratio analysis, although a good predictor, lacks accuracy. Most particularly, the operation cash flow ratio in turbulent

economic times. The argument against the cash flow ratio is that it does not have the incremental predictive ability of the accrual-based ratios. (Thevnin 2003:31.)

Beaver's study is highly accredited since he initiated ratio analysis in the study of business failure prediction. Using cash flow concepts as a theoretical framework, it was found that some financial ratios could be used to discriminate between failed and non-failed companies. The results of the univariate analysis indicate a certain success of predictive accuracy up to five years before failure (He 2002:16). This, however, is of limited use when the company's financial statements are issued after or shortly before failure.

According to Rees (1995:302), a vast number of subsequent studies appear to confirm that ratios can generally be used to predict company failure successfully. This does not apply to all ratios and the cut-off points vary noticeably over time, industries and countries. There are some generalisations regarding the ratios used. For example, the liquidity position ratios are often ineffective as are the assets turnover ratio, resulting in the rates of return and gearing ratios more usually being more reliable. Rees further purports that the analysis of the variability or the trends of earnings and stock market returns have proved valuable.

2.2.2   Multiple discriminant analysis

A major drawback of the univariate model is that it considers only one measurement or ratio at a time to discriminate between failed and non-failed companies. Therefore, combining several of these ratios might create an opportunity for more accurate failure predictions.

In an effort to address the question of the predictive accuracy of univariate analysis Altman (1968) proceeded to convert from univariate analysis to multiple discriminant analysis. A multiple discriminant analysis ("MDA") model is a statistical technique used to classify an observation into one of several *a-priori* groupings dependent on the observation's individual characteristics. It is used primarily to classify and/or make predictions where the dependent variable is a qualitative form such as failed or non-failed. The MDA technique has the advantage of considering an entire profile of characteristics common to the

relevant companies, as well as the interaction of properties (Altman 1968). The multivariate context removes ambiguities and quantifies the weights given to specific measures (Altman 1970).

Two or more explicit groups must be established using various dependent variables. MDA firstly establishes a linear combination of the various characteristics based on the interaction of the variables and then, based on a formula through regression, a company is assigned to a failed or non-failed group.

The Altman (1968) MDA model replaced the univariate analysis model. The MDA model's strength is seated in its ability to measure a company's financial attributes by analysing several ratios simultaneously as well as the interaction between these ratios. A composite MDA score compared to a single score in the univariate analysis model is used to differentiate between a failed and non-failed company.

An example of discriminant analysis is found in Altman's MDA model (1986) in the equation below:

$$Z = 0,012X_1 + 0,014X_2 + 0,033X_3 + 0,006X_4 + 0,999X_5$$

Where: Z = overall index

X_1 = working capital / total assets

X_2 = retained earnings / total assets

X_3 = earnings before interest and taxes / total assets

X_4 = market value of equity / book value of total debt

X_5 = sales / total assets

In this equation, Altman (1986) used data from 1946 through 1965 on 33 pairs of failed and non-failed companies matched for industry and size. Altman states that all companies with a score greater than 2,99 fall into the non-failed category, while those with a Z value below 1,81 are failed companies. The area between 1,81 and 2,99 is regarded as a grey area because of its susceptibility to error classification. The midpoint of the interval is

2,675, which is chosen as the Z value that discriminates best between failed and non-failed companies.

Altman (1968) concludes that if the discriminant model is used correctly and periodically, it has the ability to predict company financial distress early enough to enable management to realise its extent in time and consider corrective action to avoid failure. Altman admits some limitations of his study – the predictive ability of the discriminant model decays rapidly when the prediction horizon is extended beyond one year. Altman was unable to discriminate as accurately when the horizon was greater than two years prior to failure, whereas the Beaver univariate model was able to show some predictive power up to five years before failure.

Rees (1995:305-306) highlights some remaining problems with the Altman study:

- The variables were chosen for their impact on the efficiency of the discriminant equation, rather than from any underlying theory, and they exhibit considerable sample dependence.
- The samples used were not random but were matched for industry and size which is a useful method of controlling these variables. However, this contravenes the basic assumptions of discriminant analysis which specifies random samples from independent populations.
- Former probabilities of failure and non-failure are assumed to be equal for failed and non-failed companies, and no allowance is made for the different costs of Type I and Type II errors when assessing the performance of the model.
- The definition of a failed company is complex and Altman used companies that have applied for liquidation. It is not clear whether the company has undergone some capital restructuring or any other structuring prior to failure or liquidation.
- The variables incorporated in the equation are based on accounting values. They are therefore imperfect estimates of the underlying characteristic they purport to measure.

Despite these reservations the innovative approach introduced by Altman was imitated widely, and has led to a series of empirical work. Despite its theoretical problems, the basic technique has proved quite robust.

Altman (1970) expanded his research to include retail and larger companies to further confirm the strength of his 1968 findings. The updated study also addresses the issues of stable earnings, return on assets, size, liquidity and capitalisation.

There are various subsequent attempts to improve on the Altman research (Thevnin 2003:35). One such example is the Deakin (1972) study. Deakin combined the Beaver and Altman research into a new model, and defines company failure as "bankruptcy, insolvency and liquidation of a business". In his study, Deakin sought to determine whether there was a linear combination for companies in financial distress. He wanted to predict beyond a specific time when a company is susceptible to bankruptcy. Deakin found that in times of financial distress, companies tend to change their behaviour with respect to their capital structure.

Some of the variables in the Deakin study are modifications to a previous study that he conducted. He attempts to revert to the original ratios tested in the Beaver univariate model and incorporate a random, rather than matched, sample of non-failed or surviving companies. The resulting discriminant equation outperformed the classificatory accuracy Altman had achieved and was able to discriminate effectively up to three years in advance of failure. However, when tested against a validation sample, the results, according to Rees (1995:307), indicate some inconsistency suggesting that there is considerable instability in the estimated model.

Deakin's overall conclusion is that discriminant analysis could be used with a high degree of accuracy to predict company failure and that some ratios contributed more than others in failure prediction. He also concludes that some ratios provide better predictability than others close to the point of failure. Deakin's study indicates that MDA can be used with a high degree of accuracy to predict company failure three years in advance, an improvement on the Altman (1986) study where failure with an accuracy of two years in advance was predicted.

Libby (1975) modified Deakin's study to demonstrate that financial ratios could have better predictive values in conjunction with multivariate techniques. The primary purpose of Libby's study was to determine whether financial ratios could provide useful information *ex ante* with respect to company failures. His study confirms that financial ratios, although they lack certain abilities *ex ante*, could provide a prognosis of the financial affairs of a company with respect to company failures. Libby's evaluation of the predictive power of financial ratios shows that they provide company management with the ability to predictively evaluate company failures.

There are, however, a few issues with respect to:

- Confidence and performance;
- Composite judgement; and
- General applications of results.

However, for the most part, the results indicate that there is some usefulness in financial ratios or accounting information for predicting company failure (Hanson 2002: 36-37).

The Blum (1974) study notes that financial ratios provide relatively accurate company failure predictions, but concludes that the predictability decreases if the forecast extends beyond two years. The most conclusive findings indicate that traditional financial ratios alone could provide accurate information when companies are susceptible to failure for a limited period. However, they could predict failure beyond a two-year period without substantial variability across industries.

Thevnin (2003:37) questions the accuracy in Blum's assessment of bankruptcy as the study lends itself to interpretations that are confusing and faulty. One of the faulty interpretations is that liquidity that is a normal trend to the point of being above average could lead one to construe that the company is financially sound, when it might not be the case. Furthermore, the liquidity ratios might not be as good in assessing companies that could be susceptible to failure because the emphasis tends to be very specifically on liquidity to such an extent that other warning signs might be left undetected.

Irrespective of whether univariate or MDA is used in company failure prediction research, previous research results indicate that ratios could provide an accurate measure on a short term basis. Beyond five years, deterioration and a decrease in the level of accuracy of these ratios become noticeably apparent (Thevnin 2003:37).

Various studies focus on addressing the weakness of financial ratios beyond the extended time horizons (Altman 1968; 1970). The Beaver (1966) study provides the same conclusion and establishes the foundation for ratio analysis, which the Altman study expands upon using MDA (Thevnin 2003:38).

Within the South African context, De la Rey (1981) developed a failure prediction model based on MDA. The objective was to distinguish between financially sound and failed companies – the K-Score model.

The model was developed by paying attention to various combinations of financial ratios. De la Rey (1981:12) applies the following techniques in determining the most appropriate combination of ratios:

- A step by step procedure of discriminatory analysis is used to test the ratios for the different combinations.
- Standard deviations are used to point out ratios which are showing a distinct difference between financially sound and failed groups. The ratios are then sorted so that ratios that determine the liquidity position of a business are in one group, profitability ratios in another group and leverage ratios in the next group. Standard deviations are thus applied to determine the best ratio per group and these are then used as combinations.
- A third technique used in the choice of ratio combinations is factor analysis as it has the advantage that ratios with a high correlation or those which show a certain relationship are grouped together. This reduces the number of ratios that may be used as variables in a model. With the selection of different ratios an attempt is made to include at least one of the following groups of ratios: liquidity ratios, profitability ratios, flow of funds ratios and other liquidity ratios.

- The fourth technique is used to test the combination recommended by other researchers.

- Lastly, combinations that are developed intuitively, according to a trial and error method, are tested. In this manner, De la Rey tested a total of 194 combinations.

The K-Score model developed by De la Rey in this manner bears the following notation:

$$K = -0,01662a + 0,0111b + 0,0529c + 0,086d + 0,0174e + 0,01071f - 0,06881$$

Where:

K = overall index

a = (total outside financing / total assets) x (100 / 1)

b = (earnings or income before interest and tax) / average total assets) x (100 / 1)

c = total current assets and listed investments / total current liabilities

d = (earnings or income after tax / average total assets) x (100 / 1)

e = (net cash flow / average total assets) x (100 / 1)

f = (stock / inflation adjusted total assets) x (100 / 1)

The function of the "– 0,06881" at the end of the model is to return the point of separation between failed and financially sound companies to zero. Had this not been done, the point of separation would have been 0,06881, which according to Steyn, Warren and Jonker (2000:104) is unacceptable. The zone of ignorance of the model stretches from – 0,19 to + 0,2. Any company with a score below – 0,19 is certain to fail unless positive corrective steps are taken, while a score above + 0,2 is relatively safe.

The K-Score model successfully scored 94,5% of the financially sound companies and 98,6% of the bankrupts companies out of a sample of 138 bankrupt and 255 financially sound companies. The average success rate was 96,6%.

2.2.3   Logit and probit analysis

Harrison (2002) extends the research of Ohlson (1980) on MDA by implying logit and probit analysis. The said analyses surmount constraints associated with MDA. One of the constraints highlighted by Ohlson is certain statistical requirements imposed on the distributional properties of the predictors. For example, the variance-covariance matrices of the predictors should be the same for both groups. Another constraint is the output of the application of the MDA model which has limited intuitive interpretation. A further constraint identified by Ohlson is related to the matching procedures that have been used in MDA. Using variables for predictors are better than using them for matching purposes.

Logit analysis, according to Harrison (2005:40), is an approach which does not constrain the distribution of independent variables as severely as MDA and provides conditional probability distributions. Logit analysis estimates a non-linear function that maximises the probability of observing the sample of dichotomous events. This maximisation is accomplished through the use of logit transformation based on predictor variables.

He (2002:49) reports on the logit analysis, which is an improvement on the prediction reliability and accuracy of the MDA model. He highlights three reasons for the superiority of logit analysis over MDA. Firstly, the logit model is more robust and reliable since it does not require the normality assumption for ratio variables, which is a basic assumption under MDA. Secondly, instead of a numerical composite score for the dependent variable in MDA, the dependent variable in logit falls within the zero or one distribution. Lastly, He points out that the coefficient of individual variables in a discriminant function is not meaningful and it is impossible to identify the significance of an explanatory variable in the model, while the coefficient of individual variables in a logit model is interpretable and the significance of a variable can be tested statistically. As a result, each financial ratio in a logit model is examined so that the predictive accuracy of the model can be improved.

In an extension of his research Koh (1991) uses probit analysis based on six financial ratios to compare the predictions of assessments of auditors on the going concern status of sample companies. Koh concludes that this model is an effective prediction model that outperforms auditors in making going concern assessments. The probit model is,

however, limited by the use of only six financial ratios, which opens itself to the risk of misclassification costs.

2.3 ARTIFICIAL INTELLIGENT EXPERT SYSTEM MODELS

2.3.1 Recursive partitioning analysis

Recursive partitioning analysis ("RPA") is a non-parametric procedure that estimates a classification rule as a sequence of binary partitions of independent variables. This technique at each set splits a subset of the sample into two groups by selecting and partitioning the independent variable that most improves the homogeneity of category assignments applied to the two resulting groups. As the binary splitting continues, it generates a classification rule that can be graphically illustrated as a tree-like structure of sequential nodes and branches (Harrison 2005:44).

Based on Harrison's study, RPA has attributes to both the univariate approach to classification and multivariate procedures. While both RPA and MDA techniques lead to accurate classification results on a data set of failed and non-failed companies, RPA usually dominates MDA.

In the South African context Steyn-Bruwer and Hamman (2006) utilise the RPA model to classify companies which are experiencing financial distress. These authors base their model on income statement, balance sheet and cash flow information.

Steyn-Bruwer and Hamman conclude that the prediction accuracies in their study are not what they expected due to the following two phenomena. Firstly, the complete population of industrial companies was modelled and thereafter those average results were attributed to the "grey area" as opposed to the extremities of input data used on other studies. Secondly, the authors argue that most of the previous research did not use a hold-out sample and therefore did not report the validation results.

Steyn-Bruwer and Hamman conclude that three ratios emerge as being the most important classifiers:

- Size of the company.
- Cash flow from operations to sales.
- Cumulative cash flow from operating activities to sales.

The RPA models do better than the MDA models both in terms of actual cross-validated bootstrapped results; however, Harrison (2005:46) admits that RPA does not have the same continuous scoring system qualities of MDA.

2.3.2   Neural networks

To overcome the disadvantages of the classical statistical approaches a number of studies, Aziz and Darr (2001:21) investigate the AIES models. One major disadvantage of the statistical approaches according to Shah and Murtaza (2000:80) is that the required assumptions are fairly restrictive, since the Gaussian or normal distribution has to be assumed. Such an assumption may not be traceable to real world problems.

Shah *et al* are of the opinion that by using a neural network ("NN") approach, such an assumption can be avoided since the application of NN models do not require Gaussian distribution assumptions. In addition, NN systems are much faster than conventional statistical approaches, require less storage, are more robust to noise or missing data, and have generalisation abilities.

The conceptual basis of the NN model is rooted in attempts to simulate the neural construction of the human brain (Gudmundsson 2002:5). Muller, Steyn-Bruwer and Hamman (2008:24) describe an NN as a complex learned algorithm where inputs are mapped to outputs using layers and neurons. Parameters (coefficients and weights) are trained for the duration of historical data based on known inputs and outputs. Each of the layers comprises many neurons connected to other neurons in the network.

A second dataset is used with these predetermined parameters, obtained from training the network, to obtain the relevant output. These outputs are then statistically compared with actual outputs to determine whether there is any correlation between the simulated and actual results.

Muller, *et al* (2008) describe the NN model as follows:

> "*Key to the NN is the neutron. Each neutron has four components. Firstly, the input; secondly, the weight multiplier; thirdly, the summation function; and finally, the activation function. Each neuron receives a number of inputs (either from original data or from the output of preceding neurons in the NN). Each input is multiplied by an associated "learned" weight. The sum of the weighted inputs is added to obtain the input into the activation function. If the output of the activation function exceeds a pre-set threshold value, the neuron is activated, and if not, the neuron remains passive*".

The studies of Cybinski (2001:31–32) and Aziz and Dar (2006:21) both purport that most studies in the area of NNs are in one way or another a comparison with a published univariate or MDA model and may be automated offspring of the statistical approach, albeit more sophisticated. There are however a few studies that compare an NN with a logit failure prediction model. In all instances, Cybinski indicates that NN models reported superior results, and that NN models are more simplistic to apply, more robust, more flexible and more responsive to change than regression models. NN models also appear to be more robust on small sample sizes.

A constraint highlighted by Cybinski is that the benefits of NN technology have aided researchers with the classification problem in failure prediction studies but not with an explanation of the process. As further stated by Cybinski, the most important constraint is the "black box" nature of NN models, that is, there is a limited understanding or knowledge regarding how they solve a particular problem.

2.4   THEORETICAL MODELS

The theoretical models, according to Aziz *et al* (2006:21), are often developed by employing an appropriate available statistical technique rather than by building directly on theoretical principles. Unlike the statistical and AIES models, which focus on symptoms of company failure, theoretical models determine causes of failure (refer Table 1.1, page 13).

Aziz and Dar (2006:22) describe each of the theoretical models in Table 1.1 as follows:

- **Balance Sheet Decomposition Measure ("BSDM") / Entropy Theory**

   One way of identifying financial distress is to examine structural changes in the balance sheet that companies try to maintain equilibrium in their financial structure. Should a company's balance sheet reflect significant changes in the composition of assets and liabilities, it is more likely that it is incapable of maintaining the equilibrium. Should there be an expectation that these changes will become more uncontrollable in future, the chance of financial distress becomes more likely.

- **Gambler's Ruin Theory**

   In this approach, the actions of the company are akin to that of a gambler. It continues to operate with increased possibility of losses until the company has a negative net worth or trades under insolvent circumstances.

- **Cash Management Theory**

   The short term management of cash flow is a major concern for most companies. An imbalance between cash in-and outflow implies failure of a company's cash management function, persistence of which may lead to financial distress and ultimately, failure.

- **Credit Risk Theories**

These models are usually internally developed by financial institutions (commercial banks) and are linked to the Basel I and Basel II Accords[4]. Credit risk models provide risk of default predictions on borrowers and/or counterparties. The output of these models is in the form of a credit risk rating, for example "AAA"; "B+"; or "C". Credit risk models are often developed by employing appropriate available statistical techniques rather than by building directly on theoretical principles.

2.5   THE EVOLVEMENT OF NON-FINANCIAL MODELS

Keasey and Watson (1987) criticise failure prediction models based solely on financial ratios. Their study examines whether it is possible to achieve company failure predictions from publically available non-financial information, alone or in conjunction with financial ratios. Sources of information such as reporting lags, audit qualifications, the number of directors and the existence of loans secured on company assets may aid company failure prediction. Keasey *et al* base their study on the 1976 Argenti model. Although this model lacks empirical evidence, it is nevertheless a first attempt in the field of a hybrid company failure prediction. The Argenti model suggests several non-financial variables to be tested empirically.

In an attempt to improve prediction ability, Shumway (2001:51) developed a more dynamic failure prediction model combining both financial ratio variables and market driven variables. Five selected variables, which were found statistically significant in the empirical tests from previous work, evaluate the main aspects of financial position and market reaction within a company's solvency situation. It is reported that Shumway's model could predict more accurately than alternative models using financial ratios only. Shumway's study sheds new light on developing a failure prediction model by considering both financial ratios and market information.

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[4] Basel I is the round of deliberations by central bankers from around the world, and in 1988, the Basel Committee (BCBS) in Basel, Switzerland, published a set of minimum capital and other requirements for banks. This is also known as the 1988 Basel Accord. Basel I is now viewed as outmoded. Therefore, a more comprehensive set of guidelines known as Basel II are in the process of implementation by several countries and new updates in response to the financial crisis commonly described as Basel III.

He's study (2002) utilises the financial ratios and market measures in Shumway's model to develop a failure prediction model. He concludes that the financial and market predictors exhibit dramatic differences of performance between failed and non-failed companies several years prior to failure. When combined into a failure prediction model, the predictive variable contributes to improving the discriminatory power of the model significantly, and helps the model achieve impressive accuracy in the classification and prediction tests.

In the Lussier study (1995) a non-financial model was developed and tested. The company success, or non-failure, *versus* failure prediction model reliably outperformed the random classification of a group of companies as failed or non-failed over 99% of the time. Lussier's model accurately predicts the success or failure of a specific company 70% of the time.

Finally, in a study by Zhang (2006) it is found that the failure prediction model augmented with macro-economic variables shows greater parameter stability and better within sample prediction performance.

2.6   CONCLUSION

The Beaver univariate study can be regarded as the basis of all subsequent company failure prediction research. Altman's MDA model is an enhancement of Beaver's research and forms the basis of most statistical based failure prediction models currently in use.

Aziz and Dar's (2006) study reveals that statistical techniques (Multiple Discriminant Analysis and Logit models) have been most frequently used and dominate current research. Conversely, the AIES approach is relatively new and theoretical models are relatively uncommon.

Given that models based on financial variables have been dominant in most research to date, it is worthwhile to enhance the existing models through the inclusion of non-financial variables.

CHAPTER 3

METHODOLOGY: RESEARCH DESIGN AND VARIABLE SELECTION

3.1 INTRODUCTION

The early identification of financial distress provides stakeholders with the opportunity to take pro-active corrective action that may assist in preventing the financial failure of a company.

With reference to the two principle objectives mentioned above, the McGregorBFA[5] database is used in this study to identify the sample for a ten-year observation period. Standardised financial statements are used to calculate the financial variables and the Director's Report is used to obtain the non-financial variables.

This chapter describes the research design, including the methodology and variable selection.

3.2 RESEARCH DESIGN

This study is exploratory in nature and is broadly based on the research of Keasey and Watson (1987). The financial ratios to be used in Models 1 and 3 comprise six ratios, covering various aspects of company performance such as profitability, liquidity and gearing, which are listed in Table 3.1 below. The non-financial information to be used in Models 2 and 3, which comprise 14 questions, is displayed in Table 3.2 below.

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[5] McGregorBFA is the pre-eminent provider of stock market, fundamental research data and news to the financial sector and the corporate market at large. Data provisioning is made available *via* web based research and real time delivery products as well as customised data sets for input into client side systems, websites, print media and displays such as plasma screens. http://www.mcgregorbfa.com.

Model 1, utilising financial ratios only is designed to serve as a benchmark by which to compare the results obtained from Models 2 and 3. Model 3 incorporates both financial and non-financial information and is designed to test whether the two information sets working in conjunction with each other are able to produce superior results to those obtained from either of the individual information sets. According to Keasey and Watson (1987:346), irrespective of the relative predictive content of Models 1 and 2, either data sets may contain incremental information not present in the other; the two data sets may be complements rather than substitutes.

3.3   METHODOLOGY

The financial ratios to be applied in Models 1 and 3 are based on the K-Score model developed by De la Rey (1981). This model was developed on a similar basis as Altman's MDA model for company failure prediction, using 26 pairs of failed and non-failed South African listed companies.

$$K = -0{,}01662a + 0{,}0111b + 0{,}0529c + 0{,}086d + 0{,}0174e + 0{,}01071f - 0{,}06881$$

Where: K = overall index

a = (total outside financing / total assets) x (100 / 1)

b = (income before interest and tax) / average total

     assets) x (100 / 1)

c = total current assets and listed investments / total current liabilities

d = (income after tax / average total assets) x (100 / 1)

e = (net cash flow / average total assets) x (100 / 1)

f = (stock / inflation adjusted total assets) x (100 / 1)

The K-Score model ratios to be used are listed in Table 3.1 below.

Table 3.1: Financial ratios used in Model 1 and Model 2

FACTOR	RATIO
a	(Total external financing / Total assets) x 100/1
b	(Income before interest and tax / Average total assets) x 100/1
c	(Total current assets and listed investments / Total current liabilities)
d	(Income after tax / Average total assets) x 100/1
e	(Net cash flow / Average total assets) x 100/1
f	(Stock / Inflation adjusted total assets) x 100/1

<u>Source</u>: Bureau of Financial Analysis (1981).

Steyn, Warren and Jonker (2000:103) provide the following elaboration on the ratios in Table 3.1:

a - A gearing ratio in which preference shares are excluded from external financing

b - Return on assets (ROA). This is a basic profitability ratio indicating the generation of profit through business activities, before the leverage effect of outside financing starts increasing or decreasing the eventual return on equity.

c - Current ratio – modified to include listed investments, which is the correct approach when considering the failure possibilities of a company

d - Return on assets (after tax)

e - This ratio is not commonly used, but the significance attached to it owing to its inclusion in the K-Score model should ensure a more widespread use

f - The significance of this ratio lies in the use of inflation adjusted figures, which have not appeared in company failure models – proof of the importance of the effect of inflation on financial analysis as well as on the continued existence of a company.

The K-Score model's zone of ignorance stretches from - 0,19 to + 0,2. Any company with a score below - 0,19 has a high chance of failure unless corrective action is taken, while a score above + 0,2 is regarded as relatively safe (refer Appendix G).

The non-financial variables applied in this study are based on variables proposed by Jenster and Hussey (2001) used in examining a company's strategic capability. This is the

ability and means to be pro-active and to take action, which ultimately adds value to the company. The premise for utilising non-financial variables based on a company's strategic capability is the interdependence between an effective strategy formulation and execution and the company achieving its financial objectives (Grant 1996:29).

The five broad non-financial variables to be used in this study are vulnerability, flexibility, effectiveness, resources and capabilities.

Elaborations on each of the five non-financial variables are as follows:

- Vulnerability - This is the internal and external risks to which a company is being exposed to, that is externally, the company can be exposed to sovereign risk – over-reliance on a country with political instability and internally, where the company is reliant on a single debtor.

- Flexibility - The ability of the company to adapt to changes in market conditions, that is the ability to redeploy resources to meet changes in the external environment. This has not only to do with plant and equipment, but primarily the result of organisational software – structure, systems of decision-making, breadth of job design and attitudes.

- Effectiveness - The ability of company management to operate the business close to maximum efficiency – distribution channels, product and service innovation as well as external communication.

- Resources - These are factors of economic activity, which fall within the company's control. Three subcategories are applicable; tangible (physical and financial), intangible (technology, reputation, culture) and human capital (specialised skills and knowledge, communicative and interactive abilities, and motivation).

- Capabilities - This is an all encompassing term for all the competencies, knowledge and skills a company can apply in a situation.

Each of these five non-financial variables is expanded to include one or two simplistic and generic questions to appraise the company's strategic capability and the potential effect on financial results. The questions are listed in Table 3.2 below.

Table 3.2:   Non-financial variables questionnaire to appraise strategic capability

Variable	Questions
aa – Vulnerability	1. Does the company operate in politically and economically stable countries? 2. How well does the company manage operational risk?
bb – Flexibility	1. Is plant and equipment or services adaptable to changes in consumer demand? 2 Is key management structured in line with company core functions?
cc - Effectiveness	1. Are cost drivers clearly identifiable? 2. Does the company differentiate itself through a unique product or service offering?
dd - Resources	1. Was the company successful during the year in raising additional equity and/or debt funding? 2. Does the company have easy access to raw material and other supply resources? 3. Does the company rely on complex technology? 4. How well does the company manage reputational risk? 5. Is the company reliant on highly specialised skills? 6. Is the company transparent in its external communication?
ee – Capabilities	1. Does the company reflect the ability to acquire new capabilities? 2. Is the company a market leader?

Source: Adapted from Jenster & Hussey (2001:19-20).

A template questionnaire is presented in Appendix D.

Each item is assessed on a scale of zero to five. A line-item score of either zero or one is regarded as low or negative. A line-item score of either two or three is neutral and a line-item score of either four or five is regarded as high or positive. Each column from zero to five is added to reflect a sub-total value per column. All the sub-total columns are then added to provide one single value per financial year for a particular company. (Refer Appendix F for the results of this evaluation)[6].

The final score per financial year for a particular company is then divided by the maximum value of 70 (five points times fourteen line-items) to provide a weighted, four-decimal fraction value comparable with the Model 1 scores.

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[6] The tables are set in a format to accommodate data analysis in the SAS statistical analysis software program.

A score below 0,3750 is perceived to be an unsuccessful company. A score between 0,3750 and 0,7500 is perceived as neutral and for a score higher than 0,7500, the company is perceived to be more successful (refer Appendix H).

3.3.1   Research instruments

In order to make meaningful comparisons between the results of different companies, McGregorBFA devised a standardised system of analysing and capturing the financial statements of companies listed on the JSE.

The McGregorBFA database containing these standardised financial statements must be differentiated from the published financial statements.   The reason being that in the process of standardising the accounting figures within the income statement and the balance sheet the figures are changed according to fixed rules. This will result in the profit of a company, as per the standardised version of the financial statements differing from the financial statements published by a company in its annual report.

The reason for McGregorBFA standardising the financial statements is purely because companies apply accounting conventions, and therefore the Generally Accepted Accounting Practices, in different ways and according to different interpretations. All listed companies have to abide by the prescribed rules of the International Financial Reporting Standards ("IFRS")[7] and the Generally Accepted Accounting Practices ("GAAP")[8], but still have the freedom to categorise assets and liabilities, income and expense amounts and other items according to their own preferences and requirements and only disclose the detail of these amounts in the notes to the published financial statements.   In the standardised financial statements these amounts are therefore refined and displayed as separate lines, for example long-term loans are disclosed as secured or unsecured loans, while the split between interest-bearing / interest-free loans and local / foreign loans are included as supplementary information.

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[7] The International Accounting Standards Board ("IASB") is responsible for setting International Accounting Standards.

[8] The Financial Accounting Standards Board ("FASB") is responsible for promulgating or amending the rules of Generally Accepted Accounting Practice ("GAAP") as occasion requires.

3.3.2 Availability of data

Financial information on private companies is not readily and publically available. Reliance is therefore placed on publically available information. Data is obtained from the McGregorBFA, JSE-listed company database.

Ninety-five companies have been identified as subjects suitable for this study. These were drawn from a population of 416 companies and trade securities listed on the Main Board, the Alternative Exchange ("AltX"), the Development Capital Market ("DCM") and the Venture Capital Market ("VCM") as at 6 April 2010.

A phased approach will be applied to eliminate traded securities and companies not regarded as suitable subjects for the purposes of this study. A summary of the results of the five-phase approach is presented in Appendix A.

- In phase one, all listed traded securities, for example, debt instruments, preference shares and other trade instruments and suspended shares, are eliminated hence resulting in 378 listed companies remaining.

- In phase two, the sample is limited to industrial, services as well as wholesale and retail sector companies. All mining and mining related companies, financial companies and financial service providers (banks, long and short term insurance companies) as well as property companies are excluded from the sample. The purpose of this criterion is due to the differences in accounting systems and financial reporting formats, which may be materially different from those in the sample sectors. The result is 249 listed companies remaining in the preliminary sample.

- In phase three, all companies not listed on the JSE are eliminated – the primary listing should be on the JSE. This resulted in 238 companies remaining.

- In phase four, only companies listed for more than 10 years or listed prior to 2000 are retained. The purpose of this criterion is to obtain the most recent accounting period, which reflects the current economic environment and the changes that have taken place in accounting statements, which in turn have also changed certain financial requirements that have a serious financial impact on the company. This

phase includes companies with 10 full annual financial results available, resulting in 126 subject companies or 30,3% of the total 416 companies and securities listed on the JSE.

- In the fifth and final phase, all companies who have changed their financial year end in the ten-year observation period are eliminated. The purpose of this phase is to simplify the K-Score calculation process by having 12 full consecutive months per financial year. At this point there are 95 or 22,8% subject companies remaining within the sample out of a population of 416 companies and trade securities. A summary of the sample used in this study is presented in Appendix B.

Data for the non-financial variables have been obtained from the same database as for the financial variables. The reason being that the McGregorBFA provides a comprehensive database service, which includes annual and interim financial information (published and standardised), financial ratios, financial models and Director's Reports.

The Director's Report usually includes an overview of the past financial year as well as a discussion of future prospects. The Director's Report, amongst other published press statements, can be regarded as the official and most authoritative medium of communication by the company to its existing and prospective shareholders. Furthermore, the Director's Report, unlike a Stockbroker's Report, is publically available.

The Director's Report will for the purposes of this study be regarded as the primary source to test the non-financial variables questionnaire. The Director's Report is obtained in line with the financial statement data sourcing process. In some instances the Director's Report was not published or unavailable for a particular financial year. Where available, the interim Director's Report is used to fill the missing data. The "int" abbreviation is used as an indicator for the interim reports. In instances where neither the annual Director's Report nor an interim statement was available the "n/a" indicator is used.

Sample companies with "n/a" indicators are represented in Table 3.3 below.

Table 3.3: Subject companies with missing non-financial data

Company Name	JSE sector	Financial year
Barloworld Ltd	General Industrials	2000
Reunert Ltd	Electronic & Electrical Equipment	2000
Metrofile Holdings Ltd	Support Services	2002
Oceana Group Ltd	Food Producers	2000
Aspen Pharmacare Holdings Ltd	Pharmaceuticals & Biotechnology	2000
Pick `n Pay Stores Ltd	Food & Drug Retailers	2005
SecureData Holdings Ltd	Software & Computer Services	2000

A sample company with more than two consecutive "n/a" indicators is eliminated from the study sample. The names of these companies appear in Table 3.4 below.

Table 3.4: Subject companies eliminated due to unavailability of non-financial data

Company Name	JSE sector	Reason
Awethu Breweries Ltd	Beverages	No reports published
EOH Holdings Ltd	Software & Computer Services	No reports published
Cenmag Holdings Ltd	Development Capital Market	Cash shell

Ninety-five companies remained and are regarded as purified and suitable as sample subjects. A checklist of the availability of financial and non-financial data pertaining to the final sample of subject companies is presented in Appendix C.

3.3.3 Statistical analysis

As previously mentioned, it is intended to base the statistical analysis of the research design on the study of Keasey and Watson (1987).

While the majority of the research on company failure has used discriminant analysis, it is inappropriate according to Keasey and Watson (1987:345). One of the assumptions underlying the efficient use of discriminant analysis is that the variables are multivariate normal in its distribution, which is clearly a condition not fulfilled by the non-financial data

used in both studies. The form of the non-financial variables suggests the use of logistic regression analysis ("logit") as the ideal estimation procedure.

If the dependent variable is continuous the analysis can proceed *via* the usual regression route. However, when the dependent variable is dichotomous (0 or 1) a linear regression model has the undesirable property of heteroscedasticity. An obvious means of correcting heteroscedasticity proposed by Keasey and Watson (1987:352) is to apply weighted least-squares estimation. The difficulty with weighted least-squares is that there is no guarantee that the predicted value of the dependent variable will fall in the zero or one interval. In terms of company financial distress prediction, this amounts to the possibility of a company having a negative probability of failure.

The above difficulties with linear regression suggest the solution of transforming the original model in such a manner that for all independent variables, prediction will fall in the zero or one interval. Since the main concern in the prediction of financial distress is to achieve a predicted probability of financial distress, given a set of attributes, it makes good sense, according to Keasey and Watson (1987:352), to use some notion of probability as the basis for transformation. This requirement and that of monotonicity suggest that a cumulative probability function will provide a suitable transformation.

Keasey and Watson purport that any non-linear estimation technique will provide the required parameter estimates. Thus, if a model contains dichotomous dependent and independent variables a cumulative probability model such as probit or logit, coupled with maximum likelihood estimation seems to be the obvious solution.

However, against this background the view is held that a logit or probit procedure evaluating questions of either "yes" (1) or "no" (0) may be too limiting. The evaluation procedure will be expanded on a zero to five scale so as to capture a more sensitive response.

The Keasey and Watson approach, as initially envisaged, was therefore not appropriate for this study. Instead, the Cramer's V statistic was used to accommodate multiple variables – irrespective of whether they were placed in rows or columns. The Cramer's V

was published by Cramer (1946) and is a chi-square based measure of nominal association resulting in a value between "0" and "1" (inclusive regardless of table size).

Cramer's V is calculated dividing the chi-squared root by the sample size and the length of the minimum dimension (k is the smaller of the number of rows r or column c)

The formula for the Cramer's V is as follows:

$$\emptyset_c = \sqrt{\frac{x^2}{N\,(k-1)}}$$

Where: $\emptyset_c$ = Cramer's V or Cramer's phi

X^2 = chi-square

k = number of rows or columns in the table

The chi-square is an indication of the significance of the relationship between variables, but fails to indicate how significant and important the relationship is. Cramer's V is a post-test to provide this additional information.

Cramer's V varies between "0" and "1". Close to "0" indicates little association between variables. Close to "1" indicates a strong relationship, and "1" is an indication of perfect association between variables.

A linear regression trendline is added to the Cramer's V results for each of the fourteen questions in the graphic display in order to determine whether there is a strengthening, weakening or neutral trend over the ten-year observation period.

3.3.3   Economic phase: economic cycle selected

For the purposes of this study, the ten-year observation period includes at least one full economic cycle – one growth phase and one downturn phase. Conditions vary along the economic cycle and different factors may determine whether the company will enter a period of financial distress or not. It is also possible that the equity market and lenders are

more or less lenient during the growth phase and will tolerate a financial distressed company longer during a decline phase (Steyn-Bruwer & Hamman 2006:9).

The growth in real gross domestic product ("GDP") is used as an indicator of an economic cycle. A country's GDP is an aggregate measure of total economic production and represents the market value of all goods and services produced by the economy during the period measured, including personal consumption, government purchase, private inventories, paid-in construction costs and the foreign trade balance.

No attempt will be made to establish a correlation between the GDP and financial and non-financial variables. The reason for including the GDP economic indicator is to establish whether a co-movement exists with the statistical results over the observation period.

A summary of the South African GDP and economic phases is presented in Appendix E.

The shaded areas in the table indicate periods of economic downturn. A period of economic downturn is indicated by a "D". The assumption is made that a percentage change lower than 3,5% is regarded as a period of downturn. The general consensus is that a growth in real GDP in the range of 3,5% to 4,0% provides the best overall benefit; enough to provide for company profit and employment growth yet moderate enough to incite undue inflationary concerns. A growth period is indicated by a "G".

3.4   LIMITATIONS

The lengthy process followed in indentifying the study sample may have had an effect on the final sample size. Firstly the length of the observation period, being ten years, may have eliminated the majority of companies viable for inclusion as subject entities. The rational, however, for selecting a ten-year observation period is to include at least one or more economic decline and one or more economic growth periods (refer Section 3.3.3 above). The purpose for this is to establish whether a co-movement is observable between a company in financial distress and the economic cycle.

An additional limitation on the inclusion of viable subject entities is the availability of non-financial information in the form of a Director's Report. The Director's Report published with the interim financial results was used in instances where the report published with the annual financial results was not available from the McGregorBFA database. The limited information available from the interim report may affect the completeness testing the non-financial questionnaire.

Subject entities where the Director's Report was not published or was unavailable for two or more observation periods, were eliminated. Only three potential study subjects were affected and are therefore regarded as negligible.

3.5 CONCLUSION

This chapter furnished an overview of the methodology to be employed in achieving the two principal objectives. This includes the methodology and research instruments to be used, the sourcing and data collection process, the statistical analysis to be used and the methodology limitations to be expected. This methodology set out should provide the basis for addressing the research problem.

CHAPTER 4

ANALYSIS OF DATA

4.1   INTRODUCTION

This chapter contains the analysis of the data collected in order to address the research questions.   The findings in this chapter, flowing from the analysis of the data, are discussed in the final chapter, Chapter 5. The discussion of the findings is situated within the context of the literature review in Chapter 2, as well as the methodology discussed in Chapter 3.

The sample comprises 95 JSE-listed companies across most economic sectors in the Republic of South Africa.   A phased approach was followed to eliminate derivate instruments, mining, financial and property companies. The sample was further purified by including only companies that have been listed on the JSE for ten years and longer, with their primary listing on the JSE.

Both financial or quantitative data and non-financial or qualitative data were obtained from the McGregorBFA database. Quantitative data is represented by the De la Rey K-Score result and the qualitative data is represented by scoring 14 questions, divided into five broad groups, on a zero to five scale – zero representing a low, and five, a high score respectively.

4.2   RESEARCH OBJECTIVES

This study has two research objectives. Firstly, to determine whether a model utilising a number of non-financial variables, either alone or in conjunction with a model based on financial variables is able to predict company financial distress more accurately than a model based on financial variables only.

The second objective is to consolidate and reinforce the theoretical foundation of a company's financial distress and failure through an examination of existing studies in order to enhance insight into the company financial distress and failure phenomenon.

With the dependant variable being financial distress/non-distressed, the main objective is addressed by the analysis of the independent variable, based on the following data analyses:

- Model based on financial variables only;
- Model based on non-financial variables only; and
- Model based on a combination of financial and non-financial variables.

The results of each of these models over the full observation period are compared with the movement in the Real Gross Domestic Product ("GDP") to establish potential co-movement. The results are discussed in the sections below.

4.3   SUMMARY OF RESULTS

4.3.1   Model based on financial variables

The analysis of financial variables is based on the K-Score model developed by De la Rey (1981).

In the analysis of the K-Score result, the zone of ignorance extends from - 0,19 to + 0,2. Any company with a result below - 0,19 has a high chance of failure unless corrective action is taken, while a score above + 0,2 is regarded as being relatively safe.

In Table 4.1 below, the number of observations in a particular calendar year, less than - 0,19, more than + 0,2 and between - 0,19 and + 0,20 is expressed as a percentage of the total number of observations, respectively.

Table 4.1:   Number of observations less than – 0,19, more than + 0,2 and between - 0,19 and + 0,20 as a percentage of the total observations and gross domestic product (year on year change)

INTERVAL & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
< -0,19	15,4	25,8	12,6	20,0	18,9	14,7	21,1	16,8	20,0	24,2	22,5
> +0,2	59,6	62,4	70,5	61,1	70,5	73,7	66,3	71,6	66,3	63,2	60,0
-0,19 < > +0,20	25,0	11,8	16,8	18,9	10,5	11,6	12,6	11,6	13,7	12,6	17,5
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Figure 4.1:   Number of observations less than – 0,19, more than + 0,2 and between - 0,19 and + 0,20 as a percentage of the total observations and gross domestic product (year on year change)
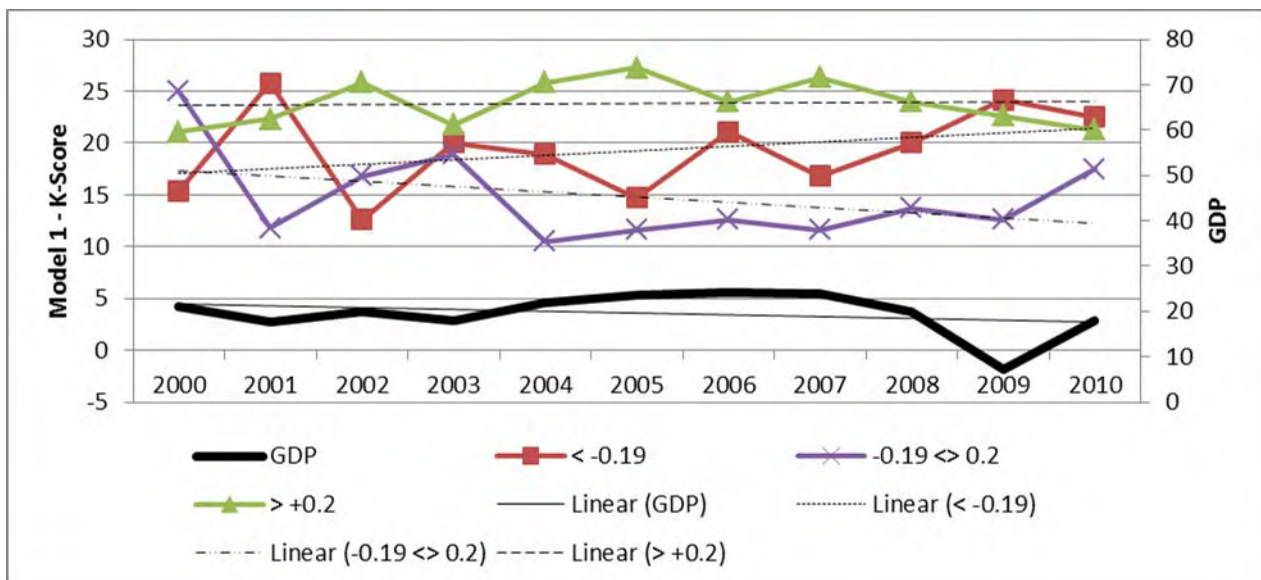
In Table 4.1, the K-Score larger than + 0,2 representing the majority, or average 66% of the sample companies, a graphical interpretation indicates that there is a relationship in the movement of the K-Score and the GDP. However, no relationship is observable between the K-Score below - 0,19, representing 19% of the sample companies, and the

GDP. Over time, the movement in the K-Score above + 0,2 represents a mirror image of the movement in the K-Score below - 0,19.

The remaining 15% of the sample companies falling within the neutral or indecision zone, between - 0,19 and + 0,20, indicates a stronger relationship with the movement in GDP than with the + 0,20 K-Score over the observation period. This is also evident from the corresponding slope in this and the GDP trend line.

4.3.2 Model based on non-financial variables

A questionnaire comprising 14 questions, divided into five groups, were used to evaluate the sample company Directors' Reports. Based on a subjective evaluation of the report, a score of between zero and five was assigned to a particular question - zero being a low score, and five representing a high score. Each sample company was assessed against a potential maximum score of 70 points (fourteen questions multiplied by five points).

For the purposes of the analysis below, the total scores attained by a sample company in a particular year was weighted against the potential maximum score of 70 points. The results are presented in Appendix H.

In Table 4.2 below, a simple separation was performed in order to demonstrate the level of success or distress of a sample company. The test results were divided into three equal sub-sectors. A potentially poor performing company scores below 0,375. A successful company achieves a score higher than 0,750. A score between 0,375 and 0,750 represents an ignorance or neutral zone.

Table 4.2:   Number of observations less than 0,375, more than + 0,750 and between - 0,375 and + 0,750 as a percentage of the total observations and gross domestic product (year on year change)

INTERVAL & GDP	OBSERVATION PERIOD (Years)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
< 0,375	24,0	24,2	21,3	22,1	24,2	24,5	20,0	18,9	13,7	14,7	17,5
> 0,750	2,0	5,3	5,3	6,3	6,3	5,3	6,3	7,4	8,4	8,4	12,5
0,375 < > 0,750	74,0	70,5	74,5	71,6	69,5	70,2	73,7	73,7	77,9	76,8	70,0
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Figure 4.2:   Number of observations less than 0,375, more than 0,750 and between 0,375 and 0,750 as a percentage of the total observations and gross domestic product (year on year change)
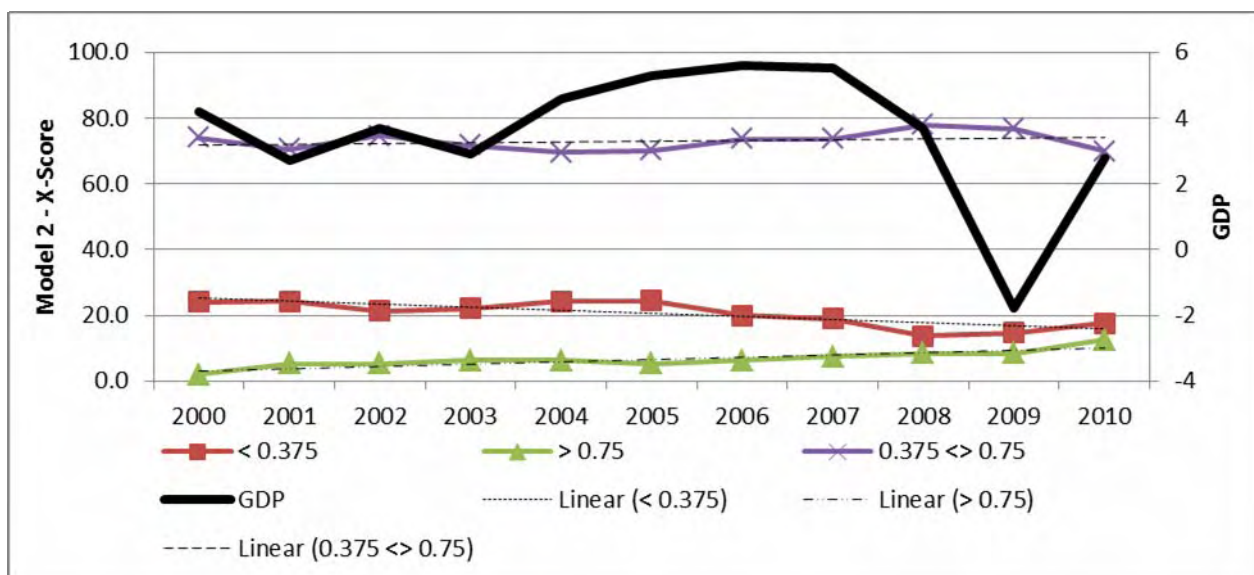
Twenty two comma five percent of the total observations indicate a value less than 0,375 – poor performing companies. Six comma seven percent of the total number of observation indicate a value more than 0,750 – successful companies. The balance, or 72,9% of the

total number of observations indicate a value between 0,375 and 0,750 – a neutral response.

4.3.3 Model based on a combination of financial and non-financial variables

- **Cramer's V results**

The Cramer's V test has been applied to determine the correlation between the K-Score result and the multiple test score results. As the chi-square does not indicate the significance of the association between the financial and non-financial variables, the Cramer's V test is used to overcome this constraint.

Cramer's V is calculated by first calculating the chi-square. The result varies between "0" and "1". Close to "0" indicates no association between variables to "1", indicating complete association. A result of 1 can only be reached when two variables are equal to each other (refer Appendix I).

The questionnaire for non-financial variables is divided into five broad groups – vulnerability, flexibility, effectiveness, resources and capabilities. The Cramer's V results for each group and question is depicted in the tables and graphs below.

- **Vulnerability**

This represents the internal and external risks to which a company may be exposed, that are externally, the level of the company's exposure to sovereign risk – over-reliance on a country experiencing political instability and internally, where the company is reliant on a single debtor. Table 4.3 and Figure 4.3 below represent the Cramer's V results for the following two questions:

aa1: Does the company operate in politically and economically stable countries?
aa2: How well does the company manage operational risk?

Table 4.3: **Results of the Cramer's V test for questions aa1 and aa2 and gross domestic product (year on year change)**

QUESTIONS & GDP	OBSERVATION PERIOD (Years)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
aa1	0,2349	0,1425	0,1880	0,0735	0,2073	0,1484	0,1647	0,1962	0,2713	0,3364	0,0000
aa2	0,2769	0,1021	0,1124	0,1493	0,1608	0,1722	0,1568	0,1910	0,2228	0,2374	0,2519
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Figure 4.3: **Results of the Cramer's V test for questions aa1 and aa2 and gross domestic product (year on year change)**
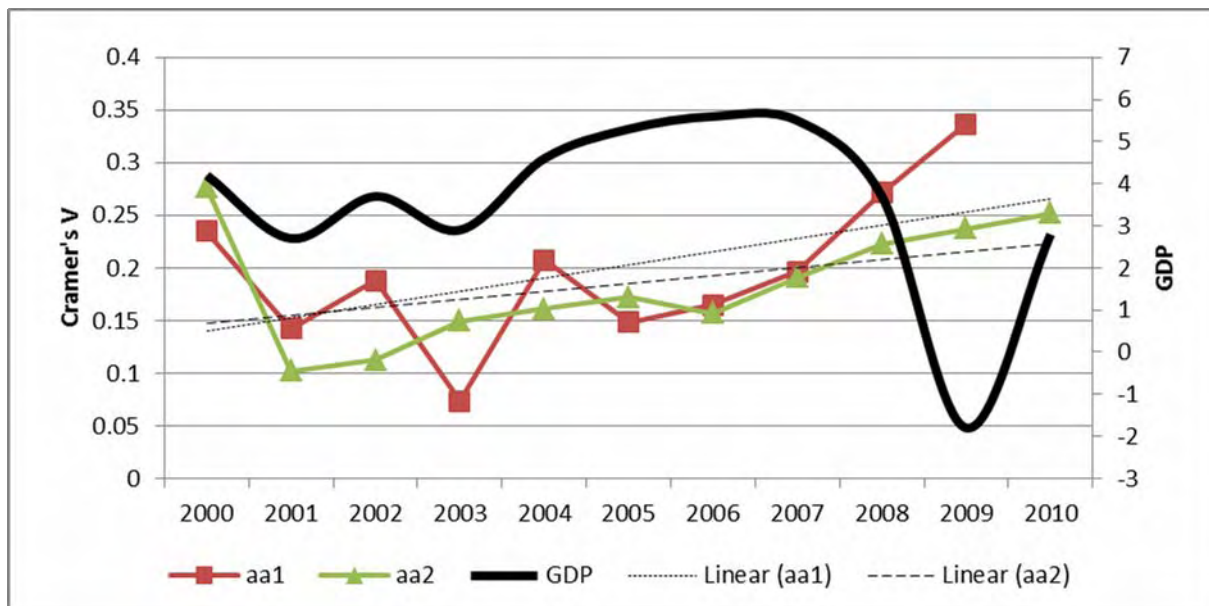
Observations based on Table 4.3 and Figure 4.3 are discussed in the section below.

Question 1: (aa1) Does the company operate in politically and economically stable countries?

The Cramer's V results follow an erratic and downward trend from 2000, the commencement date of the observation period, through 2003. This trend falls in line with the erratic trend of the GDP during the same observation period from 2000 through 2003.

During 2003, the Cramer's V results change to a positive trend, and follow this trend until the end of the observation period, 2010. The trend in the Cramer's V results during this period is virtually in line with the economic growth period from 2004 to 2008.

Question 2: (aa2) How well does the company manage operational risk?

The Cramer's V results for this question follow a less erratic trend over the observation period from 2000 through 2010. The result weakens during the initial two years, but then strengthens gradually over the period from 2001 through 2010. No similarity is observed between the Cramer's V result and the trend of the GDP from 2001 through 2010.

- **Flexibility**

This variable represents the ability of a company to adapt to changes in market conditions, that is, the ability to redeploy resources to meet changes in the external environment. This has not only to do with plant and equipment, but primarily also with the result of organisational software - structure, systems of decision making as well as breadth of job design and attitudes. Table 4.4 and Figure 4.4 below represent the Cramer's V results for the following two questions:

bb1: Is plant and equipment or services adaptable to changes in consumer demand?
bb2: Is key management structured in line with company core functions?

Table 4.4: Results of the Cramer's V test for questions bb1 and bb2 and gross domestic product (year on year change)

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
bb1	0,0544	0,1110	0,0660	0,0573	0,1187	0,1681	0,2198	0,1841	0,1391	0,1796	0,1870
bb2	0,2416	0,1202	0,2135	0,0553	0,1497	0,1607	0,2636	0,2851	0,1487	0,1777	0,2471
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Figure 4.4: **Results of the Cramer's V test for questions bb1 and bb2 and gross domestic product (year on year change)**
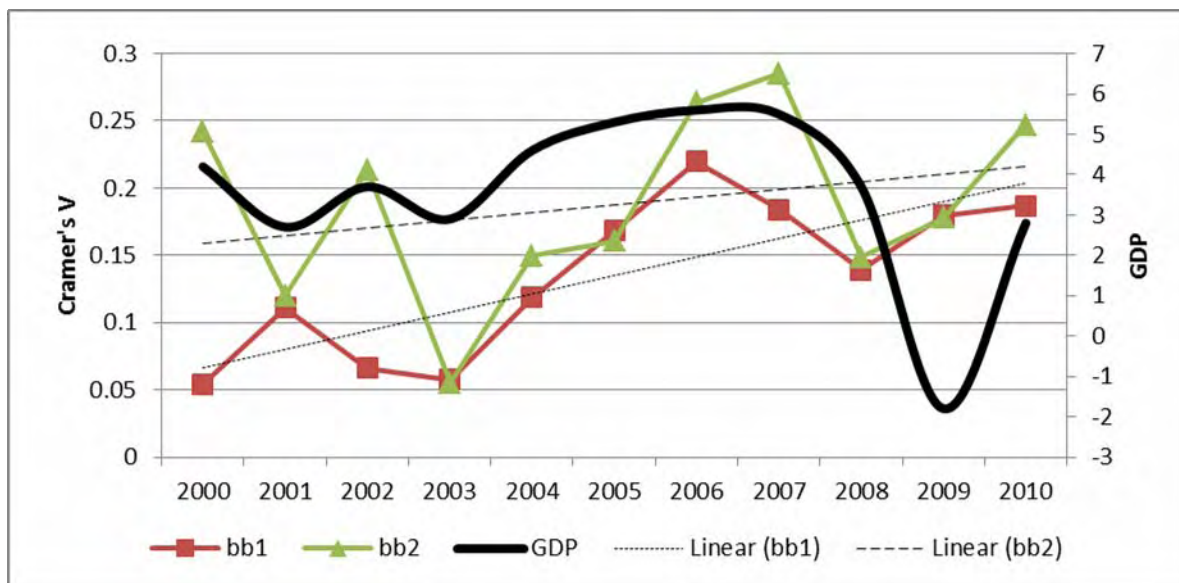
Observations based on Table 4.4 and Figure 4.4 are discussed in the section below.

Question 3: (bb1)   Is plant and equipment or services adaptable to changes in consumer demand?

Although in a slightly steeper upward trend, it is observed as being less erratic than the trend in GDP over the observation period from 2000 through 2010. It can be held that there is no or little relationship between this Cramer's V results and the economic trend. Supported by the sharper upward trend line, it appears that there is a strengthening in the relationship between the Cramer's V results and the K-Score value over the full observation period.

Question 4: (bb2)   Is key management structured in line with company core functions?

The more erratic linear trend follows a close relationship with the economic growth and downturn. Although, slightly strengthening, the relative flat linear trend line in the Cramer's V results indicates a weak relationship with the K-Score.

- **Effectiveness**

This is the ability of company management to operate the business close to maximum efficiency – distribution channels, product and service innovation as well as external communication. Table 4.5 and Figure 4.5 below represent the Cramer's V results for the following two questions:

cc1: Are cost drivers clearly identifiable?
cc2: Does the company differentiate itself through a unique product or service offering?

Table 4.5: Results of the Cramer's V test for questions cc1 and cc2 and gross domestic product (year on year change)

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
cc1	0,2054	0,1486	0,1655	0,1263	0,1264	0,1085	0,2072	0,1796	0,1351	0,2262	0,1850
cc2	0,3165	0,2388	0,0727	0,1220	0,1726	0,2413	0,2283	0,1683	0,1845	0,1923	0,2825
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Figure 4.5: Results of the Cramer's V test for questions cc1 and cc2 and gross domestic product (year on year change)
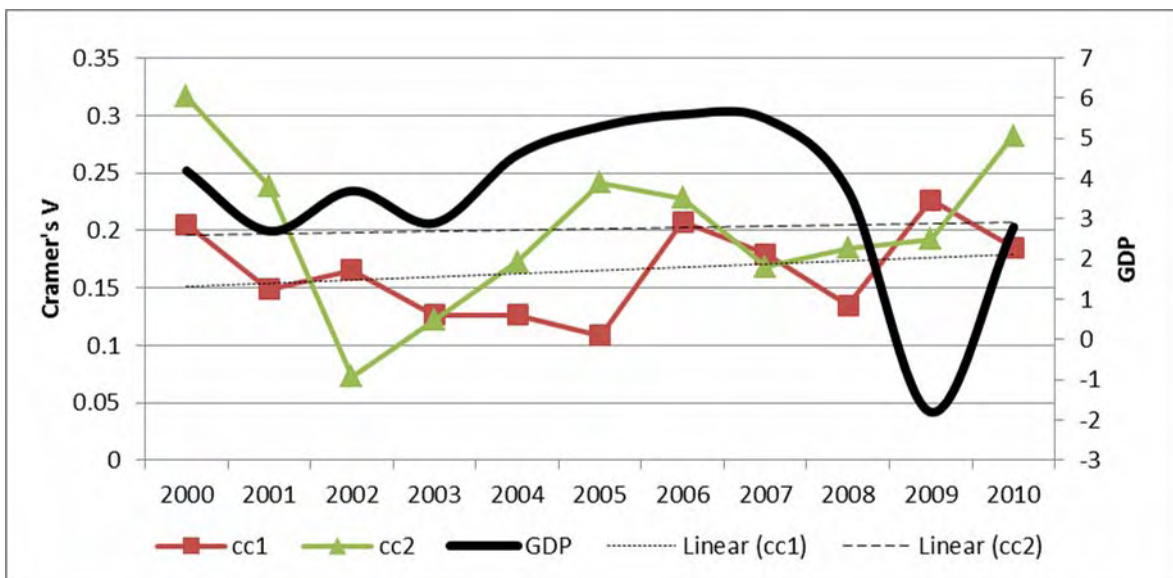
Observations based on Table 4.5 and Figure 4.5 are discussed in the section below.

Question 5: (cc1) Are cost drivers clearly identifiable?

A relative flat Cramer's V linear trend line, below 0,2 indicates a weak relationship with the K-Score result. In addition, the Cramer's V results reflect a poor relationship with the GDP.

Question 6: (cc2) Does the company differentiate itself through a unique product or service offering?

In the effectiviness category, this Cramer's V results indicate a marginally stronger relationship with the K-Score result. No relationship between the Cramer's V results and the year on year change is observable.

- **Resources**

These are factors of economic activity, which fall within the company's control. Three sub-categories are applicable – tangible (physical and financial), intangible (technology, reputation, culture) and human capital (specialised skills and knowledge; communicative and interactive abilities; and motivation). Table 4.6 to Table 4.8 and Figure 4.6 to Figure 4.9 below represent the Cramer's V results for the following six questions:

dd1: Was the company successful during the year in raising additional equity and/or debt funding?

dd2: Does the company have easy access to raw material and other supply resources?

dd3: Does the company rely on complex technology?

dd4: How well does the company manage reputational risk?

dd5: Is the company reliant on highly specialised skills?

dd6: Is the company transparent in its external communication?

Figure 4.6:   Results of the Cramer's V test for questions dd1,dd2, dd3, dd4, dd5, and dd6 and gross domestic product (year on year change)
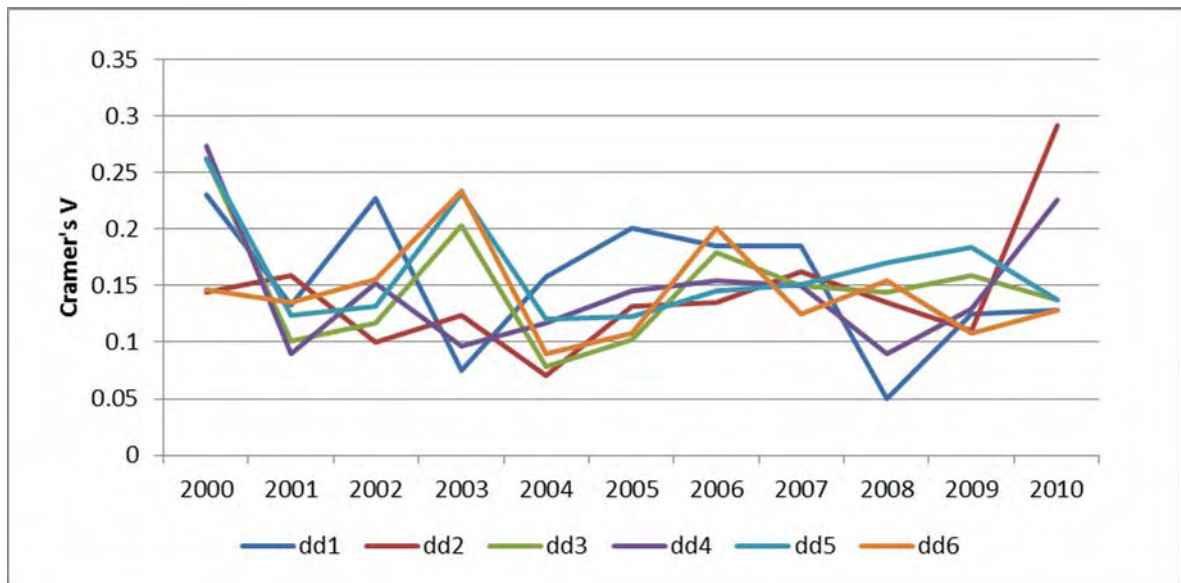
This section comprises six questions. To simplify the graphic display, the questions and graph above are divided into three pairs.

Resources – Questions 7 and 8

Table 4.6:   Results of the Cramer's V test for questions dd1 and dd2 and gross domestic product (year on year change)

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
dd1	0,2302	0,1328	0,2274	0,0755	0,1579	0,2015	0,1848	0,1848	0,0495	0,1251	0,1284
dd2	0,1446	0,1592	0,1000	0,1235	0,0703	0,1317	0,1352	0,1623	0,1356	0,1105	0,2924
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Table 4.7:   Results of the Cramer's V test for questions dd1 and dd2 and gross domestic product (year on year change)
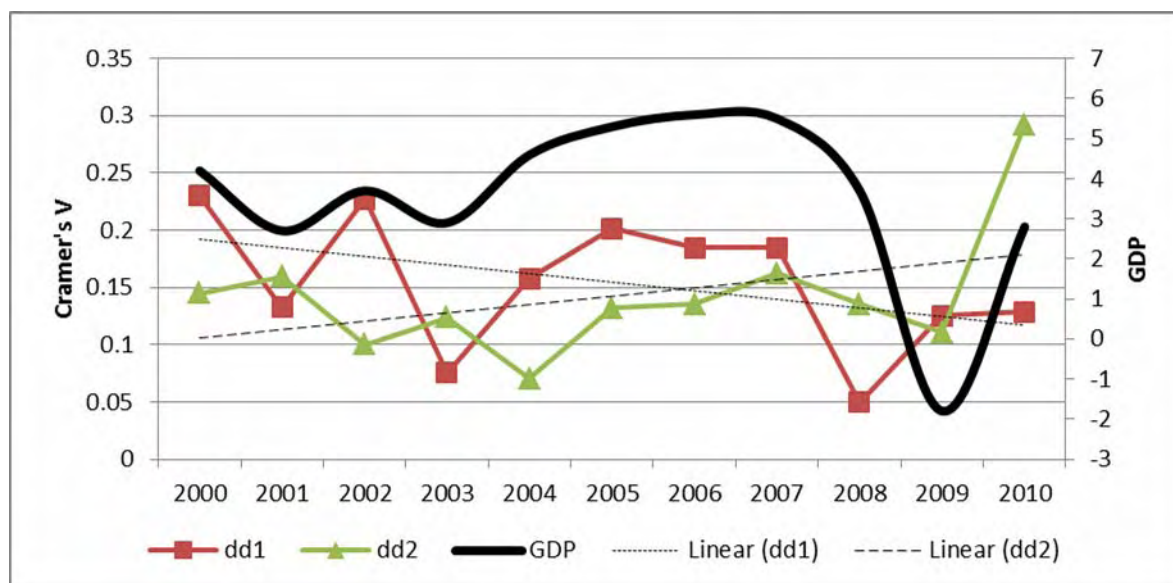
Observations based on Table 4.6 and Figure 4.7 are discussed in the section below.

Question 7: (dd1) Was the company successful during the year in raising additional debt and/or equity funding?

A downward sloping Cramer's V linear trend line indicates a weakening relationship to the K-Score result over the observation period. No relationship with the change in GDP could be observed.

Question 8: (dd2) Does the company have easy access to raw material and other supply resources?

Although not an exact match in the movement of the Cramer's V results and the change in the GDP over the observation period, the Cramer's V results indicate a weaker relationship during the period of economic downturn.   During the economic growth period, from 2004 through 2008, a strengthening in the relationship between the Cramer's V results and the K-Score result is observed.

Resources – Questions 9 and 10

Table 4.7: **Results of the Cramer's V test for questions dd3 and dd4 and gross domestic product (year on year change)**

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
dd3	0,2627	0,1015	0,1169	0,2037	0,0786	0,1022	0,1797	0,1504	0,1448	0,1594	0,1377
dd4	0,2741	0,0901	0,1523	0,0963	0,1172	0,1450	0,1543	0,1494	0,0990	0,1290	0,2256
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Table 4.8: **Results of the Cramer's V test for questions dd3 and dd4 and gross domestic product (year on year change)**
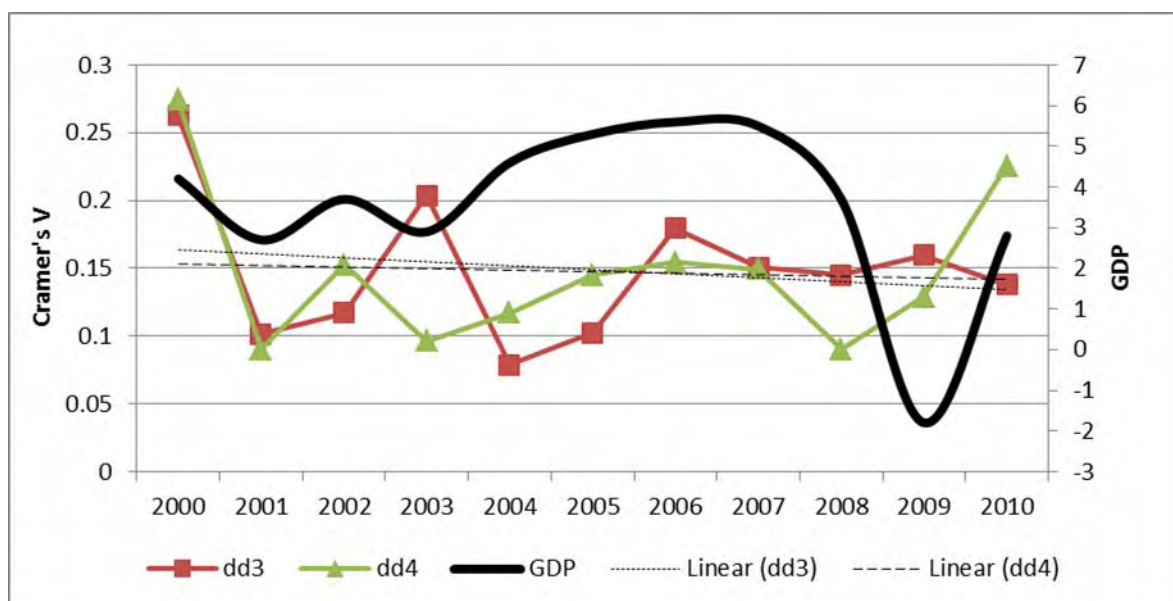
Observations based on Table 4.7 and Figure 4.8 are discussed in the section below.

Question 9: (dd3) Does the company rely on complex technology?

A downward sloping linear trend line over the observation period indicates a weakening relationship between the Cramer's V results and the K-Score result. No direct match can

be observed between the movement of the Cramer's V results and the change in GDP over the observation period.

Question 10: (dd4) How well does the company manage reputational risk?

Visually it appears that the relationship between the Cramer's V results and the K-Score result strengthen over the observation period. However, adding a linear trend line, the relationship weakens marginally over the observation period.

Resources – Questions 11 and 12

Table 4.8: Results of the Cramer's V test for questions dd5 and dd6 and gross domestic product (year on year change)

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
dd5	0,2627	0,1236	0,1320	0,2313	0,1208	0,1226	0,1450	0,1506	0,1705	0,1845	0,1377
dd6	0,1465	0,1350	0,1559	0,2344	0,0897	0,1082	0,2015	0,1253	0,1550	0,1080	0,1284
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Table 4.9:   Results of the Cramer's V test for questions dd5 and dd6 and gross domestic product (year on year change)
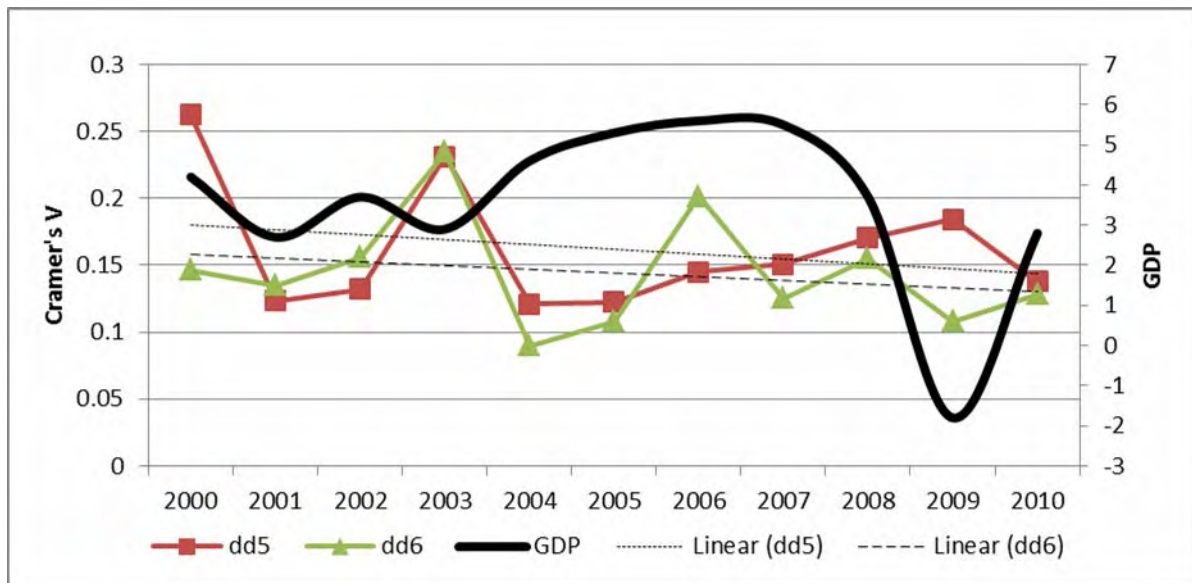
Observations based on Table 4.8 and Figure 4.9 are discussed in the section below.

Question 11: (dd5) Is the company reliant on highly specialised skills?

The movement in the Cramer's V results is erratic during the initial four years of the observation period.   After 2004, the movement in the Cramer's V results follows a movement similar to that of the change in the GDP. The downward sloping trend line over the observation period indicates a weakening relationship with the K-Score result.

Question 12: (dd6) Is the company transparent in its external communications?

The movement in the Cramer's V results over the extent of the observation period is erratic, indicating no similarity in the movement of the Real GDP. The downward sloping linear trend line over the observation period indicates, as in Question 11 above, a weakening relationship with the K-Score result.

- **Capabilities**

This is an all encompassing term for all the competencies, knowledge and skills a company can apply in a specific situation. Table 4.9 and Figure 4.10 below represent the Cramer's V results for the following two questions:

ee1: Does the company reflect the ability to acquire new capabilities?
ee2: Is the company a market leader?

Table 4.9: Results of the Cramer's V test for questions ee1 and ee2 and gross domestic product (year on year change)

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
ee1	0,2461	0,2030	0,1830	0,2288	0,1131	0,2611	0,2351	0,2525	0,1703	0,1856	0,1846
ee2	0,0471	0,1929	0,1295	0,1326	0,0789	0,1529	0,2731	0,2026	0,2053	0,2180	0,3616
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

Table 4.10: Results of the Cramer's V test for questions ee1 and ee2 and gross domestic product (year on year change)
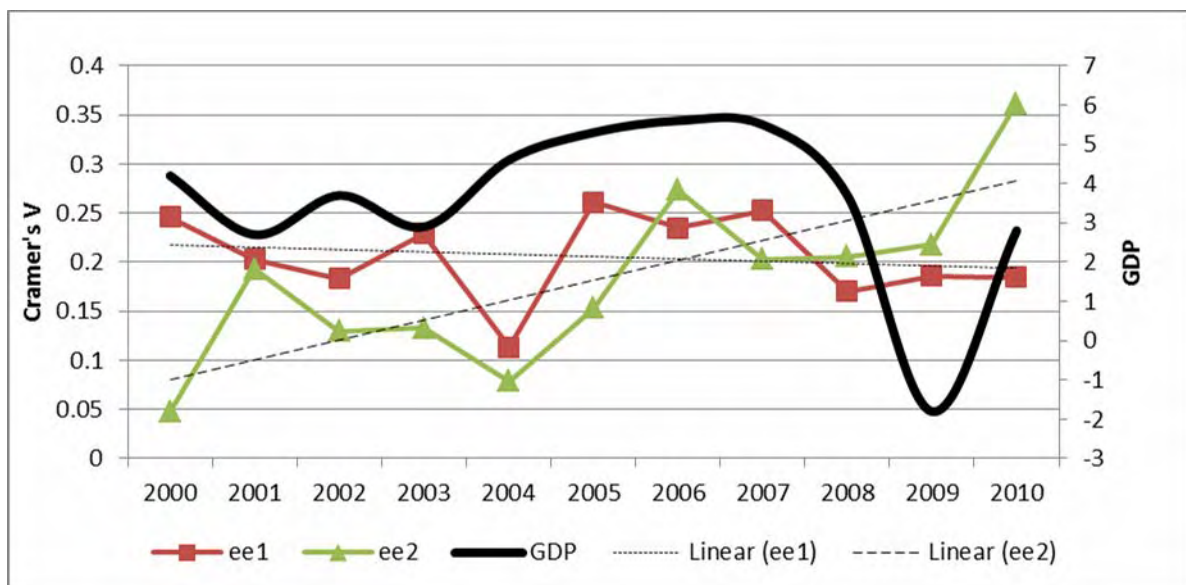
Observations based on Table 4.9 and Figure 4.10 are discussed in the section below.

Question 13:   (ee1)   Does the company reflect the ability to acquire new capabilities?

The Cramer's V results follow an erratic movement over the full observation period, indicating no observable relationship with the GDP. A marginal downward sloping linear trendline indicates a marginal, but weakening relationship with the K-Score result.

Question 14: (ee2) Is the company a market leader?

A closer relationship between the movements of the Cramer's V results and the GDP is discernible over the observation period. A sharp upward sloping linear trend line indicates an increasingly strong relationship between the Cramer's V results and the K-Score result.

4.4   CONCLUSION

In the light of the main objectives of the study, the non-financial variables examined, were chosen to capture important company characteristics – vulnerability, flexibility, effectiveness, resources and capability. In addition, these non-financial variables were compiled from published financial reports as required by Section 30 of the Companies Act 71 of 2008.

The results, while being of a tentative nature, indicate that marginally better predictions concerning JSE-listed companies' financial distress may be obtained by combining a non-financial variable to a financial model.

Chapter 5 furnishes further discussion of the results along with limitations of the study and suggestions for possible future research.

CHAPTER 5

SUMMARY OF RESULTS, RECOMMENDATION AND

CONCLUSION

5.1   INTRODUCTION

By way of introduction, the results achieved in this research report are summarised below. Chapter 2 examined several models that predict company failure and financial distress based on financial and non-financial distress. The more important studies have been categorised in three broad classes – classical statistical models; The AIES models and the theoretical models.

The Beaver univariate study can be regarded as the basis of all subsequent company failure prediction models. The Altman MDA model is an enhancement of Beaver's research and forms the basis of most statistically based failure prediction models currently in use.

MDA and logit are the most frequently used approaches in company failure prediction. The AIES and theoretical models are less known as they are relatively new and uncommon. Aziz and Dar (2006:29) conclude that the predictive accuracy of all the models is found to be generally good. Although the AIES and theoretical models reflect slightly better predictive ability than the classical statistical models, this result is based on a smaller number of studies. Compared to the consistently higher accuracy of the MDA and logit models, this was achieved through a larger number of studies with smaller adjusted standard deviations. This suggests that the MDA and Logit models may provide the most reliable methods for company failure prediction.

Some researchers (Keasey and Watson, 1987) criticised failure prediction models based solely on financial information. They purport that more accurate company failure prediction will be achieved by considering non-financial information in conjunction with financial information. The Keasey and Watson study is based on the 1976 Argenti model

– this model lacks empirical evidence. It was nevertheless a first attempt to improve company failure prediction based on a combination of financial and non-financial information.

Subsequently, various researchers (Lussier, 1995; Shumway, 2001; He, 2002; and Zhang 2006) followed with attempts to improve company failure prediction by combining financial and non-financial variables. Results of these studies demonstrate that in a combination of financial and non-financial variables, the predictive variable contributes to improving the discriminatory power of the model significantly, and helps the model achieve higher accuracy in the classification and prediction tests. The findings of these studies were documented in Chapter 2.

Based on the argument that a combination of financial and non-financial variables enhances the accuracy of failure prediction a new test was conducted in Chapter 3, and documented in Chapter 4.

This chapter summarises the results of this research report and then compares these results to the research problem in Section 1.5. Based on the findings, recommendations for future research and final conclusions are made.

5.2 SUMMARY OF FINAL RESULTS

Table 5.1 below furnishes a summary of the Cramer's V test results based on each of the 14 questions from aa1 through ee2 as well as the year on year change in the gross domestic product. The results are presented over the full ten-year observation period from 2000 through 2010.

Table 5.1: **Results of the Cramer's V test for questions aa1 to ee2 and gross domestic product (year on year change)**

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
aa1	0,2349	0,1425	0,1880	0,0735	0,2073	0,1484	0,1647	0,1962	0,2713	0,3364	0,0000
aa2	0,2769	0,1021	0,1124	0,1493	0,1608	0,1722	0,1568	0,1910	0,2228	0,2374	0,2519
bb1	0,0544	0,1110	0,0660	0,0573	0,1187	0,1681	0,2198	0,1841	0,1391	0,1796	0,1870
bb2	0,2416	0,1202	0,2135	0,0553	0,1497	0,1607	0,2636	0,2851	0,1487	0,1777	0,2471
cc1	0,2054	0,1486	0,1655	0,1263	0,1264	0,1085	0,2072	0,1796	0,1351	0,2262	0,1850
cc2	0,3165	0,2388	0,0727	0,1220	0,1726	0,2413	0,2283	0,1683	0,1845	0,1923	0,2825
dd1	0,2302	0,1328	0,2274	0,0755	0,1579	0,2015	0,1848	0,1848	0,0495	0,1251	0,1284
dd2	0,1446	0,1592	0,1000	0,1235	0,0703	0,1317	0,1352	0,1623	0,1356	0,1105	0,2924
dd3	0,2627	0,1015	0,1169	0,2037	0,0786	0,1022	0,1797	0,1504	0,1448	0,1594	0,1377
dd4	0,2741	0,0901	0,1523	0,0963	0,1172	0,1450	0,1543	0,1494	0,0990	0,1290	0,2256
dd5	0,2627	0,1236	0,1320	0,2313	0,1208	0,1226	0,1450	0,1506	0,1705	0,1845	0,1377
dd6	0,1465	0,1350	0,1559	0,2344	0,0897	0,1082	0,2015	0,1253	0,1550	0,1080	0,1284
ee1	0,2461	0,2030	0,1830	0,2288	0,1131	0,2611	0,2351	0,2525	0,1703	0,1856	0,1846
ee2	0,0471	0,1929	0,1295	0,1326	0,0789	0,1529	0,2731	0,2026	0,2053	0,2180	0,3616
GDP	4,2	2,7	3,7	2,9	4,6	5,3	5,6	5,5	3,7	-1,8	2,8

The above results are categorised into three broad groups:

- Questions where the Cramer's V indicates a strengthening in the relationship between the K-Score and the non-financial variable – movement towards one.
- Questions where the Cramer's V indicates a neutral relationship between the K-Score and non-financial variable – stable or no movement over time.
- Questions where the Cramer's V indicates a weakening relationship between the K-Score and the non-financial variable – movement closer to zero over time.

In Table 5.2 below, the questions where the Cramer's V results denote a strengthening relationship between the De la Rey K-Score and the non-financial variable are grouped together. These are the Cramer's V results where the linear regression trend line reflects a positive slope over the full ten-year observation period – movement towards one.

Table 5.2: Results of the Cramer's V – Strengthening relationship

QUESTIONS	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
aa1	0,2349	0,1425	0,1880	0,0735	0,2073	0,1484	0,1647	0,1962	0,2713	0,3364	0,0000
aa2	0,2769	0,1021	0,1124	0,1493	0,1608	0,1722	0,1568	0,1910	0,2228	0,2374	0,2519
bb1	0,0544	0,1110	0,0660	0,0573	0,1187	0,1681	0,2198	0,1841	0,1391	0,1796	0,1870
bb2	0,2416	0,1202	0,2135	0,0553	0,1497	0,1607	0,2636	0,2851	0,1487	0,1777	0,2471
dd2	0,1446	0,1592	0,1000	0,1235	0,0703	0,1317	0,1352	0,1623	0,1356	0,1105	0,2924
ee2	0,0471	0,1929	0,1295	0,1326	0,0789	0,1529	0,2731	0,2026	0,2053	0,2180	0,3616

All the questions based on the Vulnerability (aa1 and aa2) and Flexibility (bb1 and bb2) groups, 14,3% each of the total number of questions, exhibit a strengthening in the relationship between the K-Score and the non-financial variable. Only one question in the Resource (dd2) and Capability (ee2) group each show a strengthening relationship, or 7,1% each of the total number of questions.

In Table 5.3 below, the questions where the Cramer's V results denote a neutral relationship between the De la Rey K-Score and the non-financial variable are grouped together. These are the Cramer's V results where the linear regression trend line reflects a flat line over the full ten-year observation period – relative stable movement.

Table 5.3:   Results of the Cramer's V – Neutral relationship

QUESTIONS	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
cc1	0,2054	0,1486	0,1655	0,1263	0,1264	0,1085	0,2072	0,1796	0,1351	0,2262	0,1850
cc2	0,3165	0,2388	0,0727	0,1220	0,1726	0,2413	0,2283	0,1683	0,1845	0,1923	0,2825
dd4	0,2741	0,0901	0,1523	0,0963	0,1172	0,1450	0,1543	0,1494	0,0990	0,1290	0,2256

Both the questions in the Effectiveness (cc1 and cc2) group, or 14,3% of the total number of questions, and one question in the Resources (dd4) group, or 7,1% of the total number of questions, indicate a neutral relationship between the K-Score and the non-financial variable.

In Table 5.4 below, the questions where the Cramer's V results denote a negative relationship between the De la Rey K-Score and the non-financial variable are grouped together. These are the Cramer's V results where the linear regression trend line reflects a negative slope over the full ten-year observation period – movement towards zero.

Table 5.4:   Results of the Cramer's V – Weakening relationship

QUESTIONS & GDP	OBSERVATION PERIOD (YEARS)										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
dd1	0,2302	0,1328	0,2274	0,0755	0,1579	0,2015	0,1848	0,1848	0,0495	0,1251	0,1284
dd3	0,2627	0,1015	0,1169	0,2037	0,0786	0,1022	0,1797	0,1504	0,1448	0,1594	0,1377
dd5	0,2627	0,1236	0,1320	0,2313	0,1208	0,1226	0,1450	0,1506	0,1705	0,1845	0,1377
dd6	0,1465	0,1350	0,1559	0,2344	0,0897	0,1082	0,2015	0,1253	0,1550	0,1080	0,1284
ee1	0,2461	0,2030	0,1830	0,2288	0,1131	0,2611	0,2351	0,2525	0,1703	0,1856	0,1846

Four questions in the Resources group (dd1; dd3; dd5; and dd6) and one in the Capability group (ee1) indicate a weakening in the relationship between the K-Score and the non-financial variable, or 28,6% and 7,1% respectively of the total number of questions.

The above can be summarised as follows:

The following six questions, or 42,9%, out of a number of 14 questions indicate a strengthening in the relationship between the K-Score and the non-financial variable over the observation period:

- aa1 – Does the company operate in politically and economically stable countries?
- aa2 – How well does the company manage operational risk?
- bb1 – Is plant and equipment or services adaptable to changes in consumer demand?
- bb2 – Is key management structured in line with company core functions?
- dd2 – Does the company have easy access to raw material and other supply resources?

The following three questions, or 21,49% out of a number of 14 questions indicate a neutral relationship between the K-Score and the non-financial variable over the observation period:

- cc1 – Are cost drivers clearly identifiable?
- cc2 – Does the company differentiate itself through a unique product or service offering?
- dd4 – How well does the company manage reputational risk?

The following five questions, or 35,7%, out of a number of 14 questions indicate a weakening relationship between the K-Score and the non-financial variable over the observation period:

- dd1 – Was the company successful during the year in raising additional equity and/or debt funding?
- dd3 – Does the company have easy access to raw material and other supply resources?
- dd5 – Is the company reliant on highly specialised skills?

- dd6 – Is the company transparent in its external communication?
- ee1 – Does the company reflect the ability to acquire new capabilities?

An overall view of the results indicate a marginal weighting in favour of utilising non-financial variables in combination with financial variables in enhancing the prediction accuracy of company financial distress.

5.3   RESEARCH PROBLEM

5.3.1   Primary objective

The primary objective of this research report was to determine whether a model utilising a number of non-financial variables, either alone or in conjunction with a model based on financial variables is able to predict company financial distress more accurately than a model based entirely on financial variables.

Although the results indicate a marginal weighting in favour of utilising non-financial variables in combination with financial variables in enhancing the prediction accuracy of company financial distress, the fact that only 42,9% of the questions indicated a strengthening relationship between the De la Rey K-Score and the non-financial variable, is not sufficient to prove that the primary objective has been achieved convincingly.

A number of limitations, highlighted in Section 5.4 below, had an effect on the result of this study. As proposed in Section 5.5 below, comprehensive empirical research is required to overcome some or all of the limitations in order to convincingly prove that combining financial and non-financial variables would enhance the accuracy of a company financial distress model.

5.3.1   Secondary objective

The secondary objective was to consolidate and reinforce the theoretical foundation of company financial distress through the examination of existing studies in order to enhance insight into the company financial distress and failure phenomenon.

Given that the research in the prediction of financial distress has in the past predominantly been based on financial models, the limited research to date on models combining financial and non-financial variables can therefore still be regarded in its infancy.

Although this exploratory study did not achieve the secondary objective convincingly, the secondary objective was achieved by consolidating the evolution of company distress models based on financial variables over a number of years, and also by the spill over to the evolution of company distress models based on non-financial models. However, most of the initial distress models based on non-financial variables utilised economic indicators which could be regarded as quantifiable and are thus not true non-financial variables.

Against this background, this study contributed towards reinforcing the theoretical foundation by exploring the viability of pure or proper non-financial variables, albeit at an exploratory level. As indicated in Section 5.3.1 above, empirical research is required to make a meaningful contribution.

5.4   LIMITATIONS OF THE STUDY

There were several limitations in this study, which are listed here:

- The study was of an exploratory nature only. No attempt was made or intended to empirically prove the correlation between dependent and independent variables. The Cramer's V test was applied to test the strength of the relationship between the variables to determine whether a subjective evaluation of the Director's Report has an effect on financial results and *vice versa*.

- Most previous studies on the incorporation of non-financial variables in a financial distress prediction model focussed on economic indicators as non-financial variables. Economic indicators are quantifiable and can without difficulty be incorporated in a financial distress prediction model. In this study non-financial variables were based on a sample company's strategic capability, which is qualitative of nature, and due to subjectivity and therefore more challenging to quantify.

- The Director's Report was used as the sole source of non-financial information as it is the primary official communication medium to stakeholders. Reports in newspapers and other media have been ignored as the information presented there is regarded as the unique interpretation of a reporter, be it from a company presentation or personal interview with management.

- In some instances, very limited information was provided in the Director's Report, negatively affecting the evaluation and test result.

- A phased approach was followed in identifying the sample used in the study. The exhaustive selection process that was applied could have eliminated a number of companies eligible for the sample – for instance the length of the observation period and the elimination of companies in certain sectors.

- The non-financial variables tested in this study were of a qualitative nature. A Balanced Scorecard methodology was applied in an attempt to quantify the variable. Each question was evaluated on a zero to five scale – a score of zero being low or negative and five, high or positive. Although every effort was made to be objective in the evaluation, the score awarded could have been affected by subjectivity and personal interpretation of facts presented in the Director's Report.

- It was not the intention of this study to differentiate between failed and non-failed companies, only the extent of financial distress over the full observation period.

- No attempt was made to establish a correlation between the variables and the Gross Domestic Product ("GDP"). The GDP as an economic indicator was graphically presented to visually establish a co-movement with the test results over the length of the observation period. Any potential lag between the movement of GDP and scores was ignored for the purposes of this study.

5.5   RECOMMENDATIONS FOR FURTHER RESEARCH

The field of company financial distress and the prediction models based on financial and non-financial variables present significant scope for further research. Research on the effect of non-financial variables on a financial distress prediction model is still in its infancy. That is, considering the evolvement of research based on non-financial variables since the early nineties and compared to research based on financial variables that evolved in the mid sixties.

Studies of Keasey and Watson (1987), Lussier (1995), Shumway (2001), He (2002) and Zhang (2006) all acknowledged the need for the inclusion of non-financial variables in a failure prediction model. However, these models were predominantly based on macro-economic indicators, which in effect could be regarded as non-financial, but quantifiable variables.

The challenge is therefore to indentify applicable non-financial variables that can contribute to and be utilised in the development of a hybrid distress prediction model. The Director's Report can be regarded as a primary source of input information. This report covers an overview of the past financial year's performance and an interpretation of the external and internal environment in the company's future strategy. The director's ability to interpret the information translates to the company's strategic capability and ultimately financial performance.

Although the study did not provide the compelling result expected, the outcome nevertheless indicates that there is merit in combining non-financial variables with an existing company financial distress model. In view of this, sufficient impetus is provided for empirical research to translate a company's strategic capability into a single factor that can be utilised in the refining of a company distress prediction model.

5.6   CONCLUSION

Research on company financial distress or failure dates back to the mid sixties. The bulk of the research however focussed on financial variables only – data obtained from published financial results. It was the research completed by Argenti and later on by Keasey and Watson that investigated the possibility of including non-financial variables in a company distress prediction model.

These studies focussed mostly on economic factors, which cannot entirely be regarded as pure non-financial variables. This limitation gave the impetus for this exploratory study in identifying non-financial variables.

Finally, this was an exploratory study which in itself had various limitations. Each of these limitations can be harnessed through empirical research and by translating a company's strategic capability into a single factor, utilised in the refining of a company distress prediction model, possibly based on a neural network.

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APPENDIX A

PHASED SELECTION OF SAMPLE ENTITIES

	All Traded Securities	Post Phase One	Post Phase Two	Post Phase Three	Post Phase Four	Post Phase Five
Oil & Gas Producers	3	3	3	2	2	1
Chemicals	6	6	6	6	5	4
Forestry & Paper	4	4	4	4	2	1
Industrial Metals & Mining	9	9	0	0	0	0
Coal	4	3	0	0	0	0
Diamonds & Gemstones	7	5	0	0	0	0
General Mining	20	18	0	0	0	0
Gold Mining	14	11	0	0	0	0
Platinum & Precious Metals	10	10	0	0	0	0
Construction & Materials	21	20	20	20	11	10
General Industrials	9	9	9	9	7	5
Electronic & Electrical Equipment	10	9	9	8	5	4
Industrial Engineering	5	5	5	5	5	5
Industrial Transportation	7	7	7	7	7	4
Support Services	19	18	18	18	10	6
Automobiles & Parts	2	2	2	2	2	2
Beverages	4	4	4	3	2	1
Food Producers	13	13	13	13	10	8
Household Goods & Home Construction	1	1	1	1	1	1
Leisure Goods	2	2	2	2	2	1
Personal Goods	3	2	2	1	1	0
Tobacco	1	1	1	1	0	0
Healthcare Equipment & Sevices	4	3	3	3	2	2
Pharmaceuticals & Biotechnology	3	3	3	3	1	1
Food & Drug Retailers	5	5	5	5	3	3
General Retailers	19	16	16	16	12	10
Media	8	4	4	4	3	2
Travel & Leisure	10	10	10	10	8	8
Fixed Line Telecommunications	1	1	1	1	0	0
Mobile telecommunications	4	4	4	4	2	1
Banks	8	7	0	0	0	0
Non-life Insurance	3	3	0	0	0	0
Life Insurance	6	6	0	0	0	0
Industrial & Office Reits	1	1	0	0	0	0
Real Estate Holdings & Development	21	19	0	0	0	0
Diversified Reits	1	1	0	0	0	0
Retail Reits	4	4	0	0	0	0
Financial Services	23	20	0	0	0	0
Equity Investment Instruments	13	10	0	0	0	0
Software & Computer Services	15	15	15	14	11	8
Technology Hardware & Equipment	2	2	2	2	2	2
ALTx	79	73	71	66	7	3
DCM	6	4	4	4	2	1
VCM	6	5	5	4	1	1
TOTAL	**416**	**378**	**249**	**238**	**126**	**95**

APPENDIX B

FINAL SAMPLE ENTITIES

JSE Sector	Full Company Name	Short name	JSE Code	Date Founded	Date listed	Financial year-end
Oil & Gas Producers						
	Sasol Ltd	Sasol	SOL	1950	1979	June
Chemicals						
	AECI Ltd	AECI	AFE	1924	1966	December
	Delta EMD Ltd	Delta	DTA	1919	1983	December
	Omnia Holdings Ltd	Omnia	OMN	1953	1980	March
	Spanjaard Ltd	Spanjaard	SPA	1960	1987	February
Forestry & Paper						
	Sappi Ltd	Sappi	SAP	1936	1937	September
Construction & Materials						
	AG Industries Ltd	AGI	AGI	1980	1999	June
	Aveng Ltd	Aveng	AEG	1944	1999	June
	Basil Read Holdings Ltd	Basread	BSR	1984	1987	December
	Ceramic Industries Ltd	Ceramic	CRM	1987	1992	July
	Distribution and Warehousing Network Ltd	Dawn	DAW	1984	1987	June
	Group Five Ltd	Group 5	GRF	1969	1974	June
	Murray & Roberts Holdings Ltd	M&R-HLD	MUR	1902	1948	June
	Masonite (Africa) Ltd	Masonite	MAS	1942	1952	December
	Pretoria Portland Cement Company Ltd	PPC	PPC	1892	1910	September
	Wilson Bayly Holmes - Ovcon Ltd	WBHO	WBO	1975	1988	June
General Industrials						
	Astrapak Ltd	Astrapak	APK	1995	1997	February
	Barloworld Ltd	Barworld	BAW	1902	1941	September
	Nampak Ltd	Nampak	NPK	1968	1969	September
	Remgro Ltd	Remgro	REM	2000	2000	March
	Transpaco Ltd	Trnpaco	TPC	1951	1987	June
Electronic & Electrical Equipment						
	Allied Electronics Corporation Ltd	Altron	ATN	1965	1979	February
	Control Instruments Group Ltd	Control	CNL	1964	1987	December
	Digicore Holdings Ltd	Digicore	DGC	1985	1998	June
	Reunert Ltd	Reunert	RLO	1888	1948	September
Industrial Engineering						
	Bell Equipment Ltd	Bell	BEL	1968	1995	December
	Howden Africa Holdings Ltd	Howden	HWN	1996	1996	December
	Hudaco Industries Ltd	Hudaco	HDC	1891	1985	November
	Invicta Holdings Ltd	Invicta	IVT	1966	1987	March
	Kairos Industrial Holdings Ltd	Kairos	KIR	1975	1987	February
Industrial Transportation						
	Cargo Carriers Ltd	Cargo	CRG	1959	1987	February
	Grindrod Ltd	Grindrod	GND	1966	1986	December
	Imperial Holdings Ltd	Imperial	IPL	1951	1987	June
	Value Group Ltd	Value	VLE	1981	1998	February
Support Services						
	The Bidvest Group Ltd	Bidvest	BVT	1946	1954	June
	ELB Group Ltd	ELBGroup	ELR	1930	1951	June
	Iliad Africa Ltd	Iliad	ILA	1973	1998	December
	Metrofile Holdings Ltd	Metrofile	MFL	1983	1995	June
	MICROmega Holdings Ltd	Micromega	MMG	1998	1998	December
	Winhold Ltd	Winhold	WNH	1945	1946	September

JSE Sector	Full Company Name	Short name	JSE Code	Date Founded	Date listed	Financial year-end
Automobiles & Parts						
	Dorbyl Ltd	Dorbyl	DLV	1903	1948	March
	Metair Investments Ltd	Metair	MTA	1948	1949	December
Beverages						
	Distell Group Ltd	Distell	DST	1988	1988	June
Food Producers						
	AVI Ltd	A-V-I	AVI	1944	1944	June
	Crookes Brothers Ltd	Crookes	CKS	1913	1948	March
	Illovo Sugar Ltd	Illovo	ILV	1891	1992	March
	Intertrading Ltd	Intrading	ITR	1985	1998	February
	Oceana Group Ltd	Oceana	OCE	1918	1947	September
	Rainbow Chicken Ltd	Rainbow	RBW	1955	1989	March
	Sovereign Food Investments Ltd	Sovfood	SOV	1995	1995	February
	Tiger Brands Ltd	Tigbrands	TBS	1921	1944	September
Household Goods & Home Construction						
	Steinhoff International Holdings Ltd	Steinhoff	SHF	1964	1998	June
Leisure Goods						
	Nu-World Holdings Ltd	Nuworld	NWL	1947	1987	August
Healthcare Equipment & Sevices						
	Medi-Clinic Corporation Ltd	Medclin	MDC	1983	1986	March
	Netcare Ltd	Netcare	NTC	1996	1996	September
Pharmaceuticals & Biotechnology						
	Aspen Pharmacare Holdings Ltd	Aspen	APN	1986	1987	June
Food & Drug Retailers						
	Clicks Group Ltd	Clicks	CLS	1996	1996	August
	Pick n Pay Stores Ltd	PicknPay	PIK	1967	1968	February
	Shoprite Holdings Ltd	Shoprit	SHP	1936	1936	June
General Retailers						
	ADvTECH Ltd	Advtech	ADH	1975	1997	December
	Cashbuild Ltd	Cashbil	CSB	1978	1986	June
	Combined Motor Holdings Ltd	CMH	CMH	1977	1987	February
	Italtile Ltd	Itltile	ITE	1969	1988	June
	Massmart Holdings Ltd	Massmart	MSM	1990	2000	June
	Mr Price Group Ltd	Mrprice	MPC	1885	1952	March
	Nictus Ltd	Nictus	NCS	1964	1969	March
	Rex Trueform Clothing Company Ltd	Rex True	RTN	1937	1945	June
	Truworths International Ltd	Truwths	TRU	1944	1998	June
	Woolworths Holdings Ltd	Woolies	WHL	1929	1997	June
Media						
	Caxton and CTP Publishers and Printers Ltd	Caxton	CAT	1947	1948	June
	Kagiso Media Ltd	Kgmedia	KGM	1996	1997	June

JSE Sector	Full Company Name	Short name	JSE Code	Date Founded	Date listed	Financial year-end
Travel & Leisure						
	City Lodge Hotels Ltd	CityLDG	CLH	1985	1992	June
	Comair Ltd	Comair	COM	1946	1998	June
	Cullinan Holdings Ltd	Cullinan	CUL	1902	1947	September
	The Don Group Ltd	Don	DON	1946	1947	June
	Famous Brands Ltd	Fambrands	FBR	1969	1994	February
	Gold Reef Resorts Ltd	Goldreef	GDF	1994	1994	December
	Spur Corporation Ltd	Spurcorp	SUR	1967	1999	June
	Sun International Ltd	Sunint	SUI	1984	1984	June
Mobile telecommunications						
	Allied Technologies Ltd	Altech	ALT	1946	1967	February
Software & Computer Services						
	Compu-Clearing Outsourcing Ltd	Compclear	CCL	1993	1998	June
	ConvergeNet Holdings Ltd	Converge	CVN	1998	1998	August
	Datacentrix Holdings Ltd	Dcentrix	DCT	1994	1998	February
	Faritec Holdings Ltd	Faritec	FRT	1995	1998	June
	Gijima Ast Group Ltd	Gijimaast	GIJ	1987	1999	June
	SecureData Holdings Ltd	Secdata	SDH	1998	1999	July
	Spescom Ltd	Spescom	SPS	1977	1987	September
	UCS Group Ltd	UCS	UCS	1978	1998	September
Technology Hardware & Equipment						
	Mustek Ltd	Mustek	MST	1987	1997	June
	Pinnacle Technology Holdings Ltd	Pinnacle	PNC	1986	1987	June
ALTx						
	MoneyWeb Holdings Ltd	Moneyweb	MNY	1997	1999	March
	OneLogix Group Ltd	Onelogix	OLG	1998	2000	May
	SilverBridge Holdings Ltd	Silverb	SVB	1995	1999	February
DCM						
	Stella Vista Technologies Ltd	Stella	SLL	1994	1999	August
VCM						
	Labat Africa Ltd	Labat	LAB	1995	1999	February

APPENDIX C

FINANCIAL AND NON-FINANCIAL DATA CHECKLIST

	Sasol		AECI		Delta		Omnia		Spanjaard		Sappi	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	√	√	√	√	√					√	√
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	Int	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	Int	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010							√	√	√	√		

	AGI		Aveng		Basread		Ceramic		Dawn		Group 5	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	√			√	√	√	√	√	√		
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010			√	√							√	√

	M&R HLD		Masonite		PPC		WBHO		Astrapak		Barworld	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000			√	√	√	√					√	X
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010	√	√					√	√	√	√		

	Nampak		Remgro		Trnpaco		Altron		Control		Digicore	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	√			√	√			√	√	√	√
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010			√	√			√	√				

Key: "AFS" – Annual Financial Statements

　　"CR"　- Chairman's/Director's Report

	Reunert		Bell		Howden		Hudaco		Invicta		Kairos	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	n/a	√	Int	√	√	√	√				
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010									√	√	√	√

	Cargo		Grindrod		Imperial		Value		Bidvest		ELBGroup	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000			√	√					√	√	√	√
2001	√	√	√	√	√	√	√	√	√	√	√	Int
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010	√	√			√	√	√	√				

	Iliad		Metrofile		Micromega		Winhold		Dorbyl		Metair	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	Int	√	√	√	√	√	Int			√	Int
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	n/a	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	Int
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010									√	√		

	Stella		Distell		AVI		Crookes		Illovo			
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR		
2000	√	Int										
2001	√	√	√	√	√	√	√	√	√	√		
2002	√	√	√	√	√	√	√	√	√	√		
2003	√	√	√	√	√	√	√	√	√	√		
2004	√	√	√	√	√	√	√	√	√	√		
2005	√	√	√	√	√	√	√	√	√	√		
2006	√	Int	√	√	√	√	√	√	√	√		
2007	√	√	√	√	√	√	√	√	√	√		
2008	√	√	√	√	√	√	√	√	√	√		
2009	√	√	√	√	√	√	√	√	√	√		
2010			√	√	√	√	√	√	√	√		

	Oceana		Rainbow		Sovfood		Tigbrands		Steinhoff		Nuworld	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	n/a					√	√	√	√	√	√
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010			√	√	√	√						

	Medcln		Netcare		Aspen		Clicks		PicknPay		Shoprit	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000			√	√	√	n/a	√	√				
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	n/a	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010	√	√							√	√	√	√

	Advtech		Cashbil		CMH		Labat		Itltile		Massmart	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	√	√	√			√	√			√	√
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	Int	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	Int
2009	√	√	√	√	√	√	√	√	√	√	√	Int
2010					√	√			√	√		

	Mrprice		Nictus		Rex True		Truwrths		Woolies		Caxton	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000											√	Int
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010	√	√	√	√	√	√	√	√	√	√		

	Kgmedia		CityLDG		Comair		Cullinan		Don		Fambrands	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	√					√	√	√	Int		
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	Int	√	√
2010			√	√	√	√					√	√

	Goldreef		Spurcorp		Sunint		Altech		Compclear		Converge	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	√	√	√	√	√			√	√	√	√
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	Int	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010							√	√				

	Dcentrix		Silverb		Faritec		Gijimaast		Onelogix		Secdata	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000					√	√	√	√			√	n/a
2001	√	√	√	√	√	√	√	√	√	√	√	√
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	Int	√	√	√	√	√	√	√	√
2006	√	√	√	Int	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010	√	√	√	√					√	√		

	Spescom		UCS		Mustek		Pinnacle		Intrading		Moneyweb	
	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR	AFS	CR
2000	√	Int	√	√	√	Int	√	√				
2001	√	√	√	√	√	√	√	√	√	√	√	Int
2002	√	√	√	√	√	√	√	√	√	√	√	√
2003	√	√	√	√	√	√	√	√	√	√	√	√
2004	√	√	√	√	√	√	√	√	√	√	√	√
2005	√	√	√	√	√	√	√	√	√	√	√	√
2006	√	√	√	√	√	√	√	√	√	√	√	√
2007	√	√	√	√	√	√	√	√	√	√	√	√
2008	√	√	√	√	√	√	√	√	√	√	√	√
2009	√	√	√	√	√	√	√	√	√	√	√	√
2010									√	√	√	√

APPENDIX D

SAMPLE QUESTIONNAIRE

Variable	Questions	Scale					
		Low		Medium		High	
		0	1	2	3	4	5
a = Vulnerability	1. Is the company exposed in politically and economically unstable countries?						
	2. Does the company have any assets at risk through investments?						
b = Flexibility	1. Is plant and equipment or services adaptable to changes in consumer demand?						
	2. Is the key management structured in line with company core functions?						
c = Effectiviness	1. Are cost drivers clearly identifiable?						
	2. Does the company differentiate itself through a unique product or service offering?						
d = Resources	1. Was the company succesful during the year in raising additional equity and/or debt funding?						
	2. Does the company have easy access to raw material and other supply resources?						
	3. Does the company rely on complex technology?						
	4. Was the company exposed to reputaional risk in the past year?						
	5. Is the company reliant on highly specialised skills?						
	6. Is the company transparent in its external communications?						
e = Capabilities	1. Does the company reflect the ability to acquire new capabilities?						
	2. Is the company a market leader?						

Sub-total	0	0	0	0	0	0

TOTAL	0

APPENDIX E

REAL GROSS DOMESTIC PRODUCT
(YEAR ON YEAR CHANGE)

Year	Percentage change (%)	Growth ("G") or Downturn ("D")
1994	3.2	D
1995	3.1	D
1996	4.3	G
1997	2.6	D
1998	0.5	D
1999	2.4	D
2000	4.2	G
2001	2.7	D
2002	3.7	G
2003	2.9	D
2004	4.6	G
2005	5.3	G
2006	5.6	G
2007	5.5	G
2008	3.7	G
2009	-1.8	D
2010e	2.8	D

Source: Industrial Development Corporation ("IDC") – Research and Information Unit

APPENDIX F

QUESTIONNAIRE SCORE RESULTS – SAS FORMAT

ADVTECH

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ADH	Dec-00	4	4	4	2	4	2	5	5	0	3	3	2	1	5	0.2023
ADH	Dec-01	4	4	4	3	4	2	2	5	0	2	3	2	1	5	-0.7448
ADH	Dec-02	3	2	4	2	3	2	2	5	0	2	3	2	2	5	-0.6970
ADH	Dec-03	4	3	4	3	3	2	2	4	0	2	3	2	3	5	0.5721
ADH	Dec-04	4	4	4	4	3	2	3	4	0	2	3	2	3	5	0.5274
ADH	Dec-05	4	4	4	4	3	2	4	4	0	2	3	2	4	5	1.1393
ADH	Dec-06	4	4	4	4	3	2	4	4	0	2	3	0	4	5	1.7751
ADH	Dec-07	4	4	4	4	3	2	4	4	0	2	3	0	4	5	2.1027
ADH	Dec-08	4	4	4	4	3	2	4	4	0	3	3	0	4	5	2.3733
ADH	Dec-09	4	4	4	1	3	2	4	4	0	3	3	0	4	5	2.0385

AECI

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
AFE	Dec-00	3	2	4	2	1	2	1	2	3	2	3	0	2	3	0.1642
AFE	Dec-01	3	2	4	2	1	2	1	2	3	2	3	0	3	3	-0.5894
AFE	Dec-02	3	2	4	3	2	2	1	2	3	2	3	1	3	3	-0.1779
AFE	Dec-03	3	2	4	3	2	2	2	2	3	2	3	0	4	3	-0.1585
AFE	Dec-04	2	3	4	3	2	2	2	1	3	2	3	1	4	3	0.2414
AFE	Dec-05	1	2	4	3	3	2	3	1	3	2	3	1	5	3	0.4125
AFE	Dec-06	1	2	4	4	3	2	5	1	3	3	3	2	5	3	1.5822
AFE	Dec-07	1	2	4	4	3	2	5	1	3	3	3	2	5	2	0.2223
AFE	Dec-08	1	2	4	4	3	2	5	1	3	3	3	2	5	2	-0.3397
AFE	Dec-09	1	2	4	4	3	2	2	1	3	3	3	2	4	2	-0.0707

AGI

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
AGI	Jun-00	3	2	2	2	2	2	4	4	1	2	1	1	4	1	2.2521
AGI	Jun-01	3	2	3	2	2	2	1	4	1	2	1	2	4	1	2.0288
AGI	Jun-02	3	2	3	2	1	3	1	4	1	2	2	2	3	1	1.8345
AGI	Jun-03	2	2	3	2	1	3	1	4	1	2	2	2	1	1	-0.4825
AGI	Jun-04	1	1	2	2	1	3	2	4	2	2	2	0	1	1	0.5068
AGI	Jun-05	1	1	2	2	1	3	2	4	2	2	2	0	1	1	0.0163
AGI	Jun-06	0	1	1	2	1	3	2	3	2	2	2	2	0	1	0.9820
AGI	Jun-07	0	0	1	2	0	3	0	2	2	2	2	1	0	1	0.0912
AGI	Jun-08	0	0	1	1	0	2	0	2	2	2	2	1	0	1	-1.0196
AGI	Jun-09	0	0	1	1	0	1	0	1	2	0	2	1	0	1	-4.3695

ALTECH

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ALT	Feb-01	4	4	4	4	5	3	5	4	5	4	4	4	5	4	1.0698
ALT	Feb-02	4	4	4	4	5	3	5	4	5	4	4	4	5	4	1.0113
ALT	Feb-03	3	4	4	4	5	3	5	4	5	4	4	4	5	4	3.6454
ALT	Feb-04	3	4	4	4	4	3	5	4	5	4	4	3	5	4	1.3064
ALT	Feb-05	3	4	4	4	4	3	5	4	5	4	4	2	5	4	1.0773
ALT	Feb-06	3	4	4	4	4	3	5	4	5	4	4	0	5	4	1.2738
ALT	Feb-07	3	4	4	4	4	3	5	4	5	4	4	0	5	4	1.3702
ALT	Feb-08	2	4	4	4	4	3	5	4	5	4	4	0	5	4	1.3666
ALT	Feb-09	2	4	4	4	4	3	5	4	5	4	4	0	5	4	1.2683
ALT	Feb-10	2	4	4	4	4	3	5	4	5	4	4	0	5	4	1.4307

ALTRON

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ATN	Feb-01	3	4	4	4	4	4	5	5	5	5	5	4	5	5	0.8550
ATN	Feb-02	3	4	4	4	4	4	5	5	5	5	5	4	5	5	0.5850
ATN	Feb-03	2	4	4	4	4	4	5	5	5	5	5	4	5	5	1.2780
ATN	Feb-04	2	4	4	4	4	4	5	5	5	5	5	4	5	5	0.7619
ATN	Feb-05	2	4	4	4	4	4	5	5	5	5	5	4	5	5	0.9540
ATN	Feb-06	2	4	4	4	4	4	5	5	5	5	5	4	5	5	0.9226
ATN	Feb-07	2	4	4	4	4	4	5	5	5	5	5	4	5	5	1.3708
ATN	Feb-08	1	4	4	4	4	4	5	5	5	5	5	4	5	5	1.2641
ATN	Feb-09	1	4	4	4	4	4	5	5	5	5	5	4	5	5	0.7767
ATN	Feb-10	1	4	4	4	4	4	5	5	5	5	5	4	5	5	0.3816

ASPEN

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
APN	Dec-00															0.1530 n/a
APN	Dec-01	3	2	2	4	2	2	2	2	4	2	4	0	3	2	1.8137
APN	Dec-02	3	2	2	4	2	2	2	2	4	2	4	0	3	2	3.8199
APN	Dec-03	3	2	2	4	2	2	2	2	4	2	4	0	3	3	2.4416
APN	Dec-04	3	2	2	4	2	2	2	2	4	2	4	0	3	3	3.2382
APN	Dec-05	3	2	2	4	2	2	2	2	4	2	4	0	3	3	2.9729
APN	Dec-06	3	2	2	4	2	2	2	2	4	2	4	0	3	3	2.5515
APN	Dec-07	3	2	2	4	2	3	2	2	4	2	4	0	3	4	1.0682
APN	Dec-08	3	2	2	4	2	3	2	2	4	2	4	2	3	4	0.4524
APN	Dec-09	3	3	3	4	2	3	4	3	4	3	4	3	4	4	1.3370

ASTRAPAK

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
APK	Feb-01	3	3	4	3	4	1	2	3	1	2	1	2	2	1	0.0513
APK	Feb-02	3	3	4	3	4	1	2	3	1	2	1	2	4	1	0.5769
APK	Feb-03	2	3	4	3	4	1	2	3	1	2	1	3	4	2	0.1353
APK	Feb-04	2	3	4	3	4	1	2	3	1	2	1	3	4	2	0.6512
APK	Feb-05	2	3	4	3	4	1	4	3	1	2	1	4	5	3	0.8731
APK	Feb-06	2	4	4	4	4	1	4	3	1	3	1	5	5	3	0.9547
APK	Feb-07	2	4	4	4	4	1	5	3	1	3	1	5	5	3	0.6293
APK	Feb-08	2	2	4	4	4	1	4	2	1	2	1	5	5	3	0.1337
APK	Feb-09	2	2	4	4	4	1	4	2	1	2	1	5	5	3	0.1905
APK	Feb-10	2	2	4	4	4	1	4	2	1	2	1	5	5	3	0.3886

AVENG

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
AEG	Jan-01	3	3	3	4	3	2	3	4	3	3	3	1	4	4	-0.1510
AEG	Jan-02	3	3	3	4	3	2	3	4	3	3	3	1	4	4	0.0039
AEG	Jan-03	3	3	3	4	3	2	3	4	3	3	3	1	4	4	-0.1086
AEG	Jan-04	3	3	3	4	3	2	3	4	3	3	3	1	4	4	-1.3016
AEG	Jan-05	3	3	3	4	3	3	3	4	3	3	3	1	4	4	-0.8197
AEG	Jan-06	2	3	3	4	3	3	3	4	3	3	3	1	4	4	-0.1039
AEG	Jan-07	2	3	3	4	3	3	3	4	3	3	3	1	4	4	5.2680
AEG	Jan-08	2	3	3	4	4	3	4	4	3	3	3	5	4	4	0.5287
AEG	Jan-09	2	3	3	4	4	3	4	4	3	3	3	5	4	4	0.3641
AEG	Jan-10	2	3	3	4	4	3	4	4	3	2	3	5	4	4	0.3708

AVI

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
AVI	Jan-01	2	2	2	2	0	3	2	3	3	3	3	0	2	4	0.8173
AVI	Jan-02	2	2	2	2	0	3	2	3	3	3	3	0	2	4	0.9350
AVI	Jan-03	2	2	2	2	0	2	2	3	3	3	3	0	2	4	1.1428
AVI	Jan-04	2	2	2	2	0	2	2	3	3	3	3	0	2	4	1.1259
AVI	Jan-05	2	2	2	2	0	2	2	3	3	3	3	0	2	4	2.2354
AVI	Jan-06	3	2	2	2	0	2	4	3	3	3	3	0	4	4	0.3716
AVI	Jan-07	3	2	2	2	0	2	4	3	3	3	3	1	4	4	1.0945
AVI	Jan-08	3	3	2	2	2	2	4	3	3	3	3	1	4	4	0.6982
AVI	Jan-09	3	3	3	3	2	2	4	4	3	3	3	2	4	4	0.7616
AVI	Jan-10	3	4	3	3	2	2	4	4	3	3	3	3	4	4	1.1403

BARLOWORLD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
BAW	Sep-00															0.8838 n/a
BAW	Sep-01	2	3	4	4	4	3	4	3	2	3	3	3	4	4	0.5227
BAW	Sep-02	2	3	4	4	4	3	4	3	2	3	3	3	4	4	0.8757
BAW	Sep-03	2	3	4	4	4	3	4	3	2	3	3	3	4	4	-0.8779
BAW	Sep-04	2	3	4	4	4	3	4	3	3	4	4	4	4	4	0.3727
BAW	Sep-05	2	3	4	4	4	3	4	3	3	4	4	4	4	4	0.3115
BAW	Sep-06	4	3	4	4	4	3	4	4	3	4	4	4	4	4	0.3491
BAW	Sep-07	4	3	4	4	4	3	4	4	3	4	4	4	4	4	0.3767
BAW	Sep-08	2	3	4	4	4	3	4	4	3	4	4	5	5	4	-0.1959
BAW	Sep-09	2	3	4	4	4	3	4	4	3	4	4	5	5	4	-0.3834

BASREAD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
BSR	Dec-00	2	1	2	1	0	0	1	3	1	0	0	0	0	2	-2.0898
BSR	Dec-01	2	1	2	1	0	0	1	3	1	0	0	0	0	2	-3.4384
BSR	Dec-02	2	2	2	1	1	1	1	3	1	0	0	1	2	2	-0.1110
BSR	Dec-03	2	1	2	1	1	1	1	3	1	0	0	0	1	2	0.5118
BSR	Dec-04	1	0	1	1	1	1	1	3	1	0	0	0	1	2	-3.5547
BSR	Dec-05	1	0	1	1	1	1	1	3	1	0	0	0	1	2	-0.1250
BSR	Dec-06	1	0	1	1	1	1	1	3	1	0	0	0	1	2	0.1749
BSR	Dec-07	2	1	2	1	1	1	1	3	1	0	0	0	3	2	0.3376
BSR	Dec-08	3	3	2	2	2	1	2	3	1	1	2	0	3	2	0.2300
BSR	Dec-09	3	3	2	2	2	1	2	3	1	1	2	0	3	2	0.0664

BELL

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
BEL	Dec-00	3	3	2	3	3	3	3	4	3	3	3	4	3	3	1.3473
BEL	Dec-01	3	3	2	3	3	3	3	4	3	3	3	4	4	4	1.8596
BEL	Dec-02	2	3	2	3	3	4	2	4	3	3	3	4	4	4	0.4610
BEL	Dec-03	2	3	4	3	3	4	2	4	3	3	3	4	4	4	0.1136
BEL	Dec-04	2	2	4	3	3	4	2	4	3	3	3	4	4	4	-0.2564
BEL	Dec-05	2	2	4	3	3	4	2	4	3	3	3	4	4	4	-0.3605
BEL	Dec-06	3	4	4	4	3	4	4	4	3	3	3	4	4	4	1.4934
BEL	Dec-07	3	4	4	4	4	4	4	4	3	3	3	4	4	4	1.5796
BEL	Dec-08	2	3	3	4	4	4	3	4	3	3	3	4	4	4	1.2519
BEL	Dec-09	1	2	2	4	4	4	4	4	3	3	3	4	1	4	-1.3259

BIDVEST

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
BVT	Jun-00	3	4	4	4	4	2	4	4	2	4	2	3	4	4	0.8227
BVT	Jun-01	3	4	4	4	4	3	4	4	3	4	2	5	4	4	0.9247
BVT	Jun-02	3	4	4	4	4	3	5	4	3	4	2	5	5	5	0.9646
BVT	Jun-03	3	4	4	4	4	3	5	4	3	4	2	5	5	5	0.1031
BVT	Jun-04	3	4	4	4	3	3	4	4	3	4	2	2	5	5	0.2985
BVT	Jun-05	3	4	4	4	3	3	4	4	3	4	2	1	5	5	0.8622
BVT	Jun-06	3	4	4	4	3	3	4	4	3	4	2	1	5	5	0.3988
BVT	Jun-07	3	4	4	4	3	3	4	4	3	4	2	1	5	5	0.3242
BVT	Jun-08	2	4	4	4	3	3	4	4	3	4	2	1	5	5	0.1994
BVT	Jun-09	2	4	4	4	3	3	4	4	3	4	2	1	5	5	0.1989

CARGO

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CRG	Feb-01	0	1	2	1	1	3	1	1	1	1	1	0	1	2	-0.7269
CRG	Feb-02	0	1	2	1	1	3	1	1	1	1	1	0	1	2	-0.0467
CRG	Feb-03	0	1	2	1	1	3	1	1	1	1	1	0	1	2	-0.4361
CRG	Feb-04	0	1	2	1	1	3	1	1	1	1	1	0	1	2	0.1118
CRG	Feb-05	1	1	2	1	1	3	1	1	1	1	1	0	1	2	0.4107
CRG	Feb-06	1	1	2	1	1	3	1	1	1	1	1	0	1	2	0.4339
CRG	Feb-07	1	1	2	1	1	2	1	1	1	1	1	1	1	2	0.0503
CRG	Feb-08	1	1	2	1	1	2	1	1	1	1	1	0	1	2	-0.2498
CRG	Feb-09	1	1	2	1	1	2	1	1	1	1	1	0	1	2	-0.3162
CRG	Feb-10	1	1	2	1	1	2	1	1	1	1	1	0	1	2	-0.1028

CASHBIL

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CSB	Jun-00	1	1	2	1	0	1	0	1	0	1	0	0	1	1	-0.6328
CSB	Jun-01	1	1	2	1	0	1	0	1	0	1	0	0	1	1	-0.0427
CSB	Jun-02	1	2	2	1	1	1	0	2	0	1	0	1	1	1	0.1274
CSB	Jun-03	2	3	2	2	4	3	0	3	0	1	0	3	4	3	0.6732
CSB	Jun-04	2	3	2	2	4	3	0	3	0	1	0	2	4	3	0.7375
CSB	Jun-05	2	3	2	2	4	3	0	3	0	1	0	2	4	3	0.8473
CSB	Jun-06	2	3	2	2	4	3	0	3	0	1	0	2	4	3	0.7971
CSB	Jun-07	2	3	2	3	4	3	0	3	0	1	0	2	4	4	1.1621
CSB	Jun-08	2	3	2	3	4	3	0	3	0	1	0	4	4	4	0.9041
CSB	Jun-09	3	4	3	3	4	3	0	3	0	1	0	4	4	4	0.9181

CAXTON

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CAT	Jun-00	3	1	3	1	1	2	2	3	2	2	1	2	3	5	1.2788
CAT	Jun-01	3	1	1	1	1	2	2	3	2	2	1	2	3	5	1.5977
CAT	Jun-02	3	1	1	1	1	2	2	3	2	2	1	2	3	5	1.2322
CAT	Jun-03	3	2	2	1	2	2	4	3	2	2	1	2	4	5	1.0569
CAT	Jun-04	3	2	2	2	3	2	4	3	2	2	1	3	4	5	1.2281
CAT	Jun-05	3	3	4	3	3	2	4	3	3	3	1	3	4	5	1.6664
CAT	Jun-06	3	4	4	3	3	3	4	3	3	3	1	4	4	5	1.5093
CAT	Jun-07	3	4	4	4	4	3	4	3	3	3	1	4	4	5	1.4693
CAT	Jun-08	3	4	4	4	4	3	4	3	3	3	1	4	4	5	1.4248
CAT	Jun-09	3	4	4	4	4	3	4	3	3	3	1	4	4	5	2.0448

CERAMIC

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CRM	Jul-00	2	2	3	2	2	1	1	2	1	3	2	2	3	1	2.3896
CRM	Jul-01	2	2	3	3	2	1	1	3	1	3	2	2	4	2	2.6203
CRM	Jul-02	2	2	3	3	2	1	1	3	1	3	2	2	4	2	1.8534
CRM	Jul-03	2	2	3	3	2	1	1	3	1	3	2	2	4	2	1.5807
CRM	Jul-04	2	2	3	3	3	2	2	3	1	3	2	2	4	2	1.7213
CRM	Jul-05	3	3	3	3	3	2	3	3	1	3	2	2	4	2	2.3219
CRM	Jul-06	2	3	3	3	3	2	3	3	1	3	2	2	4	2	1.9017
CRM	Jul-07	2	2	3	3	3	2	3	3	1	3	2	1	4	2	1.8395
CRM	Jul-08	2	1	3	3	2	2	3	3	1	3	2	1	3	2	1.4349
CRM	Jul-09	2	0	3	3	2	2	2	3	1	3	2	1	2	2	0.9617

CITYLDG

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CLH	Jun-01	3	3	2	3	2	3	3	2	1	2	1	2	4	4	0.6869
CLH	Jun-02	3	3	2	3	3	3	3	2	1	2	1	2	4	4	1.3370
CLH	Jun-03	3	3	2	3	3	3	3	2	1	2	1	2	4	4	1.6586
CLH	Jun-04	3	3	2	3	3	3	3	2	1	1	1	2	4	4	2.1326
CLH	Jun-05	3	4	2	3	3	3	4	2	1	1	1	2	4	5	2.3632
CLH	Jun-06	3	4	2	3	3	3	4	2	1	1	1	2	4	5	2.6572
CLH	Jun-07	3	4	2	3	3	3	4	2	1	1	1	2	4	5	3.0484
CLH	Jun-08	3	4	2	3	3	3	4	2	1	1	1	2	4	5	3.1949
CLH	Jun-09	3	4	2	3	3	3	4	2	3	3	1	2	5	5	1.7922
CLH	Jun-10	3	4	2	3	3	3	4	2	3	3	1	2	5	5	1.6868

CLICKS

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CLS	Aug-00	4	4	3	3	4	3	4	4	1	2	1	4	4	4	0.8989
CLS	Aug-01	4	4	3	3	4	3	4	4	1	2	1	4	4	4	1.1525
CLS	Aug-02	3	4	3	4	4	3	4	4	1	2	1	4	4	4	1.0245
CLS	Aug-03	3	3	3	4	4	3	4	4	1	2	1	4	4	4	0.1118
CLS	Aug-04	2	3	2	4	4	3	3	4	1	2	1	4	4	4	0.4708
CLS	Aug-05	1	2	3	4	3	3	3	4	1	2	1	4	4	4	0.4956
CLS	Aug-06	1	2	3	4	3	3	3	4	1	2	1	4	4	4	0.6416
CLS	Aug-07	2	2	3	4	3	3	3	4	1	2	1	4	4	4	0.6231
CLS	Aug-08	2	2	3	4	3	3	3	4	1	2	1	4	4	4	0.7353
CLS	Aug-09	2	2	3	4	3	3	3	4	1	2	1	4	4	4	0.7128

CMH

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CMH	Feb-01	3	3	4	3	2	2	1	2	1	3	1	1	5	2	0.9410
CMH	Feb-02	3	3	4	3	2	2	1	2	1	3	1	1	5	2	0.7348
CMH	Feb-03	3	3	4	3	2	2	1	2	1	3	1	2	5	2	0.6686
CMH	Feb-04	3	3	4	3	2	2	1	2	1	3	1	2	5	2	0.6121
CMH	Feb-05	3	3	4	3	2	2	1	2	1	3	1	2	5	2	0.8826
CMH	Feb-06	3	3	4	3	2	2	1	2	1	3	1	2	5	2	0.8318
CMH	Feb-07	2	3	4	3	2	2	1	2	1	3	1	1	4	2	0.2831
CMH	Feb-08	2	3	4	3	2	2	1	2	1	3	1	1	4	2	0.0104
CMH	Feb-09	1	2	3	3	2	2	1	2	1	3	1	1	4	2	-0.5555
CMH	Feb-10	1	2	3	3	2	2	1	2	1	3	1	1	4	2	-0.0218

COMAIR

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
COM	Jun-01	2	3	4	3	3	4	4	4	5	3	5	4	5	4	0.9145
COM	Jun-02	2	3	4	3	3	4	4	4	5	3	5	4	5	4	-0.5240
COM	Jun-03	2	3	4	3	3	4	4	4	5	3	5	4	5	4	-1.2268
COM	Jun-04	2	3	4	3	3	4	4	4	5	3	5	4	5	4	-2.9099
COM	Jun-05	1	3	4	3	3	4	4	4	5	3	5	4	5	4	0.7106
COM	Jun-06	1	3	4	3	3	4	4	4	5	3	5	4	5	4	0.1259
COM	Jun-07	1	3	4	3	3	4	4	4	5	3	5	4	5	4	0.3715
COM	Jun-08	1	3	4	3	3	4	4	4	5	3	5	4	5	4	-0.1164
COM	Jun-09	1	3	4	3	3	4	4	4	5	3	5	4	5	4	-0.2565
COM	Jun-10	1	3	4	3	3	4	4	4	5	3	5	4	5	4	-0.2078

CULLINAN

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CUL	Sep-00	3	4	4	3	2	3	3	3	3	3	2	4	4	2	-1.0436
CUL	Sep-01	3	4	4	3	2	3	3	3	2	3	2	4	4	2	-1.9135
CUL	Sep-02	3	4	4	3	2	3	3	3	2	3	2	3	4	2	-0.2703
CUL	Sep-03	2	4	4	3	2	3	3	3	2	3	2	3	4	2	0.2140
CUL	Sep-04	2	4	4	3	2	3	3	3	2	3	2	3	3	2	0.4857
CUL	Sep-05	2	4	4	3	2	3	2	3	2	3	2	2	3	2	0.0662
CUL	Sep-06	2	4	4	3	2	3	2	3	2	3	2	2	4	2	-0.3222
CUL	Sep-07	2	4	4	3	2	3	2	3	2	3	2	2	4	2	-0.3916
CUL	Sep-08	1	4	4	3	2	3	2	3	2	3	2	2	3	2	-0.9359
CUL	Sep-09	1	4	4	3	2	3	2	3	2	3	2	2	3	2	-0.4070

COMPCLEAR

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CCL	Jun-00	3	4	4	4	3	5	4	3	5	4	5	2	4	4	2.4138
CCL	Jun-01	3	4	4	4	3	5	4	3	5	4	5	1	3	4	2.5347
CCL	Jun-02	2	2	4	3	3	5	3	3	5	3	5	0	2	3	2.1332
CCL	Jun-03	3	3	4	3	3	5	4	3	5	3	5	3	2	3	1.7258
CCL	Jun-04	3	4	4	4	3	5	4	3	5	4	5	3	2	3	1.7770
CCL	Jun-05	3	4	4	4	3	5	4	3	5	4	5	2	2	3	1.7074
CCL	Jun-06	3	4	4	4	3	5	4	3	5	4	5	2	2	3	2.3949
CCL	Jun-07	3	4	4	4	3	5	2	3	5	4	5	2	2	3	2.2082
CCL	Jun-08	3	4	4	4	3	5	2	3	5	4	5	2	2	3	2.5702
CCL	Jun-09	3	4	4	4	3	5	2	3	5	4	5	2	2	3	1.2523

DAWN

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
DAW	Jun-00	3	2	2	2	1	2	2	2	1	2	1	2	3	2	0.8606
DAW	Jun-01	2	2	2	2	1	2	2	2	1	2	1	1	3	2	0.5763
DAW	Jun-02	2	2	2	2	1	2	2	2	1	2	1	1	3	2	0.2015
DAW	Jun-03	3	3	2	2	2	3	3	3	1	2	1	2	3	2	0.7926
DAW	Jun-04	3	3	2	2	2	3	3	3	1	2	1	2	4	2	0.7950
DAW	Jun-05	3	3	2	2	2	3	4	3	1	2	1	2	4	2	1.4895
DAW	Jun-06	3	3	2	2	2	3	4	3	1	2	1	2	5	3	1.0732
DAW	Jun-07	3	3	2	2	2	3	4	3	1	2	1	4	5	2	0.6895
DAW	Jun-08	3	3	3	3	3	4	4	3	1	3	1	4	5	4	0.5544
DAW	Jun-09	2	2	3	3	3	4	4	3	1	3	1	4	5	4	-0.2912

CONTROL

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CNL	Dec-00	3	1	3	1	1	2	1	2	5	2	5	0	4	2	0.5840
CNL	Dec-01	2	1	3	1	1	2	1	2	5	2	5	0	3	2	-0.7460
CNL	Dec-02	3	2	3	1	1	2	2	2	5	2	5	0	3	2	0.1692
CNL	Dec-03	3	2	3	1	1	2	2	2	5	2	5	0	3	2	1.0468
CNL	Dec-04	3	2	3	1	1	2	2	2	5	2	5	0	3	2	0.8721
CNL	Dec-05	4	2	3	1	1	2	2	2	5	2	5	0	3	2	0.7325
CNL	Dec-06	4	2	4	2	1	3	2	2	5	2	5	0	5	2	-0.4486
CNL	Dec-07	4	2	4	2	1	3	2	2	5	2	5	0	5	2	10.3666
CNL	Dec-08	2	1	4	2	1	3	2	2	5	1	5	0	3	2	-1.7184
CNL	Dec-09	2	1	4	2	1	3	2	2	5	1	5	0	3	2	-1.1437

DCENTRIX

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
DCT	Feb-01	2	1	1	1	0	1	1	1	5	1	5	0	1	1	-0.0469
DCT	Feb-02	2	1	1	1	1	2	1	2	5	1	5	1	1	1	0.9025
DCT	Feb-03	2	2	1	1	1	2	2	2	5	1	5	1	5	1	1.0782
DCT	Feb-04	2	4	3	2	2	2	1	2	5	1	5	1	3	1	1.0598
DCT	Feb-05	2	4	3	2	2	2	1	2	5	1	5	1	3	1	1.3252
DCT	Feb-06	2	3	3	2	2	2	1	2	5	1	5	2	3	1	0.7224
DCT	Feb-07	2	3	3	2	2	2	1	2	5	1	5	2	3	1	1.4683
DCT	Feb-08	2	3	3	2	2	2	1	2	5	1	5	2	3	1	1.6112
DCT	Feb-09	3	4	3	2	2	2	1	2	5	2	5	3	3	1	1.9141
DCT	Feb-10	1	3	2	3	3	2	1	2	5	2	5	3	2	1	1.2950

CONVERGE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CVN	Aug-00	3	2	2	2	1	2	3	2	5	2	5	0	4	2	4.5392
CVN	Aug-01	3	2	4	2	1	2	3	2	5	2	5	0	4	2	-8.1438
CVN	Aug-02	3	2	4	2	1	2	3	2	5	2	5	0	4	2	-5.3612
CVN	Aug-03	3	2	4	2	1	2	3	2	5	2	5	0	4	2	2.9426
CVN	Aug-04	3	2	4	2	1	2	3	2	5	2	5	0	4	2	3.4729
CVN	Aug-05	3	2	4	2	1	2	3	2	5	2	5	0	4	2	3.0602
CVN	Aug-06	3	1	2	1	0	1	1	2	5	1	5	0	2	1	-23.1250
CVN	Aug-07	3	1	2	1	0	1	1	2	5	1	5	0	2	1	0.6582
CVN	Aug-08	3	2	3	2	2	2	3	2	5	2	5	3	5	2	2.4276
CVN	Aug-09	3	3	4	3	2	2	3	2	5	2	5	4	5	2	1.0311

DELTA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
DTA	Dec-00	3	3	2	2	2	4	3	4	4	3	4	2	4	4	2.0839
DTA	Dec-01	3	3	2	2	2	4	3	4	4	3	4	2	4	4	2.2636
DTA	Dec-02	3	3	3	2	2	4	3	4	4	3	4	2	4	4	2.2720
DTA	Dec-03	3	3	3	2	2	4	3	4	4	3	4	3	4	4	1.4371
DTA	Dec-04	3	3	3	2	2	4	3	4	4	3	4	3	5	4	0.3068
DTA	Dec-05	3	2	2	2	2	4	2	4	4	3	4	3	2	4	6.5969
DTA	Dec-06	3	2	2	3	2	5	2	4	4	3	4	3	3	4	-0.7570
DTA	Dec-07	1	2	2	3	2	4	2	4	4	3	4	3	1	3	-2.1436
DTA	Dec-08	1	2	1	3	2	4	1	4	4	3	4	3	0	2	1.4748
DTA	Dec-09	1	0	1	2	2	2	0	4	4	3	4	3	0	2	2.3859

CROOKES

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
CKS	Mar-01	3	3	2	3	4	2	3	4	1	3	1	2	4	2	0.8159
CKS	Mar-02	3	3	2	3	4	2	3	4	1	3	1	2	4	2	0.9285
CKS	Mar-03	3	4	3	4	4	2	3	4	1	3	1	2	4	2	1.3831
CKS	Mar-04	3	4	4	4	4	2	4	4	1	3	1	2	5	2	0.6907
CKS	Mar-05	2	4	4	4	4	2	4	4	1	3	1	2	5	2	-0.0282
CKS	Mar-06	2	4	4	4	4	2	4	4	1	3	1	2	5	2	0.9308
CKS	Mar-07	2	4	4	4	4	2	4	4	1	3	1	3	5	2	0.9133
CKS	Mar-08	2	4	4	4	4	2	4	4	1	3	1	4	5	2	1.1481
CKS	Mar-09	3	4	4	4	4	2	4	4	1	3	1	4	5	2	1.6984
CKS	Mar-10	3	4	4	4	4	2	4	4	1	3	1	4	5	2	-0.0924

DIGICORE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
DGC	Jun-00	3	3	4	4	2	4	1	4	5	2	5	1	3	2	0.0625
DGC	Jun-01	3	3	4	4	2	4	1	4	5	2	5	1	3	2	3.7905
DGC	Jun-02	3	3	4	4	2	4	1	4	5	2	5	0	3	2	1.3430
DGC	Jun-03	3	4	4	4	3	4	1	4	5	2	5	1	3	2	2.3617
DGC	Jun-04	3	4	4	4	3	4	1	4	5	2	5	1	3	2	2.5486
DGC	Jun-05	3	4	4	4	2	4	1	4	5	1	5	0	2	2	1.9791
DGC	Jun-06	3	4	4	4	2	4	1	4	5	1	5	0	2	2	3.6632
DGC	Jun-07	3	4	4	4	3	4	1	4	5	1	5	1	4	3	3.5180
DGC	Jun-08	4	4	4	4	1	4	1	4	5	1	5	0	4	3	3.9987
DGC	Jun-09	4	4	4	4	1	4	1	4	5	1	5	0	4	3	2.1805

DISTELL

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
DST	Jun-01	3	3	4	4	1	2	3	4	2	2	2	0	5	5	0.0867
DST	Jun-02	3	3	4	4	1	2	3	4	2	2	2	0	5	5	0.3600
DST	Jun-03	3	4	4	4	3	4	3	4	2	2	2	3	5	5	0.5989
DST	Jun-04	3	4	4	4	3	4	3	4	2	2	2	3	5	5	0.6743
DST	Jun-05	3	4	4	4	3	4	3	4	2	4	2	3	5	5	0.9569
DST	Jun-06	3	4	4	4	3	4	3	4	2	4	2	3	5	5	1.1473
DST	Jun-07	3	5	5	4	4	4	3	4	2	4	2	3	5	5	1.8086
DST	Jun-08	3	5	5	4	4	4	3	4	2	4	2	3	5	5	1.9778
DST	Jun-09	3	5	5	4	4	4	3	4	2	4	2	3	5	5	1.7263
DST	Jun-10	3	5	5	4	4	4	3	4	2	4	2	3	5	5	1.4465

DON

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
DON	Jun-00	3	1	1	1	1	1	1	1	1	0	1	0	2	0	-0.9607
DON	Jun-01	3	2	3	2	2	1	1	2	0	1	0	3	1	1	-5.8241
DON	Jun-02	3	2	3	2	2	1	1	2	0	1	0	3	1	1	0.0025
DON	Jun-03	3	3	3	2	2	1	1	2	0	1	0	3	1	1	0.1306
DON	Jun-04	3	2	3	2	1	1	1	2	0	1	0	3	1	1	-1.7067
DON	Jun-05	3	2	3	2	1	1	1	2	0	1	0	2	1	1	-0.7306
DON	Jun-06	3	2	3	2	1	1	1	2	0	1	0	1	1	1	-0.9788
DON	Jun-07	3	2	3	2	1	1	1	2	0	1	0	1	1	1	-0.2660
DON	Jun-08	3	1	3	2	1	1	1	2	0	1	0	1	1	1	-0.0974
DON	Jun-09	3	1	3	2	1	1	1	2	0	1	0	1	1	1	-0.8725

DORBYL

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
DLV	Mar-01	2	2	1	3	2	2	2	3	3	2	3	4	1	3	-0.4336
DLV	Mar-02	2	2	1	3	2	2	2	3	3	2	3	2	1	3	-0.0921
DLV	Mar-03	2	2	1	2	2	2	2	3	3	2	3	2	1	2	1.2752
DLV	Mar-04	2	2	1	3	3	2	2	3	3	2	3	2	1	2	0.5978
DLV	Mar-05	1	1	1	2	3	2	2	3	3	2	3	1	1	2	1.0430
DLV	Mar-06	1	1	1	2	3	2	2	3	3	2	3	1	1	2	7.4390
DLV	Mar-07	1	1	1	2	2	2	2	3	2	1	2	1	1	1	0.0075
DLV	Mar-08	1	0	1	1	1	2	1	3	2	1	2	0	1	1	-0.8151
DLV	Mar-09	1	0	1	1	1	2	1	3	2	1	2	0	1	1	-4.9739
DLV	Mar-10	1	0	1	1	1	2	1	3	2	1	2	0	1	1	-2.9882

ELB

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ELR	Jun-00	2	1	1	1	1	1	2	2	3	2	3	4	1	3	-1.1669
ELR	Jun-01	2	1	1	1	1	1	2	2	3	2	3	2	1	3	-0.6357
ELR	Jun-02	3	2	2	2	3	1	2	2	4	2	3	2	1	2	0.8087
ELR	Jun-03	3	2	2	2	3	1	2	2	4	2	3	2	1	2	-1.0234
ELR	Jun-04	3	2	2	2	3	1	2	2	4	2	3	1	1	2	-0.3955
ELR	Jun-05	3	2	2	2	3	1	2	2	4	2	3	1	1	2	-0.0053
ELR	Jun-06	3	2	2	2	3	1	2	2	4	2	3	1	1	1	-0.5671
ELR	Jun-07	3	2	3	2	3	1	2	3	4	2	3	0	1	1	0.3097
ELR	Jun-08	3	2	3	2	3	1	2	3	4	2	3	0	1	1	0.6431
ELR	Jun-09	3	2	3	2	3	1	2	3	4	2	3	0	1	1	0.3399

FAMBRANDS

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
FBR	Feb-01	2	3	4	4	3	3	2	3	1	2	1	4	5	4	1.8407
FBR	Feb-02	2	3	4	4	3	3	2	3	1	2	1	4	5	4	1.3727
FBR	Feb-03	3	3	4	4	3	3	2	3	1	2	1	4	5	4	0.8992
FBR	Feb-04	3	4	4	4	3	4	2	4	1	2	1	4	5	4	1.2319
FBR	Feb-05	3	4	4	4	3	4	3	4	1	2	1	4	5	4	2.5235
FBR	Feb-06	3	4	4	4	3	4	3	4	1	2	1	3	5	4	2.2983
FBR	Feb-07	3	4	4	4	3	4	3	4	1	2	1	3	5	4	1.8541
FBR	Feb-08	3	4	4	4	3	4	3	4	1	2	1	3	5	4	2.5041
FBR	Feb-09	3	4	4	4	3	4	3	4	1	2	1	3	5	4	2.242
FBR	Feb-10	3	4	4	4	3	4	3	4	1	2	1	3	5	5	3.3596

FARITEC

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
FRT	Jun-00	3	1	2	2	1	1	3	2	5	1	5	0	1	1	0.4768
FRT	Jun-01	3	1	2	2	1	1	3	2	5	1	5	0	1	1	0.2573
FRT	Jun-02	2	1	2	2	1	1	3	2	5	1	5	0	1	0	0.4458
FRT	Jun-03	2	1	2	2	1	1	3	2	5	1	5	0	3	0	0.0127
FRT	Jun-04	2	1	2	2	1	1	2	2	5	1	5	0	3	0	-2.7479
FRT	Jun-05	2	1	2	2	1	1	2	2	5	1	5	0	3	0	-0.3837
FRT	Jun-06	2	1	2	2	1	1	4	2	5	1	5	2	3	0	-0.3803
FRT	Jun-07	2	1	2	2	1	1	2	2	5	1	5	2	2	0	-0.6937
FRT	Jun-08	2	1	2	2	1	1	2	2	5	1	5	2	2	0	-0.4294
FRT	Jun-09	1	0	1	2	0	1	1	2	5	1	5	2	0	0	-7.1065

GIJIMA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
GIJ	Jun-00	3	3	4	4	2	4	2	2	5	2	5	4	4	4	3.8709
GIJ	Jun-01	3	3	4	4	2	4	2	2	5	2	5	4	4	4	1.3886
GIJ	Jun-02	3	4	4	4	2	4	3	3	5	2	5	4	5	4	0.0831
GIJ	Jun-03	3	4	4	4	2	4	4	3	5	2	5	4	5	4	-4.1113
GIJ	Jun-04	3	4	4	4	3	4	4	3	5	2	5	4	5	4	-3.8200
GIJ	Jun-05	3	4	4	3	2	4	3	3	5	2	5	2	4	4	-0.6510
GIJ	Jun-06	3	4	4	3	2	4	3	3	5	2	5	2	4	4	-0.2516
GIJ	Jun-07	2	4	4	3	2	4	3	3	5	2	5	2	4	4	-0.3407
GIJ	Jun-08	2	4	4	3	2	4	3	3	5	2	5	1	4	4	-0.7121
GIJ	Jun-09	2	4	4	3	2	4	3	3	5	2	5	1	4	4	0.4430

GOLDREEF

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
GDF	Dec-00	3	2	3	3	2	4	5	3	3	2	3	2	4	3	0.5912
GDF	Dec-01	3	2	4	4	2	4	5	3	3	2	3	3	4	3	1.0051
GDF	Dec-02	3	2	4	4	2	4	5	3	3	2	3	2	4	3	1.0092
GDF	Dec-03	3	2	4	4	2	4	4	3	3	2	3	1	4	3	1.1783
GDF	Dec-04	3	2	4	4	2	4	4	3	3	2	3	1	4	3	2.0769
GDF	Dec-05	3	1	4	4	2	4	4	3	3	0	3	1	4	3	2.3241
GDF	Dec-06	3	1	4	4	2	4	4	3	3	0	3	1	4	3	1.4955
GDF	Dec-07	3	3	4	4	3	4	4	3	3	2	3	2	4	3	0.2960
GDF	Dec-08	3	4	4	4	3	4	4	3	3	3	3	4	4	3	0.6654
GDF	Dec-09	3	4	4	4	3	4	4	3	3	3	3	4	4	4	0.7250

GRINDROD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
GND	Dec-00	1	2	2	3	3	4	4	3	2	2	2	2	2	5	0.1304
GND	Dec-01	1	2	2	3	3	4	4	3	2	2	2	2	2	5	0.6718
GND	Dec-02	2	3	3	3	3	4	4	3	2	2	2	2	3	5	-1.9374
GND	Dec-03	2	3	3	3	3	4	4	3	2	2	2	2	3	5	-0.6317
GND	Dec-04	3	4	3	3	3	4	4	3	2	2	2	2	4	5	1.0566
GND	Dec-05	3	4	3	3	3	4	4	3	2	2	2	2	4	5	1.5473
GND	Dec-06	3	4	3	3	3	4	5	3	2	2	2	2	4	5	0.9239
GND	Dec-07	3	4	3	3	3	4	5	3	2	2	2	2	4	5	0.6561
GND	Dec-08	4	4	3	3	3	4	5	3	2	2	2	2	4	5	1.5500
GND	Dec-09	2	4	3	3	3	4	5	3	2	2	2	1	4	5	-0.0053

GROUP 5

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
GRF	Jun-01	3	3	4	4	2	2	3	4	1	2	1	2	3	3	-0.7038
GRF	Jun-02	3	3	3	3	2	2	3	4	1	2	1	1	3	3	-0.7706
GRF	Jun-03	3	3	3	3	2	2	3	4	1	2	1	1	3	3	-0.5451
GRF	Jun-04	3	3	3	3	2	2	3	4	1	2	1	1	3	3	-0.6482
GRF	Jun-05	2	3	3	3	2	2	3	4	1	2	1	1	3	3	-0.8445
GRF	Jun-06	2	3	3	3	2	2	3	4	1	2	1	1	3	3	-0.8803
GRF	Jun-07	3	4	3	3	3	2	4	4	1	2	1	4	3	3	-0.7399
GRF	Jun-08	3	4	3	3	3	2	4	4	1	2	1	4	4	4	-0.5649
GRF	Jun-09	2	4	3	3	3	2	4	4	1	2	1	2	4	4	-0.3851
GRF	Jun-10	2	4	3	3	3	2	4	4	1	2	1	2	4	4	-0.3786

HOWDEN

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
HWN	Dec-00	2	2	1	1	1	3	1	1	2	1	2	0	1	1	-0.0364
HWN	Dec-01	2	2	2	1	1	3	1	1	2	1	2	0	3	1	-0.4014
HWN	Dec-02	1	2	2	1	1	3	1	1	2	1	2	0	3	1	0.0741
HWN	Dec-03	1	2	2	1	1	3	1	1	2	1	2	1	3	1	0.3280
HWN	Dec-04	2	2	2	1	1	3	1	2	2	1	2	2	2	1	-0.1832
HWN	Dec-05	2	2	2	1	1	3	1	2	2	1	2	2	2	1	0.3482
HWN	Dec-06	2	2	2	1	1	3	1	2	2	1	2	2	2	1	-0.5082
HWN	Dec-07	3	2	3	3	1	3	5	3	2	1	2	2	4	1	1.1304
HWN	Dec-08	3	2	3	3	1	3	5	3	2	1	2	2	4	1	0.5312
HWN	Dec-09	3	2	3	3	2	3	4	3	2	1	2	2	4	1	1.0437

INTRADING

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ITR	Feb-01	3	2	3	2	1	3	5	3	3	2	3	2	4	3	0.0863
ITR	Feb-02	3	2	3	2	1	3	5	3	3	2	3	2	4	3	0.7982
ITR	Feb-03	1	2	3	2	1	3	3	3	3	2	3	2	4	3	0.1680
ITR	Feb-04	1	2	3	2	1	3	3	3	1	2	1	1	3	2	-0.7441
ITR	Feb-05	1	1	2	2	1	3	2	2	1	2	1	1	1	2	0.4455
ITR	Feb-06	1	1	2	2	1	2	2	2	1	2	1	1	1	2	-2.5946
ITR	Feb-07	1	1	2	2	1	2	2	2	1	2	1	1	1	2	-1.4923
ITR	Feb-08	2	2	3	2	1	2	2	2	1	2	1	2	2	2	0.1168
ITR	Feb-09	2	2	3	2	1	2	2	2	1	2	1	2	2	2	-0.2972
ITR	Feb-10	2	1	2	2	1	1	2	2	1	2	1	0	1	1	-1.8104

HUDACO

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
HDC	Nov-00	2	2	3	3	2	2	2	3	1	2	1	1	2	2	0.9688
HDC	Nov-01	2	3	3	3	3	3	2	3	1	2	1	1	4	2	0.8949
HDC	Nov-02	3	3	3	3	3	3	2	3	1	2	1	2	4	2	1.0659
HDC	Nov-03	3	3	3	3	3	3	2	3	1	2	1	2	4	2	1.5066
HDC	Nov-04	3	3	3	3	3	3	2	3	1	2	1	2	4	2	1.1959
HDC	Nov-05	4	4	4	4	3	3	3	3	1	2	1	2	4	2	1.7162
HDC	Nov-06	4	4	4	4	3	3	3	3	1	2	1	4	4	2	1.6151
HDC	Nov-07	4	4	4	4	3	3	3	4	1	2	1	4	4	3	-0.1640
HDC	Nov-08	4	4	4	4	3	3	3	4	1	2	1	4	4	3	0.1309
HDC	Nov-09	2	3	4	4	3	3	2	4	1	2	1	4	1	3	-0.0626

INVICTA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
IVT	Mar-01	3	2	3	3	3	4	3	3	4	2	4	2	2	4	0.8929
IVT	Mar-02	3	2	3	3	3	4	3	3	4	2	4	2	2	4	0.8017
IVT	Mar-03	3	3	3	3	3	4	4	4	4	2	4	3	4	4	1.5905
IVT	Mar-04	3	4	4	4	3	4	4	4	4	2	4	3	4	4	1.5471
IVT	Mar-05	3	4	4	4	3	4	4	4	4	2	4	3	4	4	1.7478
IVT	Mar-06	2	4	4	4	3	4	4	4	4	2	4	3	4	4	-0.0614
IVT	Mar-07	2	4	4	4	3	4	4	4	4	2	4	5	4	4	0.1567
IVT	Mar-08	3	4	4	4	3	4	4	4	4	2	4	5	4	4	-0.2097
IVT	Mar-09	3	4	4	4	3	4	4	4	4	2	4	5	4	4	-0.1814
IVT	Mar-10	3	4	4	4	3	4	4	4	4	2	4	5	4	4	-0.1636

ILIAD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ILA	Dec-00	3	1	1	1	1	1	1	1	1	1	1	0	4	1	1.0801
ILA	Dec-01	3	2	4	3	3	4	4	3	1	2	1	4	4	2	1.0454
ILA	Dec-02	3	2	4	3	3	4	4	3	1	2	1	1	4	2	1.6782
ILA	Dec-03	3	2	2	3	1	4	1	3	1	2	1	0	1	2	1.3399
ILA	Dec-04	3	1	2	1	1	4	1	2	1	2	1	0	1	2	1.6943
ILA	Dec-05	3	2	3	2	3	4	4	4	1	2	1	2	5	2	1.4894
ILA	Dec-06	3	2	3	2	3	4	4	4	1	2	1	2	5	2	1.4097
ILA	Dec-07	3	2	3	2	3	4	4	4	1	2	1	2	5	2	1.6569
ILA	Dec-08	3	3	4	3	3	4	4	4	1	2	1	3	5	3	1.3456
ILA	Dec-09	3	3	4	3	3	4	4	4	1	2	1	3	5	2	0.0616

ITALTILE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ITE	Jun-01	3	2	3	2	2	3	4	4	1	2	1	2	4	4	1.7027
ITE	Jun-02	3	2	3	2	2	3	4	4	1	2	1	2	4	4	2.2398
ITE	Jun-03	3	2	3	2	2	3	4	4	1	2	1	2	4	4	2.0247
ITE	Jun-04	3	2	3	2	3	3	4	4	1	2	1	3	4	4	2.0944
ITE	Jun-05	4	3	3	3	4	4	4	4	1	3	1	3	4	5	2.2820
ITE	Jun-06	4	3	3	3	4	4	4	4	1	3	1	3	4	5	2.3832
ITE	Jun-07	4	3	3	3	4	4	4	4	1	3	1	3	4	5	2.3880
ITE	Jun-08	2	3	2	3	4	4	4	4	1	3	1	3	3	5	2.0864
ITE	Jun-09	2	3	2	3	4	4	4	4	1	3	1	3	4	5	1.5119
ITE	Jun-10	3	3	2	3	4	4	4	4	1	3	1	3	4	5	1.4625

ILLOVO

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
ILV	Mar-01	3	3	4	4	4	3	3	4	1	2	1	4	5	4	0.2641
ILV	Mar-02	3	3	4	4	4	3	3	4	1	2	1	3	5	4	0.4493
ILV	Mar-03	3	3	4	4	4	3	3	4	1	2	1	3	5	4	-0.9306
ILV	Mar-04	3	3	4	4	4	3	3	4	1	2	1	3	5	4	-0.6476
ILV	Mar-05	2	3	3	4	4	3	3	4	1	2	1	4	4	4	-0.4515
ILV	Mar-06	2	3	3	4	4	3	3	4	1	2	1	4	4	4	0.6489
ILV	Mar-07	2	3	3	4	4	3	3	4	1	2	1	4	4	4	0.9934
ILV	Mar-08	3	4	4	4	4	3	5	4	1	2	1	4	4	4	0.6108
ILV	Mar-09	3	4	4	4	4	3	5	4	1	2	1	4	4	4	0.5523
ILV	Mar-10	3	4	4	4	4	3	5	4	1	2	1	4	4	4	0.8959

KAIROS

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
KIR	Feb-01	2	1	2	2	0	0	5	4	1	1	1	0	4	1	0.0489
KIR	Feb-02	2	1	2	2	0	0	5	4	1	0	1	0	4	1	-1.1503
KIR	Feb-03	3	1	2	2	0	0	3	4	1	0	1	0	2	1	1.1452
KIR	Feb-04	3	1	2	1	0	0	3	3	1	0	1	0	2	1	0.4812
KIR	Feb-05	3	1	2	1	0	0	3	3	1	0	1	0	2	1	1.8212
KIR	Feb-06	3	1	2	1	0	0	3	3	1	0	1	0	2	1	0.5900
KIR	Feb-07	3	1	2	1	0	0	3	3	1	0	1	0	2	1	0.0307
KIR	Feb-08	1	1	1	1	0	0	1	2	1	0	1	0	2	1	-0.3421
KIR	Feb-09	1	1	1	1	0	0	1	2	1	0	1	0	2	1	-1.6521
KIR	Feb-10	1	1	1	1	0	0	1	2	1	0	1	0	2	1	-7.7598

IMPERIAL

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
IPL	Jun-01	3	4	3	4	1	2	3	3	2	2	3	1	4	3	0.3449
IPL	Jun-02	3	4	3	4	2	3	5	3	3	2	3	2	4	3	0.4945
IPL	Jun-03	3	4	3	4	2	3	3	3	3	2	3	2	4	3	0.1499
IPL	Jun-04	3	4	3	4	2	3	3	3	3	2	3	2	4	3	0.0183
IPL	Jun-05	3	4	4	4	2	3	3	3	3	2	3	1	4	4	0.4846
IPL	Jun-06	3	4	4	4	1	3	2	3	3	2	3	0	3	4	0.1005
IPL	Jun-07	3	4	4	4	1	3	2	3	3	2	3	0	3	4	0.0620
IPL	Jun-08	3	4	4	4	1	3	2	3	3	2	3	0	3	4	-0.8728
IPL	Jun-09	3	4	4	4	2	3	2	3	3	2	3	2	3	4	-0.1792
IPL	Jun-10	3	4	4	4	3	3	2	3	3	2	3	2	3	4	0.0485

KGMEDIA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
KGM	Jun-00	3	1	2	1	1	4	1	3	1	1	1	0	3	4	-0.3039
KGM	Jun-01	3	1	2	1	1	4	1	3	1	1	1	0	3	4	1.6189
KGM	Jun-02	3	0	2	0	0	4	1	3	1	1	1	0	3	4	3.4654
KGM	Jun-03	3	0	2	0	0	4	1	3	1	1	1	0	0	4	4.0245
KGM	Jun-04	3	0	2	0	0	4	1	3	1	1	1	0	0	4	3.7462
KGM	Jun-05	3	0	2	0	0	4	1	3	1	1	1	0	0	4	5.0413
KGM	Jun-06	3	3	4	3	2	4	1	4	3	1	3	4	4	4	5.0595
KGM	Jun-07	3	3	4	3	2	4	1	4	3	1	3	0	4	4	4.6134
KGM	Jun-08	3	3	4	3	2	4	1	4	3	1	3	0	4	4	4.9226
KGM	Jun-09	3	3	4	3	2	4	1	4	3	1	3	0	4	4	4.3204

LABAT

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
LAB	Feb-01	2	0	1	0	0	0	0	0	4	0	4	0	0	0	0.6106
LAB	Feb-02	2	0	1	0	0	0	0	0	4	0	4	0	0	0	-0.7990
LAB	Feb-03	2	1	2	1	1	1	0	1	4	0	4	1	2	0	2.2795
LAB	Feb-04	2	1	2	1	1	1	2	1	4	0	4	2	3	0	0.6997
LAB	Feb-05	2	1	2	1	1	1	1	1	4	0	4	2	2	0	-1.6716
LAB	Feb-06	2	0	2	0	1	1	1	1	4	0	4	2	2	0	-2.9936
LAB	Feb-07	2	0	2	0	1	1	1	1	4	0	4	2	2	0	-0.6466
LAB	Feb-08	2	0	2	0	1	1	1	1	4	0	4	2	2	0	-1.0850
LAB	Feb-09	1	0	1	0	1	1	1	1	4	0	4	0	0	0	-0.5656
LAB	Feb-10	1	0	1	0	0	0	0	1	4	0	4	1	0	0	1.1593

METAIR

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MTA	Dec-00	2	1	3	3	1	2	3	4	3	2	4	1	3	2	1.6975
MTA	Dec-01	2	1	2	3	2	2	3	4	3	2	4	1	2	2	1.0940
MTA	Dec-02	2	2	2	3	3	2	3	4	3	2	4	1	4	2	0.8788
MTA	Dec-03	2	2	2	3	3	2	3	4	3	2	4	1	4	2	1.4372
MTA	Dec-04	2	3	3	3	3	2	3	4	3	2	4	4	4	2	1.5464
MTA	Dec-05	2	3	3	3	3	2	3	4	3	2	4	4	4	2	1.5813
MTA	Dec-06	3	3	3	3	3	2	3	4	3	2	4	4	4	2	1.8311
MTA	Dec-07	2	3	3	3	3	2	3	4	3	2	4	5	4	2	1.3918
MTA	Dec-08	2	3	3	3	3	2	3	4	3	2	4	1	4	2	-0.0081
MTA	Dec-09	2	2	3	3	1	2	2	2	3	1	4	0	1	2	0.5265

M&R-HLD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MUR	Jun-01	4	3	2	4	3	3	4	3	2	3	2	4	5	5	-0.2050
MUR	Jun-02	4	3	2	3	3	3	3	3	2	3	2	4	5	5	0.3940
MUR	Jun-03	4	3	2	3	3	3	3	3	2	3	2	4	5	5	-0.5310
MUR	Jun-04	4	3	2	2	3	3	3	3	2	3	2	4	5	5	-0.2046
MUR	Jun-05	4	3	2	2	3	3	3	3	2	3	2	4	5	5	0.4095
MUR	Jun-06	4	3	2	3	3	3	3	3	2	3	2	4	5	5	0.0867
MUR	Jun-07	4	3	2	4	3	3	3	3	2	3	2	4	5	5	0.0432
MUR	Jun-08	4	4	3	4	3	3	3	3	2	3	2	4	5	5	0.8016
MUR	Jun-09	4	4	3	4	3	3	3	3	2	3	2	4	5	5	0.6800
MUR	Jun-10	3	4	3	4	3	3	3	3	2	3	2	4	5	5	0.1394

METROFILE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MFL	Jun-00	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8851
MFL	Jun-01	3	1	0	0	3	0	0	0	0	0	0	0	0	0	-0.4430
MFL	Jun-02															-0.7087 n/a
MFL	Jun-03	3	1	0	0	3	0	0	0	0	0	0	3	0	0	-5.1898
MFL	Jun-04	3	1	3	0	3	3	0	1	2	0	2	3	0	3	-4.5007
MFL	Jun-05	3	1	3	0	3	3	0	1	2	0	2	3	1	3	-2.9397
MFL	Jun-06	3	1	3	0	3	3	0	1	2	0	2	3	3	3	-1.6601
MFL	Jun-07	3	1	3	0	3	3	0	1	2	0	2	2	3	3	-0.2444
MFL	Jun-08	2	1	3	0	3	3	0	1	2	0	2	2	3	3	0.8608
MFL	Jun-09	2	1	3	0	3	3	0	1	2	0	2	2	3	3	0.1391

MASONITE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MAS	Dec-00	1	3	2	3	2	3	2	3	1	2	1	2	4	4	-0.2270
MAS	Dec-01	1	3	2	3	2	3	2	3	1	2	1	1	4	4	0.1300
MAS	Dec-02	1	3	2	3	2	3	2	3	1	2	1	0	4	4	0.3778
MAS	Dec-03	1	2	2	1	0	2	1	3	1	2	1	0	1	4	0.5537
MAS	Dec-04	1	3	2	1	1	2	1	3	1	2	1	0	3	4	0.0473
MAS	Dec-05	1	3	2	1	1	2	1	3	1	2	1	0	3	4	0.4274
MAS	Dec-06	1	3	2	1	1	2	1	3	1	2	1	0	3	4	0.7528
MAS	Dec-07	1	3	2	1	1	2	1	3	1	2	1	0	3	4	1.1324
MAS	Dec-08	1	3	2	1	1	2	1	3	1	2	1	0	3	4	2.2020
MAS	Dec-09	1	3	2	1	1	2	1	3	1	2	1	0	3	4	0.8411

MICROMEGA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MMG	Dec-00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5.0160
MMG	Dec-01	1	0	0	0	0	0	0	0	4	0	4	2	0	0	3.7785
MMG	Dec-02	1	0	0	0	0	0	0	0	4	0	4	2	0	0	0.9397
MMG	Dec-03	1	1	2	0	0	3	0	0	4	0	4	2	0	0	5.2756
MMG	Dec-04	1	1	2	0	0	3	1	0	4	0	4	2	3	0	1.5009
MMG	Dec-05	1	1	2	1	1	3	1	0	4	0	4	2	3	0	1.4045
MMG	Dec-06	1	1	2	1	1	2	1	1	4	0	4	2	1	0	2.3651
MMG	Dec-07	3	1	2	1	1	2	1	1	4	2	4	2	4	1	2.4518
MMG	Dec-08	3	1	2	1	1	2	1	1	4	2	4	2	4	1	1.9689
MMG	Dec-09	1	1	2	1	1	2	1	1	4	2	4	1	1	1	0.4722

MASSMART

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MSM	Jun-00	3	0	2	0	0	0	0	3	1	0	1	0	1	5	
MSM	Jun-01	3	0	2	0	0	0	0	3	1	0	1	0	1	5	-0.1895
MSM	Jun-02	3	0	2	0	0	0	0	3	1	0	1	0	1	5	0.5291
MSM	Jun-03	3	0	2	0	0	0	0	3	1	0	1	0	1	5	0.4643
MSM	Jun-04	3	0	2	0	0	0	0	3	1	0	1	0	1	5	0.2421
MSM	Jun-05	3	1	2	2	0	0	1	3	1	0	1	0	1	5	-0.0825
MSM	Jun-06	3	1	2	2	0	0	1	3	1	0	1	0	1	5	0.2655
MSM	Jun-07	3	1	2	2	0	0	1	3	1	0	1	0	1	5	0.5352
MSM	Jun-08	3	1	2	2	0	0	1	3	1	0	1	2	1	5	0.9455
MSM	Jun-09	2	1	2	2	0	0	1	3	1	0	1	2	1	5	0.7120

MONEYWEB

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MNY	Mar-01	3	2	2	3	3	4	5	4	3	2	3	4	5	4	1.7560
MNY	Mar-02	3	2	2	3	3	4	5	4	3	2	3	4	5	4	0.7057
MNY	Mar-03	3	4	2	3	3	4	5	4	3	2	3	4	5	4	0.3979
MNY	Mar-04	3	4	2	3	3	4	5	4	3	2	3	4	5	4	1.0915
MNY	Mar-05	3	2	1	2	3	4	3	4	3	2	3	4	5	5	-2.8500
MNY	Mar-06	3	2	1	2	3	4	3	4	3	2	3	4	5	5	0.5254
MNY	Mar-07	3	2	1	2	3	4	3	4	3	2	3	4	5	5	1.2448
MNY	Mar-08	2	2	1	2	3	4	3	4	3	2	3	4	5	5	1.3494
MNY	Mar-09	1	2	1	2	3	4	3	4	3	2	3	4	5	5	0.0806
MNY	Mar-10	1	2	1	2	3	4	3	4	3	2	3	4	5	5	0.9747

MEDCLIN

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MDC	Mar-01	4	4	4	4	4	5	4	5	5	3	5	5	5	5	1.4435
MDC	Mar-02	4	4	4	4	4	5	4	5	5	3	5	5	5	5	1.6341
MDC	Mar-03	3	4	4	4	4	5	4	4	5	3	5	5	5	5	1.5504
MDC	Mar-04	3	4	4	4	4	5	4	4	5	3	5	5	5	5	1.6243
MDC	Mar-05	3	4	4	4	4	5	4	4	5	3	5	5	5	5	1.7816
MDC	Mar-06	3	4	4	4	4	5	5	4	5	3	5	5	5	5	0.7109
MDC	Mar-07	3	4	4	4	4	5	5	4	5	3	5	5	5	5	1.0540
MDC	Mar-08	3	4	4	4	4	5	5	4	5	3	5	5	5	5	-0.7756
MDC	Mar-09	2	4	4	4	4	5	5	4	5	3	5	5	5	5	-1.0053
MDC	Mar-10	2	4	4	4	4	5	5	4	5	3	5	5	5	5	-0.8389

MRPRICE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MPC	Mar-01	4	4	5	4	4	3	3	4	0	0	0	4	5	3	0.7999
MPC	Mar-02	4	4	5	4	4	3	3	4	0	0	0	4	5	3	1.0151
MPC	Mar-03	3	4	5	4	4	3	3	4	0	2	0	4	5	3	1.1758
MPC	Mar-04	2	4	5	4	4	3	3	4	0	1	0	4	5	3	0.6963
MPC	Mar-05	2	4	5	4	4	3	3	4	0	1	0	4	5	3	1.2242
MPC	Mar-06	2	4	5	4	4	3	3	4	0	1	0	2	5	3	1.6757
MPC	Mar-07	3	4	5	4	4	3	3	4	0	1	0	2	5	3	1.6922
MPC	Mar-08	3	4	5	4	4	3	3	4	0	1	0	2	5	3	2.0531
MPC	Mar-09	3	4	5	4	4	3	3	4	0	1	0	2	5	3	1.9850
MPC	Mar-10	3	4	5	4	4	3	3	4	0	1	0	2	5	4	1.4217

MUSTEK

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
MST	Jun-00	3	2	4	3	3	3	4	4	5	2	5	4	5	4	0.2040
MST	Jun-01	2	1	4	2	2	3	3	4	5	2	5	1	2	4	-0.0867
MST	Jun-02	2	1	3	2	2	3	3	4	5	2	5	1	3	4	0.2196
MST	Jun-03	2	1	3	2	2	3	5	4	5	2	5	2	3	4	0.5098
MST	Jun-04	2	3	3	3	3	3	5	5	5	3	5	3	4	4	-0.0960
MST	Jun-05	2	3	3	3	3	3	5	5	5	3	5	4	4	4	0.3021
MST	Jun-06	1	2	3	3	3	3	5	5	5	3	5	4	4	4	-0.1587
MST	Jun-07	1	2	3	3	3	3	5	5	5	3	5	4	4	4	-0.2698
MST	Jun-08	1	2	3	3	3	3	5	5	5	3	5	4	4	4	-0.1604
MST	Jun-09	1	2	3	3	3	3	5	5	5	3	5	4	4	4	-0.1939

OCEANA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
OCE	Sep-00															1.2938 n/a
OCE	Sep-01	3	1	2	1	2	4	1	3	0	1	0	1	4	4	1.6017
OCE	Sep-02	3	1	2	1	2	4	1	3	0	1	0	1	4	4	1.9361
OCE	Sep-03	3	1	2	1	2	4	1	3	0	1	0	1	4	4	1.4308
OCE	Sep-04	3	1	2	1	2	4	1	3	0	1	0	1	4	4	1.0271
OCE	Sep-05	3	1	2	1	2	4	1	3	0	1	0	1	4	4	0.6612
OCE	Sep-06	3	1	2	2	2	4	1	3	0	1	0	1	4	4	0.8429
OCE	Sep-07	3	1	2	2	2	4	1	3	0	1	0	3	4	4	1.3519
OCE	Sep-08	3	2	3	2	3	4	1	3	0	1	0	3	4	4	1.7606
OCE	Sep-09	3	2	3	2	3	4	1	3	0	1	0	3	4	4	2.1782

NAMPAK

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
NPK	Sep-00	4	4	4	3	3	2	4	4	3	2	3	4	5	4	0.6359
NPK	Sep-01	3	4	4	3	3	2	4	4	3	2	3	4	5	4	0.0308
NPK	Sep-02	3	4	4	3	3	2	4	4	3	2	3	4	5	4	-0.0691
NPK	Sep-03	3	4	4	3	3	2	4	4	3	2	3	4	5	4	-0.0802
NPK	Sep-04	3	4	4	3	3	2	4	4	3	2	3	4	5	4	0.7032
NPK	Sep-05	3	4	4	3	3	2	4	4	3	2	3	4	5	4	0.6315
NPK	Sep-06	3	4	4	4	3	3	4	4	3	2	3	4	5	4	0.6915
NPK	Sep-07	3	4	4	4	3	3	4	4	3	2	3	4	5	4	0.5197
NPK	Sep-08	2	4	4	4	3	3	4	4	3	2	3	4	5	4	0.1253
NPK	Sep-09	2	4	4	4	3	3	4	4	3	2	3	4	5	4	-0.6661

OMNIA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
OMN	Mar-01	2	4	4	4	3	4	2	1	4	2	4	2	4	4	
OMN	Mar-02	2	4	4	4	3	4	2	1	4	2	4	2	4	4	1.4713
OMN	Mar-03	2	4	4	4	3	4	2	3	4	2	4	2	4	4	1.5302
OMN	Mar-04	1	3	4	4	3	4	2	3	4	2	4	2	4	4	0.1506
OMN	Mar-05	1	3	4	4	3	4	2	3	4	2	4	2	4	4	0.7752
OMN	Mar-06	1	3	4	4	3	4	2	3	4	0	4	2	4	4	0.2446
OMN	Mar-07	2	3	4	4	3	4	3	3	4	0	4	2	4	4	0.5771
OMN	Mar-08	3	4	4	4	3	4	3	3	4	0	4	2	4	4	0.4380
OMN	Mar-09	3	4	4	4	3	4	5	3	4	0	44	2	4	4	0.8553
OMN	Mar-10	2	4	4	4	3	4	2	3	4	0	4	2	4	4	-0.4687

NETCARE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
NTC	Sep-00	3	3	3	3	2	4	3	4	5	3	5	3	5	3	0.3903
NTC	Sep-01	3	3	3	3	2	4	3	4	5	2	5	3	5	3	0.5083
NTC	Sep-02	3	4	3	3	3	4	3	4	5	2	5	3	5	3	0.9218
NTC	Sep-03	3	4	3	3	3	4	3	4	5	2	5	3	5	4	1.381
NTC	Sep-04	3	4	3	3	3	4	3	4	5	2	5	3	5	4	0.7505
NTC	Sep-05	3	4	3	3	4	4	3	4	5	2	5	3	5	4	1.1174
NTC	Sep-06	3	4	3	3	4	4	3	4	5	2	5	3	5	4	-1.5994
NTC	Sep-07	3	4	3	3	4	4	3	4	5	2	5	3	5	4	-1.3457
NTC	Sep-08	3	4	3	4	4	4	3	4	5	2	5	4	5	5	-1.4447
NTC	Sep-09	3	4	3	4	4	4	3	4	5	2	5	4	5	5	-1.1146

ONELOGIX

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
OLG	May-01	3	1	2	1	1	4	4	3	2	2	2	2	3	2	0.6890
OLG	May-02	3	1	2	1	1	4	3	3	2	2	2	2	2	2	-5.2742
OLG	May-03	3	1	2	1	1	4	5	3	2	2	2	2	4	2	-4.6990
OLG	May-04	3	1	2	1	1	4	5	3	2	2	2	2	4	2	4.4256
OLG	May-05	3	1	2	1	1	4	5	3	2	2	2	2	4	2	3.5817
OLG	May-06	3	2	3	2	1	4	3	3	2	2	2	2	4	2	1.7281
OLG	May-07	3	2	3	2	1	4	3	3	2	2	2	2	4	2	0.8959
OLG	May-08	3	2	3	2	1	4	3	3	2	2	2	2	5	2	1.2061
OLG	May-09	3	2	3	2	1	4	3	3	2	2	2	2	5	2	0.4735
OLG	May-10	3	2	3	2	1	4	4	3	2	2	2	2	5	2	0.9639

NICTUS

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
NCS	Mar-01	2	1	1	0	0	0	0	0	1	1	1	0	0	0	-0.2115
NCS	Mar-02	3	2	4	2	0	1	5	2	1	1	1	2	5	1	-0.3455
NCS	Mar-03	3	2	4	2	0	1	5	2	1	1	1	2	5	1	-0.6166
NCS	Mar-04	2	2	4	2	2	1	5	2	1	1	1	2	5	1	-1.1979
NCS	Mar-05	2	2	4	2	2	1	5	2	1	1	1	2	3	1	-1.1224
NCS	Mar-06	2	2	4	2	2	1	5	2	1	1	1	2	3	1	-1.1836
NCS	Mar-07	2	2	4	2	2	1	3	2	1	1	1	2	3	1	-1.0287
NCS	Mar-08	2	2	4	2	2	1	3	2	1	1	1	2	3	1	-1.1062
NCS	Mar-09	2	2	4	2	2	1	3	2	1	1	1	2	3	1	-1.2081
NCS	Mar-10	2	2	4	2	2	1	3	2	1	1	1	2	3	1	-1.2509

PICKNPAY

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
PIK	Feb-01	3	1	3	3	0	4	0	4	1	2	1	0	1	5	0.2063
PIK	Feb-02	3	2	3	3	0	4	0	4	1	2	1	0	1	5	0.6283
PIK	Feb-03	3	2	3	3	0	4	0	4	1	2	1	2	1	5	-0.2605
PIK	Feb-04	3	2	3	3	1	4	0	4	1	0	1	2	1	5	0.0254
PIK	Feb-05															0.0469 n/a
PIK	Feb-06	3	2	3	3	1	4	0	4	1	0	1	2	1	5	-0.0128
PIK	Feb-07	3	3	4	4	2	4	3	4	1	2	1	2	2	5	0.1417
PIK	Feb-08	3	3	4	4	2	4	3	4	1	2	1	1	2	5	0.3488
PIK	Feb-09	3	3	4	4	2	4	3	4	1	2	1	1	2	5	0.3079
PIK	Feb-10	3	3	4	4	2	4	3	4	1	2	1	1	2	5	0.3371

NUWORLD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
NWL	Aug-00	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9252
NWL	Aug-01	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9093
NWL	Aug-02	3	2	3	0	1	4	0	1	0	0	0	0	0	0	0.9778
NWL	Aug-03	3	2	3	0	1	4	0	1	0	0	0	0	4	0	1.0846
NWL	Aug-04	3	2	3	0	1	4	0	1	0	0	0	0	4	0	1.0665
NWL	Aug-05	3	2	3	0	1	4	0	1	0	0	0	0	4	2	1.2579
NWL	Aug-06	3	2	4	0	1	4	0	3	0	0	0	1	4	2	1.4219
NWL	Aug-07	3	2	4	0	1	4	0	3	0	0	0	1	4	2	1.4969
NWL	Aug-08	3	2	4	0	1	4	0	3	0	0	0	1	4	2	0.7465
NWL	Aug-09	3	2	4	0	1	4	0	3	0	0	0	1	4	2	0.5305

PINNACLE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
PNC	Jun-00	3	0	2	0	0	5	0	3	5	0	5	0	0	0	0.0068
PNC	Jun-01	3	0	2	0	0	5	0	3	5	0	5	0	0	0	-0.4299
PNC	Jun-02	3	0	2	0	0	5	0	3	5	0	5	0	0	0	-0.0562
PNC	Jun-03	3	0	2	0	0	5	0	3	5	0	5	0	5	0	0.0741
PNC	Jun-04	3	0	2	0	0	5	0	3	5	0	5	0	2	0	0.4991
PNC	Jun-05	3	0	2	0	0	5	0	3	5	0	5	0	2	0	0.8530
PNC	Jun-06	3	0	2	0	0	5	0	3	5	0	5	0	2	0	0.1564
PNC	Jun-07	3	0	2	0	0	5	0	3	5	0	5	0	2	0	0.5449
PNC	Jun-08	3	0	2	0	0	5	0	3	5	0	5	0	2	0	0.7381
PNC	Jun-09	3	0	2	0	0	5	0	3	5	0	5	0	2	0	0.8102

PPC

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
PPC	Sep-00	2	2	3	3	3	5	2	3	2	2	2	4	3	5	1.1046
PPC	Sep-01	2	2	3	3	3	5	2	3	2	2	2	4	3	5	1.3273
PPC	Sep-02	3	3	3	3	2	5	2	3	2	2	2	4	3	5	1.9594
PPC	Sep-03	3	3	3	3	3	5	2	3	2	2	2	4	3	5	1.3700
PPC	Sep-04	1	3	3	3	3	5	2	4	2	2	2	5	3	5	2.2408
PPC	Sep-05	2	3	3	3	3	5	2	4	2	2	2	5	3	5	2.5653
PPC	Sep-06	2	3	3	3	3	5	2	4	2	2	2	5	3	5	2.7489
PPC	Sep-07	2	3	3	3	3	5	2	4	2	2	2	5	3	5	2.5704
PPC	Sep-08	2	3	3	3	3	5	2	4	2	2	2	5	3	5	3.0009
PPC	Sep-09	2	3	3	3	3	5	2	4	2	2	2	5	3	5	1.6388

SAPPI

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SAP	Sep-00	4	3	2	3	2	4	5	4	3	1	2	4	4	5	-0.0875
SAP	Sep-01	4	3	2	3	2	4	5	4	3	1	2	5	4	5	-0.8328
SAP	Sep-02	4	3	2	3	2	4	5	4	3	1	2	5	4	5	-0.1892
SAP	Sep-03	2	3	2	3	2	4	5	4	3	1	2	5	4	5	-0.0012
SAP	Sep-04	2	3	2	3	2	4	5	4	3	1	2	5	4	5	-0.4308
SAP	Sep-05	2	3	2	3	2	4	5	4	3	1	2	5	4	5	-1.1723
SAP	Sep-06	2	3	2	3	2	4	5	4	3	1	2	5	4	5	-0.9339
SAP	Sep-07	2	3	2	3	2	4	5	4	3	1	2	5	4	5	-0.5754
SAP	Sep-08	2	3	2	3	2	4	5	4	3	1	2	5	4	5	-1.0538
SAP	Sep-09	2	3	2	3	2	4	5	4	3	1	2	5	4	5	-1.2731

RAINBOW

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
RBW	Mar-01	3	3	4	4	4	5	3	4	2	1	2	4	5	5	0.7274
RBW	Mar-02	3	3	4	4	4	5	3	4	2	1	2	4	5	5	1.1415
RBW	Mar-03	3	3	4	4	4	5	3	4	2	1	2	4	5	5	1.7181
RBW	Mar-04	3	3	4	4	4	5	3	4	2	1	2	4	5	5	1.9096
RBW	Mar-05	3	3	4	4	4	5	3	4	2	1	2	1	5	5	1.1544
RBW	Mar-06	3	3	4	4	4	5	3	4	2	1	2	1	5	5	1.6017
RBW	Mar-07	3	3	4	4	4	5	3	4	2	1	2	1	5	5	1.6865
RBW	Mar-08	3	3	4	4	4	5	3	4	2	1	2	1	5	5	1.8230
RBW	Mar-09	3	3	4	4	4	5	3	4	2	1	2	1	5	5	0.5848
RBW	Mar-10	3	3	4	4	4	5	3	4	2	1	2	1	5	5	0.9228

SASOL

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SOL	Jun-00	4	3	3	4	1	5	4	4	5	1	5	3	4	5	1.9821
SOL	Jun-01	4	3	3	4	1	5	4	4	5	1	5	3	4	5	1.6608
SOL	Jun-02	3	3	3	4	1	5	4	4	5	1	5	3	4	5	2.0282
SOL	Jun-03	3	3	3	4	1	5	5	4	5	1	5	3	4	5	0.4936
SOL	Jun-04	3	3	3	4	1	5	5	4	5	1	5	3	4	5	0.3306
SOL	Jun-05	3	3	3	4	1	5	5	4	5	1	5	3	4	5	1.2287
SOL	Jun-06	3	3	3	4	1	5	5	4	5	1	5	3	4	5	0.9189
SOL	Jun-07	3	3	3	4	1	5	4	4	5	1	5	3	5	5	1.7400
SOL	Jun-08	3	3	3	4	1	5	4	4	5	1	5	3	5	5	1.9980
SOL	Jun-09	3	3	3	4	1	5	4	4	5	1	5	1	5	5	1.1952

REMGRO

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
REM	Mar-01	4	4	4	4	3	1	5	4	4	4	4	5	5	5	
REM	Mar-02	4	4	4	4	3	1	5	4	4	4	4	5	5	5	2.1198
REM	Mar-03	4	4	4	4	3	1	5	4	4	4	4	5	5	5	0.8804
REM	Mar-04	4	4	4	4	3	1	5	4	4	4	4	5	5	5	0.7092
REM	Mar-05	4	4	4	4	3	1	5	4	4	4	4	5	5	5	2.0389
REM	Mar-06	4	4	4	4	3	1	5	4	4	4	4	5	5	5	2.1258
REM	Mar-07	3	4	4	4	3	1	5	4	4	4	4	5	5	5	1.4314
REM	Mar-08	3	4	4	4	3	1	5	4	4	4	4	5	5	5	1.5611
REM	Mar-09	2	4	4	4	3	1	5	4	4	4	4	5	5	5	9.9807
REM	Mar-10	2	4	4	4	3	1	5	4	4	4	4	5	5	5	1.0858

SECDATA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SDH	Jul-00															n/a
SDH	Jul-01	3	3	4	3	3	4	1	4	5	1	5	2	4	1	2.9382
SDH	Jul-02	3	3	4	3	3	4	1	4	5	1	5	2	4	1	2.5780
SDH	Jul-03	3	3	4	3	3	4	1	4	5	1	5	2	4	1	2.6374
SDH	Jul-04	3	3	4	3	3	4	1	4	5	1	5	2	4	1	2.0762
SDH	Jul-05	3	3	4	3	3	4	1	4	5	1	5	2	4	1	2.2877
SDH	Jul-06	2	3	4	3	3	4	1	4	5	1	5	2	4	1	1.5490
SDH	Jul-07	2	3	4	3	3	4	1	4	5	1	5	2	4	1	-0.3523
SDH	Jul-08	2	3	4	3	3	4	1	4	5	1	5	2	4	1	-0.6223
SDH	Jul-09	2	3	4	3	3	4	1	4	5	1	5	2	4	1	-0.6489

REUNERT

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
RLO	Sep-00															1.0666 n/a
RLO	Sep-01	3	1	2	2	1	1	1	1	4	1	4	1	3	2	0.6803
RLO	Sep-02	3	2	3	3	3	1	4	1	4	1	4	1	5	3	0.6686
RLO	Sep-03	3	2	3	3	3	1	4	1	4	1	4	1	4	3	0.7643
RLO	Sep-04	3	2	3	3	3	1	4	1	4	1	4	1	4	3	0.7250
RLO	Sep-05	2	2	3	3	3	1	4	1	4	1	4	1	4	3	1.4014
RLO	Sep-06	2	2	3	3	3	1	4	1	4	1	4	1	4	3	1.1668
RLO	Sep-07	3	3	3	3	3	2	4	3	4	1	4	5	4	3	0.4715
RLO	Sep-08	3	3	3	3	3	2	4	3	4	1	4	5	4	3	1.4989
RLO	Sep-09	3	3	3	3	3	2	4	4	4	1	4	5	4	3	1.2721

SHOPRIT

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SHP	Jun-01	3	3	4	4	3	5	0	4	1	2	1	4	5	5	-0.2638
SHP	Jun-02	3	4	4	4	3	5	0	4	1	2	1	4	5	5	-0.0499
SHP	Jun-03	3	4	4	4	3	5	0	4	1	2	1	4	5	5	-0.0690
SHP	Jun-04	3	4	4	4	3	5	0	4	1	2	1	1	5	5	-0.0705
SHP	Jun-05	3	4	4	4	3	5	0	4	1	2	1	1	5	5	-0.0206
SHP	Jun-06	3	4	4	4	3	5	0	4	1	2	1	1	5	5	0.4431
SHP	Jun-07	3	4	4	4	3	5	0	4	1	2	1	1	5	5	0.4531
SHP	Jun-08	3	4	4	4	3	5	0	4	1	2	1	1	5	5	0.7018
SHP	Jun-09	3	4	4	4	3	5	0	4	1	1	1	1	5	5	0.8245
SHP	Jun-10	3	4	4	4	3	5	0	4	1	1	1	1	5	5	0.9715

REX TRUE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
RTN	Jun-01	2	2	3	3	1	5	0	1	1	1	0	0	3	2	0.6720
RTN	Jun-02	2	2	3	3	1	5	0	1	1	1	4	4	3	2	0.7860
RTN	Jun-03	2	2	3	3	1	5	0	1	1	1	1	1	3	2	1.0568
RTN	Jun-04	1	2	1	3	1	5	0	1	1	1	1	1	3	2	0.5443
RTN	Jun-05	0	1	0	3	1	5	0	1	1	0	1	1	0	2	-1.4380
RTN	Jun-06	0	1	0	3	1	5	0	1	1	0	1	1	0	2	0.8378
RTN	Jun-07	2	2	0	3	1	5	0	1	1	0	1	1	0	2	1.2661
RTN	Jun-08	3	4	2	3	1	5	0	2	1	0	2	2	1	2	2.2163
RTN	Jun-09	2	3	2	3	1	5	0	2	1	0	2	2	1	2	1.8663
RTN	Jun-10	2	3	2	3	1	5	0	2	1	0	2	2	1	2	1.6252

SILVERB

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SVB	Feb-01	1	1	0	0	0	0	0	1	4	0	5	0	0	0	-6.3495
SVB	Feb-02	2	1	0	0	0	0	0	1	4	0	5	0	0	0	1.0133
SVB	Feb-03	2	1	0	0	0	0	0	1	4	0	5	0	0	0	2.1270
SVB	Feb-04	2	1	0	0	0	0	0	1	4	0	5	0	0	0	2.0992
SVB	Feb-05	2	1	0	0	0	0	0	1	4	0	5	0	0	0	0.0755
SVB	Feb-06	2	1	0	0	0	0	0	1	4	0	5	0	0	0	-2.2833
SVB	Feb-07	2	3	2	2	1	3	1	1	4	1	5	3	4	2	2.2243
SVB	Feb-08	2	3	2	2	1	3	1	1	4	1	5	2	4	2	2.6211
SVB	Feb-09	2	3	2	2	1	3	1	1	4	1	5	2	4	2	1.4576
SVB	Feb-10	2	3	2	2	1	3	1	1	4	1	5	2	4	2	4.1954

SOVFOOD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SOV	Feb-01	3	2	3	1	2	2	2	2	1	1	1	2	2	1	0.0629
SOV	Feb-02	3	2	3	1	2	2	2	2	1	1	1	0	2	1	0.3737
SOV	Feb-03	2	1	3	1	2	2	2	2	1	1	1	0	2	1	-0.0673
SOV	Feb-04	2	1	3	1	2	2	2	2	1	1	1	0	2	1	-0.1472
SOV	Feb-05	2	1	3	1	2	2	2	2	1	1	1	1	2	1	1.6463
SOV	Feb-06	2	1	3	1	2	2	5	2	1	1	1	1	2	1	1.9158
SOV	Feb-07	3	2	4	1	2	4	5	3	1	1	1	2	3	1	1.6570
SOV	Feb-08	2	2	4	1	2	4	5	3	1	1	1	2	3	1	0.5028
SOV	Feb-09	1	1	4	1	2	4	5	3	1	1	1	2	3	1	-1.0122
SOV	Feb-10	2	1	4	1	2	4	5	3	1	1	1	2	3	1	-0.5825

STELLA

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SLL	Aug-00	3	2	3	1	0	4	2	5	3	3	3	3	5	4	-0.0310
SLL	Aug-01	1	2	3	1	0	4	2	5	3	3	3	3	5	4	0.4788
SLL	Aug-02	1	1	3	1	0	4	2	5	3	3	3	3	5	4	-3.5023
SLL	Aug-03	1	1	3	1	0	4	2	5	3	3	3	3	5	4	-0.4853
SLL	Aug-04	1	1	3	1	0	4	2	5	3	3	3	3	5	4	-8.3864
SLL	Aug-05	1	1	3	1	0	4	2	5	3	3	3	3	5	4	0.3608
SLL	Aug-06	1	1	3	1	0	4	2	5	3	3	3	3	5	4	-1.6110
SLL	Aug-07	1	1	3	1	0	4	2	5	3	3	3	3	5	4	0.3979
SLL	Aug-08	3	3	4	3	2	4	4	5	3	3	3	3	5	4	2.2482
SLL	Aug-09	3	3	4	3	2	4	4	5	3	3	3	3	5	4	-0.0373

SPANJAARD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SPA	Feb-01	2	1	1	1	0	2	0	0	0	0	0	0	0	0	0.6487
SPA	Feb-02	2	2	1	1	2	2	0	0	0	0	0	0	0	0	1.1558
SPA	Feb-03	2	2	1	1	2	2	0	2	0	0	0	0	0	0	0.1458
SPA	Feb-04	2	2	1	1	2	2	0	2	0	0	0	0	0	0	2.1110
SPA	Feb-05	1	1	1	1	2	2	0	2	0	0	0	0	0	0	0.2389
SPA	Feb-06	1	1	1	1	2	2	0	2	0	0	0	0	0	0	0.0648
SPA	Feb-07	2	1	1	1	1	2	0	2	0	0	0	1	0	0	0.5006
SPA	Feb-08	3	1	1	1	1	2	4	2	0	0	0	1	0	0	1.0429
SPA	Feb-09	3	1	1	1	1	2	4	2	0	0	0	1	0	0	1.0267
SPA	Feb-10	3	1	1	1	1	2	4	2	0	0	0	1	0	0	0.4015

SUNINT

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SUI	Jun-00	4	3	4	4	2	5	2	5	3	3	3	3	5	4	0.3818
SUI	Jun-01	4	3	4	4	2	5	2	5	3	3	3	3	5	4	0.2298
SUI	Jun-02	4	3	4	4	2	5	2	5	3	3	3	3	5	4	-0.1333
SUI	Jun-03	2	3	4	4	2	5	2	5	3	3	3	3	5	4	-0.7195
SUI	Jun-04	3	3	4	4	2	5	2	5	3	3	3	3	5	4	0.6019
SUI	Jun-05	3	3	4	4	2	5	2	5	3	3	3	3	5	4	1.0937
SUI	Jun-06	3	3	4	4	2	5	2	5	3	3	3	3	5	4	1.3861
SUI	Jun-07	3	4	4	4	3	5	2	5	3	3	3	3	5	4	1.1050
SUI	Jun-08	3	4	4	4	3	5	4	5	3	3	3	3	5	4	0.8776
SUI	Jun-09	3	4	4	4	3	5	4	5	3	3	3	3	5	4	0.8720

SPESCOM

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SPS	Sep-00	3	3	4	3	4	2	4	4	5	1	5	5	5	1	-3.6901
SPS	Sep-01	2	3	4	3	4	2	4	4	5	1	5	5	5	1	0.5001
SPS	Sep-02	1	2	3	3	4	2	2	4	5	1	5	3	1	1	-5.2197
SPS	Sep-03	2	2	3	3	4	2	3	4	5	1	5	3	1	1	-0.4221
SPS	Sep-04	2	2	3	3	4	2	3	4	5	1	5	1	1	1	1.6913
SPS	Sep-05	2	2	3	3	4	2	3	4	5	1	5	1	1	1	-3.2391
SPS	Sep-06	2	2	3	3	4	2	3	4	5	1	5	1	1	1	-1.8883
SPS	Sep-07	2	2	3	3	4	2	3	4	5	1	5	3	1	1	0.4650
SPS	Sep-08	2	2	3	3	4	2	3	4	5	1	5	3	1	1	-0.0979
SPS	Sep-09	2	2	3	3	4	2	3	4	5	1	5	3	1	1	0.5975

TIGBRANDS

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
TBS	Sep-00	3	4	4	4	2	3	3	4	1	1	1	2	5	5	-0.1599
TBS	Sep-01	3	4	4	4	2	3	3	4	1	1	1	2	5	5	0.2618
TBS	Sep-02	3	4	4	4	2	3	3	4	1	1	1	1	5	5	0.6116
TBS	Sep-03	2	4	4	4	2	3	3	4	1	1	1	1	5	5	0.3777
TBS	Sep-04	3	4	4	4	3	3	3	4	1	1	1	4	5	5	0.7903
TBS	Sep-05	4	4	4	4	4	3	3	4	1	1	1	4	5	5	1.1048
TBS	Sep-06	4	4	4	4	4	3	3	4	1	1	1	4	5	5	2.3590
TBS	Sep-07	4	4	4	4	4	3	3	4	1	0	1	4	5	5	2.2125
TBS	Sep-08	4	4	4	4	4	3	3	4	1	0	1	4	5	5	2.1564
TBS	Sep-09	4	4	4	4	4	3	3	4	1	0	1	4	5	5	2.2866

SPURCORP

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SUR	Jun-00	3	4	4	3	1	5	1	4	1	1	1	1	4	5	
SUR	Jun-01	3	4	4	3	1	5	1	4	1	1	1	1	4	5	8.3621
SUR	Jun-02	3	4	4	3	1	5	1	4	1	1	1	2	5	5	5.8169
SUR	Jun-03	3	4	4	3	1	5	1	4	1	1	1	2	5	5	3.8111
SUR	Jun-04	3	4	4	3	1	5	1	4	1	1	1	2	5	5	4.1470
SUR	Jun-05	3	4	4	3	1	5	1	4	1	1	1	2	5	5	4.9469
SUR	Jun-06	2	4	4	3	1	5	1	4	1	1	1	2	5	5	4.8826
SUR	Jun-07	2	4	4	3	1	5	1	4	1	1	1	2	5	5	4.0293
SUR	Jun-08	3	4	4	3	1	5	1	4	1	1	1	2	5	5	2.9785
SUR	Jun-09	2	4	4	3	1	5	1	4	1	1	1	2	5	5	3.1686

TRNPACO

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
TPC	Jun-00	3	4	4	4	3	3	2	3	2	3	2	5	4	3	2.5254
TPC	Jun-01	3	4	4	4	3	3	2	3	2	3	2	5	4	3	-0.8298
TPC	Jun-02	3	4	4	4	3	3	2	3	2	3	2	5	4	3	0.5248
TPC	Jun-03	3	4	4	4	3	3	2	3	2	3	2	4	4	3	1.1072
TPC	Jun-04	2	4	4	4	3	3	2	3	2	3	2	1	4	3	1.0921
TPC	Jun-05	2	4	4	4	3	3	2	3	2	3	2	1	4	3	0.7809
TPC	Jun-06	2	4	4	4	3	3	2	3	2	3	2	1	4	3	0.2956
TPC	Jun-07	2	4	4	4	3	3	2	3	2	3	2	2	5	3	0.1852
TPC	Jun-08	2	4	4	4	3	3	2	3	2	3	2	4	5	3	0.2156
TPC	Jun-09	3	4	4	4	3	3	2	3	2	3	2	4	5	3	0.9769

STEINHOFF

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
SHF	Jun-00	4	4	4	4	3	2	0	4	2	1	2	4	5	1	0.4354
SHF	Jun-01	4	4	4	4	3	2	0	4	2	1	2	4	5	1	0.8512
SHF	Jun-02	4	4	4	4	3	2	0	4	2	1	2	4	5	1	0.9778
SHF	Jun-03	4	4	4	4	3	2	0	4	2	1	2	4	5	1	-0.0151
SHF	Jun-04	4	4	4	4	3	4	0	4	2	3	2	4	5	1	0.0744
SHF	Jun-05	4	4	4	4	3	4	0	4	2	3	2	5	5	1	0.4267
SHF	Jun-06	4	4	4	4	3	4	0	4	2	3	2	5	5	1	0.0292
SHF	Jun-07	4	4	4	4	3	4	0	4	2	3	2	5	5	1	0.2327
SHF	Jun-08	4	4	4	4	3	4	0	4	2	3	2	2	5	5	0.1134
SHF	Jun-09	4	4	4	4	3	4	0	4	2	3	2	2	5	5	0.2687

TRUWTHS

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
TRU	Jun-01	3	0	1	0	0	4	0	1	1	0	1	0	0	2	1.8705
TRU	Jun-02	3	0	1	0	0	4	0	1	1	0	1	2	3	2	2.6401
TRU	Jun-03	3	2	3	4	1	4	0	3	1	0	1	2	3	2	2.3297
TRU	Jun-04	3	3	3	4	3	4	2	3	1	0	1	2	5	3	2.8106
TRU	Jun-05	3	3	3	4	3	4	2	3	1	0	1	2	5	3	2.7309
TRU	Jun-06	3	3	3	4	3	4	2	3	1	0	1	2	5	3	3.4962
TRU	Jun-07	3	3	3	4	3	4	2	4	1	0	1	3	5	3	3.9800
TRU	Jun-08	3	3	3	4	3	4	2	4	1	0	1	3	5	3	3.9838
TRU	Jun-09	2	3	3	4	3	4	2	4	1	0	1	3	5	3	4.2043
TRU	Jun-10	2	3	3	4	3	4	2	4	1	0	1	3	5	3	3.8926

UCS

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
UCS	Sep-00	2	0	0	0	0	1	0	0	5	0	0	0	0	0	2.0070
UCS	Sep-01	2	0	0	0	0	1	0	0	5	0	0	0	0	0	1.4757
UCS	Sep-02	2	0	0	0	0	1	0	0	5	0	1	1	0	0	0.6687
UCS	Sep-03	2	0	0	0	0	1	0	0	5	0	1	1	0	0	-0.6597
UCS	Sep-04	2	0	0	0	0	1	0	0	5	0	1	1	0	0	0.4180
UCS	Sep-05	2	0	0	0	0	1	0	0	5	0	1	1	0	0	0.9014
UCS	Sep-06	2	2	4	2	2	4	0	3	5	0	3	3	2	3	2.5002
UCS	Sep-07	2	2	4	2	2	4	0	3	5	0	3	3	2	3	3.4491
UCS	Sep-08	2	2	4	3	2	4	0	3	5	0	3	3	4	3	1.1540
UCS	Sep-09	2	2	4	3	2	4	0	3	5	0	3	3	4	3	0.5513

VALUE

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
VLE	Feb-01	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3872
VLE	Feb-02	2	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.1822
VLE	Feb-03	3	0	0	0	0	4	0	0	0	0	0	0	0	0	1.1202
VLE	Feb-04	3	0	0	0	0	4	0	0	0	0	0	0	0	0	0.8698
VLE	Feb-05	3	0	0	0	0	4	0	0	0	0	0	0	0	0	0.6181
VLE	Feb-06	3	0	0	0	0	4	0	0	0	0	0	0	0	0	0.7746
VLE	Feb-07	3	0	0	0	0	4	0	0	0	0	0	0	0	0	-0.2263
VLE	Feb-08	3	0	0	0	0	4	0	0	0	0	0	0	0	0	0.1365
VLE	Feb-09	3	0	0	0	0	4	0	0	0	0	0	0	0	0	0.5604
VLE	Feb-10	3	0	0	0	0	4	0	0	0	0	0	0	0	0	0.5763

WBHO

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
WBO	Jun-01	2	2	3	4	0	5	0	3	1	1	1	2	1	3	-0.0342
WBO	Jun-02	2	2	3	4	0	5	0	3	1	1	1	2	1	3	-0.1289
WBO	Jun-03	2	2	3	4	0	5	0	3	1	1	1	2	1	3	-0.7546
WBO	Jun-04	3	2	3	4	0	5	0	3	1	1	1	2	1	3	-0.2800
WBO	Jun-05	3	2	3	4	0	5	0	3	1	1	1	2	5	4	-0.1531
WBO	Jun-06	3	2	3	4	0	5	0	3	1	1	1	2	5	4	-0.3882
WBO	Jun-07	3	2	3	4	0	5	0	3	1	1	1	2	5	4	0.0066
WBO	Jun-08	3	2	3	4	0	5	0	3	1	1	1	2	5	4	0.2225
WBO	Jun-09	3	2	3	4	0	5	0	3	1	1	1	2	5	4	0.2735
WBO	Jun-10	3	2	3	4	0	5	0	3	1	1	1	2	5	4	0.1781

WINHOLD

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
WNH	Sep-00	2	3	3	3	3	4	0	2	1	1	1	3	3	1	0.0104
WNH	Sep-01	2	3	3	3	3	4	0	2	1	1	1	3	3	1	-0.3064
WNH	Sep-02	2	3	3	3	3	4	0	2	1	1	1	4	3	1	-0.0698
WNH	Sep-03	3	3	3	3	3	4	0	2	1	1	1	4	3	1	0.5105
WNH	Sep-04	3	3	3	3	3	4	0	2	1	1	1	4	3	1	0.6298
WNH	Sep-05	3	3	3	3	3	4	0	2	1	1	1	4	3	1	0.1429
WNH	Sep-06	3	3	3	3	3	4	0	2	1	1	1	4	3	1	-0.1385
WNH	Sep-07	4	3	3	3	3	4	0	2	1	1	1	4	3	1	-0.2221
WNH	Sep-08	4	3	3	3	3	4	0	2	1	1	1	5	3	1	-0.0926
WNH	Sep-09	4	3	3	3	3	4	0	2	1	1	1	5	3	1	-0.1024

WOOLIES

Company	Year	a1	a2	b1	b2	c1	c2	d1	d2	d3	d4	d5	d6	e1	e2	K
WHL	Jun-01	3	1	4	0	1	5	0	4	1	1	1	1	2	5	0.6337
WHL	Jun-02	3	1	4	0	1	5	0	4	1	1	1	1	2	5	0.6186
WHL	Jun-03	3	2	4	3	1	5	0	4	1	1	1	1	2	5	0.5307
WHL	Jun-04	3	2	4	3	1	5	0	4	1	1	1	1	2	5	0.8194
WHL	Jun-05	3	2	4	3	1	5	4	4	1	1	1	1	2	5	0.3547
WHL	Jun-06	4	2	4	3	1	5	4	4	1	1	1	1	2	5	0.2141
WHL	Jun-07	4	4	4	3	3	5	4	4	1	1	1	1	2	5	0.3276
WHL	Jun-08	4	4	4	3	3	5	5	4	1	1	1	3	2	5	0.3125
WHL	Jun-09	2	4	4	3	3	5	5	4	1	1	1	3	2	5	0.9287
WHL	Jun-10	2	4	4	3	3	5	5	4	1	1	1	3	2	5	0.9795

APPENDIX G

DE LA REY K-SCORE RESULTS

JSE Sector	Full Company Name	Short name	JSE Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Oil & Gas Producers														
	Sasol Ltd	Sasol	SOL	1.9821	1.6608	2.0282	0.4936	0.3306	1.2287	0.9189	1.7400	1.9980	1.1952	
Chemicals														
	AECI Ltd	AECI	AFE	0.1642	-0.5894	-0.1779	-0.1585	0.2414	0.4125	1.5822	0.2223	-0.3397	-0.0707	
	Delta EMD Ltd	Delta	DTA	2.0839	2.2636	2.2720	1.4371	0.3068	6.5969	-0.7570	-2.1436	1.4748	2.3859	
	Omnia Holdings Ltd	Omnia	OMN		n/a	1.4713	1.5302	0.1506	0.7752	0.2446	0.5771	0.4380	0.8553	-0.4687
	Spanjaard Ltd	Spanjaard	SPA		0.6487	1.1558	0.1458	2.1110	0.2389	0.0648	0.5006	1.0429	1.0267	0.4015
Forestry & Paper														
	Sappi Ltd	Sappi	SAP	-0.0875	-0.8328	-0.1892	-0.0012	-0.4308	-1.1723	-0.9339	-0.5754	-1.0538	-1.2731	
Construction & Materials														
	AG Industries Ltd	AGI	AGI	2.2521	2.0288	1.8345	-0.4825	0.5068	0.0163	0.9820	0.0912	-1.0196	-4.3695	
	Aveng Ltd	Aveng	AEG		-0.1510	0.0039	-0.1086	-1.3016	-0.8197	-0.1039	5.2680	0.5287	0.3641	0.3708
	Basil Read Holdings Ltd	Basread	BSR	-2.0898	-3.4384	-0.1110	0.5118	-3.5547	-0.1250	0.1749	0.3376	0.2300	0.0664	
	Ceramic Industries Ltd	Ceramic	CRM	2.3896	2.6203	1.8534	1.5807	1.7213	2.3219	1.9017	1.8395	1.4349	0.9617	
	Distribution and Warehousing Network Ltd	Dawn	DAW	0.8606	0.5763	0.2015	0.7926	0.7950	1.4895	1.0732	0.6895	0.5544	-0.2912	
	Group Five Ltd	Group 5	GRF		-0.7038	-0.7706	-0.5451	-0.6482	-0.8445	-0.8803	-0.7399	-0.5649	-0.3851	-0.3786
	Murray & Roberts Holdings Ltd	M&R-HLD	MUR		-0.2050	0.3940	-0.5310	-0.2046	0.4095	0.0867	0.0432	0.8016	0.6800	0.1394
	Masonite (Africa) Ltd	Masonite	MAS	-0.2270	0.1300	0.3778	0.5537	0.0473	0.4274	0.7528	1.1324	2.2020	0.8411	
	Pretoria Portland Cement Company Ltd	PPC	PPC	1.1046	1.3273	1.9594	1.3700	2.2408	2.5653	2.7489	2.5704	3.0009	1.6388	
	Wilson Bayly Holmes - Ovcon Ltd	WBHO	WBO		-0.0342	-0.1289	-0.7546	-0.2800	-0.1531	-0.3882	0.0066	0.2225	0.2735	0.1781
General Industrials														
	Astrapak Ltd	Astrapak	APK		0.0513	0.5769	0.1353	0.6512	0.8731	0.9547	0.6293	0.1337	0.1905	0.3886
	Barloworld Ltd	Barworld	BAW	0.8838	0.5227	0.8757	-0.8779	0.3727	0.3115	0.3491	0.3767	-0.1959	-0.3834	
	Nampak Ltd	Nampak	NPK	0.6359	0.0308	-0.0691	-0.0802	0.7032	0.6315	0.6915	0.5197	0.1253	-0.6661	
	Remgro Ltd	Remgro	REM		n/a	2.1198	0.8804	0.7092	2.0389	2.1258	1.4314	1.5611	9.9807	1.0858
	Transpaco Ltd	Trnpaco	TPC	2.5254	-0.8298	0.5248	1.1072	1.0921	0.7809	0.2956	0.1852	0.2156	0.9769	
Electronic & Electrical Equipment														
	Allied Electronics Corporation Ltd	Altron	ATN		0.8550	0.5850	1.2780	0.7619	0.9540	0.9226	1.3708	1.2641	0.7767	0.3816
	Control Instruments Group Ltd	Control	CNL	0.5840	-0.7460	0.1692	1.0468	0.8721	0.7325	-0.4486	10.3666	-1.7184	-1.1437	
	Digicore Holdings Ltd	Digicore	DGC	0.0625	3.7905	1.3430	2.3617	2.5486	1.9791	3.6632	3.5180	3.9987	2.1805	
	Reunert Ltd	Reunert	RLO	1.0666	0.6803	0.6686	0.7643	0.7250	1.4014	1.1668	0.4715	1.4989	1.2721	
Industrial Engineering														
	Bell Equipment Ltd	Bell	BEL	1.3473	1.8596	0.4610	0.1136	-0.2564	-0.3605	1.4934	1.5796	1.2519	-1.3259	
	Howden Africa Holdings Ltd	Howden	HWN	-0.0364	-0.4014	0.0741	0.3280	-0.1832	0.3482	-0.5082	1.1304	0.5312	1.0437	
	Hudaco Industries Ltd	Hudaco	HDC	0.9688	0.8949	1.0659	1.5066	1.1959	1.7162	1.6151	-0.1640	0.1309	-0.0626	
	Invicta Holdings Ltd	Invicta	IVT		0.8929	0.8017	1.5905	1.5471	1.7478	-0.0614	0.1567	-0.2097	-0.1814	-0.1636
	Kairos Industrial Holdings Ltd	Kairos	KIR		0.0489	-1.1503	1.1452	0.4812	1.8212	0.5900	0.0307	-0.3421	-1.6521	-7.7598
Industrial Transportation														
	Cargo Carriers Ltd	Cargo	CRG		-0.7269	-0.0467	-0.4361	0.1118	0.4107	0.4339	0.0503	-0.2498	-0.3162	-0.1028
	Grindrod Ltd	Grindrod	GND	0.1304	0.6718	-1.9374	-0.6317	1.0566	1.5473	0.9239	0.6561	1.5500	-0.0053	
	Imperial Holdings Ltd	Imperial	IPL		0.3449	0.4945	0.1499	0.0183	0.4846	0.1005	0.0620	-0.8728	-0.1792	0.0485
	Value Group Ltd	Value	VLE		0.3872	-0.1822	1.1202	0.8698	0.6181	0.7746	-0.2263	0.1365	0.5604	0.5763
Support Services														
	The Bidvest Group Ltd	Bidvest	BVT	0.8227	0.9247	0.9646	0.1031	0.2985	0.8622	0.3988	0.3242	0.1994	0.1989	
	ELB Group Ltd	ELBGroup	ELR	-1.1669	-0.6357	0.8087	-1.0234	-0.3955	-0.0053	-0.5671	0.3097	0.6431	0.3399	
	Iliad Africa Ltd	Iliad	ILA	1.0801	1.0454	1.6782	1.3399	1.6943	1.4894	1.4097	1.6569	1.3456	0.0616	
	Metrofile Holdings Ltd	Metrofile	MFL	0.8851	-0.4430	-0.7087	-5.1898	-4.5007	-2.9397	-1.6601	-0.2444	0.8608	0.1391	
	MICROmega Holdings Ltd	Micromega	MMG	5.0160	3.7785	0.9397	5.2756	1.5009	1.4045	2.3651	2.4518	1.9689	0.4722	
	Winhold Ltd	Winhold	WNH	0.0104	-0.3064	-0.0698	0.5105	0.6298	0.1429	-0.1385	-0.2221	-0.0926	-0.1024	

JSE Sector	Full Company Name	Short name	JSE Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Automobiles & Parts														
	Dorbyl Ltd	Dorbyl	DLV		-0.4336	-0.0921	1.2752	0.5978	1.0430	7.4390	0.0075	-0.8151	-4.9739	-2.9882
	Metair Investments Ltd	Metair	MTA	1.6975	1.0940	0.8788	1.4372	1.5464	1.5813	1.8311	1.3918	-0.0081	0.5265	
Beverages														
	Distell Group Ltd	Distell	DST		0.0867	0.3600	0.5989	0.6743	0.9569	1.1473	1.8086	1.9778	1.7263	1.4465
Food Producers														
	AVI Ltd	A-V-I	AVI		0.8173	0.9350	1.1428	1.1259	2.2354	0.3716	1.0945	0.6982	0.7616	1.1403
	Crookes Brothers Ltd	Crookes	CKS		0.8159	0.9285	1.3831	0.6907	-0.0282	0.9308	0.9133	1.1481	1.6984	-0.0924
	Illovo Sugar Ltd	Illovo	ILV		0.2641	0.4493	-0.9306	-0.6476	-0.4515	0.6489	0.9934	0.6108	0.5523	0.8959
	Intertrading Ltd	Intrading	ITR		0.0863	0.7982	0.1680	-0.7441	0.4455	-2.5946	-1.4923	0.1168	-0.2972	-1.8104
	Oceana Group Ltd	Oceana	OCE	1.2938	1.6017	1.9361	1.4308	1.0271	0.6612	0.8429	1.3519	1.7606	2.1782	
	Rainbow Chicken Ltd	Rainbow	RBW		0.7274	1.1415	1.7181	1.9096	1.1544	1.6017	1.6865	1.8230	0.5848	0.9228
	Sovereign Food Investments Ltd	Sovfood	SOV		0.0629	0.3737	-0.0673	-0.1472	1.6463	1.9158	1.6570	0.5028	-1.0122	-0.5825
	Tiger Brands Ltd	Tigbrands	TBS	-0.1599	0.2618	0.6116	0.3777	0.7903	1.1048	2.3590	2.2125	2.1564	2.2866	
Household Goods & Home Construction														
	Steinhoff International Holdings Ltd	Steinhoff	SHF	0.4354	0.8512	0.9778	-0.0151	0.0744	0.4267	0.0292	0.2327	0.1134	0.2687	
Leisure Goods														
	Nu-World Holdings Ltd	Nuworld	NWL	0.9252	0.9093	0.9778	1.0846	1.0665	1.2579	1.4219	1.4969	0.7465	0.5305	
Healthcare Equipment & Sevices														
	Medi-Clinic Corporation Ltd	Medclin	MDC		1.4435	1.6341	1.5504	1.6243	1.7816	0.7109	1.0540	-0.7756	-1.0053	-0.8389
	Netcare Ltd	Netcare	NTC	0.3903	0.5083	0.9218	1.381	0.7505	1.1174	-1.5994	-1.3457	-1.4447	-1.1146	
Pharmaceuticals & Biotechnology														
	Aspen Pharmacare Holdings Ltd	Aspen	APN	0.1530	1.8137	3.8199	2.4416	3.2382	2.9729	2.5515	1.0682	0.4524	1.3370	
Food & Drug Retailers														
	Clicks Group Ltd	Clicks	CLS	0.8989	1.1525	1.0245	0.1118	0.4708	0.4956	0.6416	0.6231	0.7353	0.7128	
	Pick n Pay Stores Ltd	PicknPay	PIK		0.2063	0.6283	-0.2605	0.0254	0.0469	-0.0128	0.1417	0.3488	0.3079	0.3371
	Shoprite Holdings Ltd	Shoprit	SHP		-0.2638	-0.0499	-0.0690	-0.0705	-0.0206	0.4431	0.4531	0.7018	0.8245	0.9715
General Retailers														
	ADvTECH Ltd	Advtech	ADH	0.2023	-0.7448	-0.6970	0.5721	0.5274	1.1393	1.7751	2.1027	2.3733	2.0385	
	Cashbuild Ltd	Cashbil	CSB	-0.6328	-0.0427	0.1274	0.6732	0.7375	0.8473	0.7971	1.1621	0.9041	0.9181	
	Combined Motor Holdings Ltd	CMH	CMH		0.9410	0.7348	0.6686	0.6121	0.8826	0.8318	0.2831	0.0104	-0.5555	-0.0218
	Italtile Ltd	Itltile	ITE		1.7027	2.2398	2.0247	2.0944	2.2820	2.3832	2.3880	2.0864	1.5119	1.4625
	Massmart Holdings Ltd	Massmart	MSM	n/a	-0.1895	0.5291	0.4643	0.2421	-0.0825	0.2655	0.5352	0.9455	0.7120	
	Mr Price Group Ltd	Mrprice	MPC		0.7999	1.0151	1.1758	0.6963	1.2242	1.6757	1.6922	2.0531	1.9850	1.4217
	Nictus Ltd	Nictus	NCS		-0.2115	-0.3455	-0.6166	-1.1979	-1.1224	-1.1836	-1.0287	-1.1062	-1.2081	-1.2509
	Rex Trueform Clothing Company Ltd	Rex True	RTO		0.6720	0.7860	1.0568	0.5443	-1.4380	0.8378	1.2661	2.2163	1.8663	1.6252
	Truworths International Ltd	Truwths	TRU		1.8705	2.6401	2.3297	2.8106	2.7309	3.4962	3.9800	3.9838	4.2043	3.8926
	Woolworths Holdings Ltd	Woolies	WHL		0.6337	0.6186	0.5307	0.8194	0.3547	0.2141	0.3276	0.3125	0.9287	0.9795
Media														
	Caxton and CTP Publishers and Printers Ltd	Caxton	CAT	1.2788	1.5977	1.2322	1.0569	1.2281	1.6664	1.5093	1.4693	1.4248	2.0448	
	Kagiso Media Ltd	Kgmedia	KGM	-0.3039	1.6189	3.4654	4.0245	3.7462	5.0413	5.0595	4.6134	4.9226	4.3204	

JSE Sector	Full Company Name	Short name	JSE Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Travel & Leisure														
	City Lodge Hotels Ltd	CityLDG	CLH		0.6869	1.3370	1.6586	2.1326	2.3632	2.6572	3.0484	3.1949	1.7922	1.6868
	Comair Ltd	Comair	COM		0.9145	-0.5240	-1.2268	-2.9099	0.7106	0.1259	0.3715	-0.1164	-0.2565	-0.2078
	Cullinan Holdings Ltd	Cullinan	CUL	-1.0436	-1.9135	-0.2703	0.2140	0.4857	0.0662	-0.3222	-0.3916	-0.9359	-0.4070	
	The Don Group Ltd	Don	DON	-0.9607	-5.8241	0.0025	0.1306	-1.7067	-0.7306	-0.9788	-0.2660	-0.0974	-0.8725	
	Famous Brands Ltd	Fambrands	FBR		1.8407	1.3727	0.8992	1.2319	2.5235	2.2983	1.8541	2.5041	2.242	3.3596
	Gold Reef Resorts Ltd	Goldreef	GDF	0.5912	1.0051	1.0092	1.1783	2.0769	2.3241	1.4955	0.2960	0.6654	0.7250	
	Spur Corporation Ltd	Spurcorp	SUR	n/a	8.3621	5.8169	3.8111	4.1470	4.9469	4.8826	4.0293	2.9785	3.1686	
	Sun International Ltd	Sunint	SUI	0.3818	0.2298	-0.1333	-0.7195	0.6019	1.0937	1.3861	1.1050	0.8776	0.8720	
Mobile telecommunications														
	Allied Technologies Ltd	Altech	ALT		1.0698	1.0113	3.6454	1.3064	1.0773	1.2738	1.3702	1.3666	1.2683	1.4307
Software & Computer Services														
	Compu-Clearing Outsourcing Ltd	Compclear	CCL	2.4138	2.5347	2.1332	1.7258	1.7770	1.7074	2.3949	2.2082	2.5702	1.2523	
	ConvergeNet Holdings Ltd	Converge	CVN	4.5392	-8.1438	-5.3612	2.9426	3.4729	3.0602	-23.1250	0.6582	2.4276	1.0311	
	Datacentrix Holdings Ltd	Dcentrix	DCT		-0.0469	0.9025	1.0782	1.0598	1.3252	0.7224	1.4683	1.6112	1.9141	1.2950
	Faritec Holdings Ltd	Faritec	FRT	0.4768	0.2573	0.4458	0.0127	-2.7479	-0.3837	-0.3803	-0.6937	-0.4294	-7.1065	
	Gijima Ast Group Ltd	Gijimaast	GIJ	3.8709	1.3886	0.0831	-4.1113	-3.8200	-0.6510	-0.2516	-0.3407	-0.7121	0.4430	
	SecureData Holdings Ltd	Secdata	SDH	n/a	2.9382	2.5780	2.6374	2.0762	2.2877	1.5490	-0.3523	-0.6223	-0.6489	
	Spescom Ltd	Spescom	SPS	-3.6901	0.5001	-5.2197	-0.4221	1.6913	-3.2391	-1.8883	0.4650	-0.0979	0.5975	
	UCS Group Ltd	UCS	UCS	2.0070	1.4757	0.6687	-0.6597	0.4180	0.9014	2.5002	3.4491	1.1540	0.5513	
Technology Hardware & Equipment														
	Mustek Ltd	Mustek	MST	0.2040	-0.0867	0.2196	0.5098	-0.0960	0.3021	-0.1587	-0.2698	-0.1604	-0.1939	
	Pinnacle Technology Holdings Ltd	Pinnacle	PNC	0.0068	-0.4299	-0.0562	0.0741	0.4991	0.8530	0.1564	0.5449	0.7381	0.8102	
ALTx														
	MoneyWeb Holdings Ltd	Moneyweb	MNY		1.7560	0.7057	0.3979	1.0915	-2.8500	0.5254	1.2448	1.3494	0.0806	0.9747
	OneLogix Group Ltd	Onelogix	OLG		0.6890	-5.2742	-4.6990	4.4256	3.5817	1.7281	0.8959	1.2061	0.4735	0.9639
	SilverBridge Holdings Ltd	Silverb	SVB		-6.3495	1.0133	2.1270	2.0992	0.0755	-2.2833	2.2243	2.6211	1.4576	4.1954
DCM														
	Stella Vista Technologies Ltd	Stella	SLL	-0.0310	0.4788	-3.5023	-0.4853	-8.3864	0.3608	-1.6110	0.3979	2.2482	-0.0373	
VCM														
	Labat Africa Ltd	Labat	LAB	0.6106	-0.7990	2.2795	0.6997	-1.6716	-2.9936	-0.6466	-1.0850	-0.5656	1.1593	

APPENDIX H

WEIGHTED QUESTIONNAIRE SCORE RESULTS

JSE Sector	Full Company Name	Short name	JSE Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Sasol Ltd	Sasol	SOL	0.4714	0.4429	0.4143	0.4429	0.7286	0.7286	0.7286	0.7286	0.7286	0.7000	
Chemicals														
	AECI Ltd	AECI	AFE	0.4286	0.4429	0.4857	0.5000	0.5000	0.5143	0.5857	0.5714	0.5714	0.5143	
	Delta EMD Ltd	Delta	DTA	0.6286	0.6286	0.6429	0.6571	0.6714	0.5857	0.6286	0.5429	0.4857	0.4000	
	Omnia Holdings Ltd	Omnia	OMN		0.6143	0.6143	0.6429	0.6143	0.6143	0.5857	0.6286	0.6571	0.6857	0.6286
	Spanjaard Ltd	Spanjaard	SPA		0.1000	0.1429	0.1714	0.1714	0.1429	0.1429	0.1571	0.2286	0.2286	0.2286
Forestry & Paper														
	Sappi Ltd	Sappi	SAP	0.6571	0.6714	0.6714	0.6429	0.6429	0.6429	0.6429	0.6429	0.6429	0.6429	
Construction & Materials														
	AG Industries Ltd	AGI	AGI	0.4429	0.4286	0.4286	0.3857	0.3429	0.3429	0.3143	0.2286	0.2000	0.1429	
	Aveng Ltd	Aveng	AEG		0.6143	0.6143	0.6143	0.6143	0.6286	0.6143	0.6000	0.7000	0.7000	0.6857
	Basil Read Holdings Ltd	Basread	BSR	0.1857	0.1857	0.2714	0.2286	0.1857	0.1857	0.1857	0.2571	0.3857	0.3857	
	Ceramic Industries Ltd	Ceramic	CRM	0.3857	0.4429	0.4429	0.4429	0.4857	0.5286	0.5143	0.4857	0.4429	0.4000	
	Distribution and Warehousing Network Ltd	Dawn	DAW	0.3857	0.3571	0.2286	0.4571	0.4714	0.4857	0.5143	0.5429	0.6286	0.6000	
	Group Five Ltd	Group 5	GRF		0.5143	0.4857	0.4857	0.4857	0.4714	0.4714	0.6000	0.6000	0.5571	0.5571
	Murray & Roberts Holdings Ltd	M&R-HLD	MUR		0.6714	0.6429	0.6429	0.6286	0.6286	0.6429	0.6571	0.6857	0.6857	0.6714
	Masonite (Africa) Ltd	Masonite	MAS	0.4714	0.4571	0.4429	0.3000	0.3571	0.3571	0.3571	0.3571	0.3571	0.3571	
	Pretoria Portland Cement Company Ltd	PPC	PPC	0.5857	0.5857	0.6143	0.6143	0.6143	0.6286	0.6286	0.6286	0.6286	0.6286	
	Wilson Bayly Holmes - Ovcon Ltd	WBHO	WBO		0.4000	0.4000	0.4000	0.4143	0.4857	0.4857	0.4857	0.4857	0.4857	0.4857
General Industrials														
	Astrapak Ltd	Astrapak	APK		0.4571	0.4857	0.5000	0.5000	0.5714	0.6286	0.6429	0.5714	0.5714	0.5714
	Barloworld Ltd	Barworld	BAW	#VALUE!	0.6571	0.6571	0.6571	0.7143	0.7143	0.7571	0.7571	0.7571	0.7571	
	Nampak Ltd	Nampak	NPK	0.7000	0.6857	0.6857	0.6857	0.6857	0.6857	0.7143	0.7143	0.6857	0.6857	
	Remgro Ltd	Remgro	REM		0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.7857	0.7857	0.7714	0.7714
	Transpaco Ltd	Trnpaco	TPC	0.6429	0.6429	0.6429	0.6286	0.5714	0.5714	0.5714	0.6000	0.6286	0.6429	
Electronic & Electrical Equipment														
	Allied Electronics Corporation Ltd	Altron	ATN		0.8857	0.8857	0.8714	0.8714	0.8714	0.8714	0.8714	0.8571	0.8571	0.8571
	Control Instruments Group Ltd	Control	CNL	0.4571	0.4286	0.4714	0.4714	0.4714	0.4857	0.5571	0.5571	0.4714	0.4714	
	Digicore Holdings Ltd	Digicore	DGC	0.6143	0.6143	0.6000	0.6429	0.6429	0.5857	0.5857	0.6571	0.6286	0.6286	
	Reunert Ltd	Reunert	RLO	#VALUE!	0.3857	0.5429	0.5286	0.5286	0.5143	0.5143	0.6429	0.6429	0.6571	
Industrial Engineering														
	Bell Equipment Ltd	Bell	BEL	0.6429	0.6429	0.6286	0.6571	0.6429	0.6429	0.7286	0.7429	0.6857	0.6143	
	Howden Africa Holdings Ltd	Howden	HWN	0.2714	0.3143	0.3000	0.3143	0.3429	0.3429	0.3429	0.5143	0.5143	0.5143	
	Hudaco Industries Ltd	Hudaco	HDC	0.4000	0.4714	0.5000	0.5000	0.5000	0.5714	0.6000	0.6286	0.6286	0.5286	
	Invicta Holdings Ltd	Invicta	IVT		0.6000	0.6000	0.6857	0.7286	0.7286	0.7143	0.7429	0.7571	0.7571	0.7571
	Kairos Industrial Holdings Ltd	Kairos	KIR		0.3429	0.3286	0.2857	0.2571	0.2571	0.2571	0.2571	0.1714	0.1714	0.1714
Industrial Transportation														
	Cargo Carriers Ltd	Cargo	CRG		0.2286	0.2286	0.2286	0.2286	0.2429	0.2429	0.2429	0.2286	0.2286	0.2286
	Grindrod Ltd	Grindrod	GND	0.5286	0.5286	0.5857	0.5857	0.6286	0.6286	0.6429	0.6429	0.6571	0.5857	
	Imperial Holdings Ltd	Imperial	IPL		0.5429	0.6286	0.6000	0.6000	0.6143	0.5571	0.5571	0.5571	0.6000	0.6143
	Value Group Ltd	Value	VLE		0.0286	0.0286	0.1000	0.1000	0.1000	0.1000	0.0857	0.1000	0.1000	0.1000
Support Services														
	The Bidvest Group Ltd	Bidvest	BVT	0.6857	0.7429	0.7857	0.7857	0.7143	0.7000	0.7000	0.7000	0.6857	0.6857	
	ELB Group Ltd	ELBGroup	ELR	0.3000	0.3000	0.4714	0.4714	0.4571	0.4571	0.4571	0.4857	0.4857	0.4857	
	Iliad Africa Ltd	Iliad	ILA	0.2571	0.5714	0.5286	0.3714	0.3143	0.5429	0.5429	0.5429	0.6143	0.6143	
	Metrofile Holdings Ltd	Metrofile	MFL	0.0429	0.1000	#VALUE!	0.1429	0.3429	0.3571	0.3857	0.3714	0.3571	0.3571	
	MICROmega Holdings Ltd	Micromega	MMG	0.0143	0.1571	0.1571	0.2429	0.3000	0.3286	0.3000	0.4143	0.4143	0.3286	
	Winhold Ltd	Winhold	WNH	0.4429	0.4429	0.4571	0.4714	0.4714	0.4714	0.4714	0.4857	0.5000	0.5000	

JSE Sector	Full Company Name	Short name	JSE Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Automobiles & Parts														
	Dorbyl Ltd	Dorbyl	DLV		0.4714	0.4429	0.4143	0.4429	0.3857	0.3857	0.3143	0.2429	0.2429	0.2429
	Metair Investments Ltd	Metair	MTA	0.4857	0.4714	0.5286	0.5286	0.6000	0.6000	0.6143	0.6143	0.5571	0.4000	
Beverages														
	Distell Group Ltd	Distell	DST		0.5714	0.5714	0.6857	0.6857	0.7143	0.7143	0.7571	0.7571	0.7571	0.7571
Food Producers														
	AVI Ltd	A-V-I	AVI		0.4429	0.4429	0.4286	0.4286	0.4286	0.5000	0.5000	0.5571	0.6143	0.6429
	Crookes Brothers Ltd	Crookes	CKS		0.5286	0.5286	0.5714	0.6143	0.6000	0.6000	0.6143	0.6286	0.6429	0.6429
	Illovo Sugar Ltd	Illovo	ILV		0.6429	0.6286	0.6286	0.6286	0.6000	0.6000	0.6000	0.6714	0.6714	0.6714
	Intertrading Ltd	Intrading	ITR		0.5571	0.5571	0.5000	0.4000	0.3000	0.3000	0.3000	0.3714	0.3714	0.2714
	Oceana Group Ltd	Oceana	OCE	#VALUE!	0.3714	0.3714	0.3714	0.3714	0.3714	0.3857	0.4143	0.4571	0.4571	
	Rainbow Chicken Ltd	Rainbow	RBW		0.7000	0.7000	0.7000	0.7000	0.6571	0.6571	0.6571	0.6571	0.6571	0.6571
	Sovereign Food Investments Ltd	Sovfood	SOV		0.3571	0.3286	0.3000	0.3000	0.3143	0.3571	0.4714	0.4571	0.4286	0.4429
	Tiger Brands Ltd	Tigbrands	TBS	0.6000	0.6000	0.5857	0.7000	0.6429	0.6714	0.6714	0.6571	0.6571	0.6571	
Household Goods & Home Construction														
	Steinhoff International Holdings Ltd	Steinhoff	SHF	0.6714	0.6857	0.6857	0.6857	0.7429	0.7714	0.7714	0.7714	0.7286	0.7286	
Leisure Goods														
	Nu-World Holdings Ltd	Nuworld	NWL	0.0571	0.0429	0.2000	0.2571	0.2571	0.2857	0.3429	0.3429	0.3429	0.3429	
Healthcare Equipment & Sevices														
	Medi-Clinic Corporation Ltd	Medclin	MDC		0.8857	0.8857	0.8571	0.8571	0.8571	0.8714	0.8714	0.8714	0.8571	0.8571
	Netcare Ltd	Netcare	NTC	0.6857	0.6857	0.7143	0.7286	0.7286	0.7429	0.7429	0.7429	0.7857	0.7857	
Pharmaceuticals & Biotechnology														
	Aspen Pharmacare Holdings Ltd	Aspen	APN	#VALUE!	0.4857	0.4857	0.5000	0.5000	0.5000	0.5000	0.5286	0.5571	0.6714	
Food & Drug Retailers														
	Clicks Group Ltd	Clicks	CLS	0.6429	0.6429	0.6429	0.6286	0.6000	0.5571	0.5571	0.5714	0.5714	0.5714	
	Pick n Pay Stores Ltd	PicknPay	PIK		0.4000	0.4143	0.4429	0.4286	#VALUE!	0.4286	0.5714	0.5571	0.5571	0.5571
	Shoprite Holdings Ltd	Shoprit	SHP		0.6286	0.6429	0.6429	0.6000	0.6000	0.6000	0.6000	0.6000	0.5857	0.5857
General Retailers														
	ADvTECH Ltd	Advtech	ADH	0.6286	0.5857	0.5286	0.5714	0.6143	0.6429	0.6143	0.6143	0.6286	0.6286	
	Cashbuild Ltd	Cashbil	CSB	0.1429	0.1429	0.2000	0.4286	0.4143	0.4143	0.4143	0.4429	0.4714	0.5143	
	Combined Motor Holdings Ltd	CMH	CMH		0.4714	0.4714	0.4857	0.4857	0.4857	0.4857	0.4429	0.4429	0.4000	0.4000
	Italtile Ltd	Itltile	ITE		0.5286	0.5286	0.5286	0.5714	0.6571	0.6571	0.6571	0.6000	0.6143	0.6286
	Massmart Holdings Ltd	Massmart	MSM	0.2286	0.2286	0.2286	0.2286	0.2286	0.2857	0.2857	0.2857	0.3143	0.3000	
	Mr Price Group Ltd	Mrprice	MPC		0.6143	0.6143	0.6286	0.6000	0.6000	0.5714	0.5857	0.6000	0.6000	0.6000
	Nictus Ltd	Nictus	NCS		0.1000	0.4286	0.4286	0.4429	0.4143	0.4143	0.3857	0.3857	0.3857	0.3857
	Rex Trueform Clothing Company Ltd	Rex True	RTO		0.3571	0.4143	0.3714	0.3286	0.2286	0.2286	0.2714	0.4000	0.3714	0.3714
	Truworths International Ltd	Truwths	TRU		0.1857	0.2571	0.4143	0.5286	0.5286	0.5286	0.5571	0.5571	0.5429	0.5429
	Woolworths Holdings Ltd	Woolies	WHL		0.4143	0.4143	0.4714	0.4714	0.5286	0.5429	0.6000	0.6429	0.6143	0.6286
Media														
	Caxton and CTP Publishers and Printers Ltd	Caxton	CAT	0.4429	0.4143	0.4143	0.5000	0.5429	0.6286	0.6714	0.7000	0.7000	0.7000	
	Kagiso Media Ltd	Kgmedia	KGM	0.3714	0.3714	0.3286	0.2857	0.2857	0.2857	0.6143	0.5571	0.5571	0.5571	

JSE Sector	Full Company Name	Short name	JSE Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Travel & Leisure														
	City Lodge Hotels Ltd	CityLDG	CLH		0.5000	0.5143	0.5143	0.5000	0.5429	0.5429	0.5429	0.5429	0.6143	0.6143
	Comair Ltd	Comair	COM		0.7571	0.7571	0.7571	0.7571	0.7429	0.7429	0.7429	0.7429	0.7429	0.7429
	Cullinan Holdings Ltd	Cullinan	CUL	0.6143	0.6000	0.5857	0.5714	0.5571	0.5286	0.5429	0.5429	0.5143	0.5143	
	The Don Group Ltd	Don	DON	0.2000	0.3143	0.3143	0.3286	0.3000	0.2857	0.2714	0.2714	0.2571	0.2571	
	Famous Brands Ltd	Fambrands	FBR		0.5857	0.5857	0.6000	0.6429	0.6571	0.6429	0.6429	0.6429	0.6429	0.6571
	Gold Reef Resorts Ltd	Goldreef	GDF	0.6000	0.6429	0.6286	0.6000	0.6000	0.5571	0.5571	0.6429	0.7000	0.7571	
	Spur Corporation Ltd	Spurcorp	SUR	0.5429	0.5429	0.5714	0.5714	0.5714	0.5714	0.5571	0.5571	0.5714	0.5571	
	Sun International Ltd	Sunint	SUI	0.7143	0.7143	0.7143	0.6714	0.7000	0.7000	0.7000	0.7286	0.7571	0.7571	
Mobile telecommunications														
	Allied Technologies Ltd	Altech	ALT		0.8429	0.8429	0.8286	0.8000	0.7857	0.7571	0.7571	0.7429	0.7429	0.7429
Software & Computer Services														
	Compu-Clearing Outsourcing Ltd	Compclear	CCL	0.7714	0.7429	0.6143	0.7000	0.7429	0.7286	0.7286	0.7000	0.7000	0.7000	
	ConvergeNet Holdings Ltd	Converge	CVN	0.5000	0.5286	0.5286	0.5286	0.5286	0.5286	0.3571	0.3571	0.5857	0.6429	
	Datacentrix Holdings Ltd	Dcentrix	DCT		0.3000	0.3571	0.4429	0.4857	0.4857	0.4857	0.4857	0.4857	0.5857	0.5000
	Faritec Holdings Ltd	Faritec	FRT	0.4000	0.4000	0.3714	0.4000	0.3857	0.3857	0.4429	0.4000	0.4000	0.3000	
	Gijima Ast Group Ltd	Gijimaast	GIJ	0.6857	0.6857	0.7429	0.7571	0.7714	0.6857	0.6857	0.6714	0.6571	0.6571	
	SecureData Holdings Ltd	Secdata	SDH	#VALUE!	0.6143	0.6143	0.6143	0.6143	0.6143	0.6000	0.6000	0.6000	0.6000	
	Spescom Ltd	Spescom	SPS	0.7000	0.6857	0.5286	0.5571	0.5286	0.5286	0.5286	0.5571	0.5571	0.5571	
	UCS Group Ltd	UCS	UCS	0.1857	0.1857	0.2000	0.2000	0.2000	0.2000	0.5286	0.5286	0.5714	0.5714	
Technology Hardware & Equipment														
	Mustek Ltd	Mustek	MST	0.7286	0.5714	0.5714	0.6143	0.7286	0.7429	0.7143	0.7143	0.7143	0.7143	
	Pinnacle Technology Holdings Ltd	Pinnacle	PNC	0.3286	0.3286	0.3286	0.4000	0.3571	0.3571	0.3571	0.3571	0.3571	0.3571	
ALTx														
	MoneyWeb Holdings Ltd	Moneyweb	MNY		0.6714	0.6714	0.7000	0.7000	0.6286	0.6286	0.6286	0.6143	0.6000	0.6000
	OneLogix Group Ltd	Onelogix	OLG		0.4571	0.4286	0.0429	0.4857	0.4857	0.5000	0.5000	0.5143	0.5143	0.5286
	SilverBridge Holdings Ltd	Silverb	SVB		0.1714	0.1857	0.1857	0.1857	0.1857	0.1857	0.4857	0.4714	0.4714	0.4714
DCM														
	Stella Vista Technologies Ltd	Stella	SLL	0.4429	0.3857	0.3714	0.3714	0.3714	0.3714	0.3714	0.3714	0.6286	0.6286	
VCM														
	Labat Africa Ltd	Labat	LAB	0.1571	0.1571	0.2857	0.3429	0.3143	0.2857	0.2857	0.2857	0.2000	0.1714	

APPENDIX I

CRAMER'S V STATISTIC TEST RESULTS

P4 non-financials by K category
Francois van der Colff T11091 - 23 August 2011
Non-financial category by K category - by Year

The FREQ Procedure

Statistics for Table 1 of aa1 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2349

Effective Sample Size = 49

Statistics for Table 2 of aa1 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1425

Sample Size = 95

Statistics for Table 3 of aa1 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.188

Effective Sample Size = 94

Statistics for Table 4 of aa1 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.0735

Sample Size = 95

Statistics for Table 5 of aa1 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.2073

Sample Size = 95

Statistics for Table 6 of aa1 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1484

Effective Sample Size = 94

Statistics for Table 7 of aa1 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.1647

Sample Size = 95

Statistics for Table 8 of aa1 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1962

Sample Size = 95

Statistics for Table 1 of dd2 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.1446

Effective Sample Size = 49

Statistics for Table 2 of dd2 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1592

Sample Size = 95

Statistics for Table 3 of dd2 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.1

Effective Sample Size = 94

Statistics for Table 4 of dd2 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.1235

Sample Size = 95

Statistics for Table 5 of dd2 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.0703

Sample Size = 95

Statistics for Table 6 of dd2 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1317

Effective Sample Size = 94

Statistics for Table 7 of dd2 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.1352

Sample Size = 95

Statistics for Table 8 of dd2 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1623

Sample Size = 95

Statistics for Table 9 of aa1 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.2713

Sample Size = 95

Statistics for Table 10 of aa1 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.3364

Sample Size = 95

Statistics for Table 11 of aa1 by Kcat
Controlling for YY=2010

Row or column sum zero. No statistics computed for this ta

Sample Size = 41

Statistics for Table 9 of dd2 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1356

Sample Size = 95

Statistics for Table 10 of dd2 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1105

Sample Size = 95

Statistics for Table 11 of dd2 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.2924

Sample Size = 41

Statistics for Table 1 of aa2 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2769

Effective Sample Size = 49

Statistics for Table 2 of aa2 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1021

Sample Size = 95

Statistics for Table 3 of aa2 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.1124

Effective Sample Size = 94

Statistics for Table 4 of aa2 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.1493

Sample Size = 95

Statistics for Table 5 of aa2 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1608

Sample Size = 95

Statistics for Table 6 of aa2 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1722

Effective Sample Size = 94

Statistics for Table 1 of dd3 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2627

Effective Sample Size = 49

Statistics for Table 2 of dd3 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1015

Sample Size = 95

Statistics for Table 3 of dd3 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.1169

Effective Sample Size = 94

Statistics for Table 4 of dd3 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.2037

Sample Size = 95

Statistics for Table 5 of dd3 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.0786

Sample Size = 95

Statistics for Table 6 of dd3 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1022

Effective Sample Size = 94

Statistics for Table 7 of aa2 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.1568

Sample Size = 95

Statistics for Table 8 of aa2 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.191

Sample Size = 95

Statistics for Table 9 of aa2 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.2228

Sample Size = 95

Statistics for Table 10 of aa2 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.2374

Sample Size = 95

Statistics for Table 11 of aa2 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.2519

Sample Size = 41

Statistics for Table 1 of bb1 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.0544

Effective Sample Size = 49

Statistics for Table 2 of bb1 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.111

Sample Size = 95

Statistics for Table 3 of bb1 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.066

Effective Sample Size = 94

Statistics for Table 4 of bb1 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.0573

Sample Size = 95

Statistics for Table 7 of dd3 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.1797

Sample Size = 95

Statistics for Table 8 of dd3 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1504

Sample Size = 95

Statistics for Table 9 of dd3 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1448

Sample Size = 95

Statistics for Table 10 of dd3 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1594

Sample Size = 95

Statistics for Table 11 of dd3 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.1377

Sample Size = 41

Statistics for Table 1 of dd4 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2741

Effective Sample Size = 49

Statistics for Table 2 of dd4 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.0901

Sample Size = 95

Statistics for Table 3 of dd4 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.1523

Effective Sample Size = 94

Statistics for Table 4 of dd4 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.0963

Sample Size = 95

Statistics for Table 5 of bb1 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1187

Sample Size = 95

Statistics for Table 6 of bb1 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1681

Effective Sample Size = 94

Statistics for Table 7 of bb1 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.2198

Sample Size = 95

Statistics for Table 8 of bb1 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1841

Sample Size = 95

Statistics for Table 9 of bb1 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1391

Sample Size = 95

Statistics for Table 10 of bb1 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1796

Sample Size = 95

Statistics for Table 11 of bb1 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.187

Sample Size = 41

Statistics for Table 1 of bb2 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2416

Effective Sample Size = 49

Statistics for Table 2 of bb2 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1202

Sample Size = 95

Statistics for Table 5 of dd4 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1172

Sample Size = 95

Statistics for Table 6 of dd4 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.145

Effective Sample Size = 94

Statistics for Table 7 of dd4 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.1543

Sample Size = 95

Statistics for Table 8 of dd4 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1494

Sample Size = 95

Statistics for Table 9 of dd4 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.09

Sample Size = 95

Statistics for Table 10 of dd4 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.129

Sample Size = 95

Statistics for Table 11 of dd4 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.2256

Sample Size = 41

Statistics for Table 1 of dd5 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2627

Effective Sample Size = 49

Statistics for Table 2 of dd5 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1236

Sample Size = 95

Statistics for Table 3 of bb2 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.2135

Effective Sample Size = 94

Statistics for Table 4 of bb2 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.0553

Sample Size = 95

Statistics for Table 5 of bb2 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1497

Sample Size = 95

Statistics for Table 6 of bb2 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1607

Effective Sample Size = 94

Statistics for Table 7 of bb2 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.2636

Sample Size = 95

Statistics for Table 8 of bb2 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.2851

Sample Size = 95

Statistics for Table 9 of bb2 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1487

Sample Size = 95

Statistics for Table 10 of bb2 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1777

Sample Size = 95

Statistics for Table 11 of bb2 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.2471

Sample Size = 41

Statistics for Table 3 of dd5 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.132

Effective Sample Size = 94

Statistics for Table 4 of dd5 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.2313

Sample Size = 95

Statistics for Table 5 of dd5 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1208

Sample Size = 95

Statistics for Table 6 of dd5 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1226

Effective Sample Size = 94

Statistics for Table 7 of dd5 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.145

Sample Size = 95

Statistics for Table 8 of dd5 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1506

Sample Size = 95

Statistics for Table 9 of dd5 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1705

Sample Size = 95

Statistics for Table 10 of dd5 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1845

Sample Size = 95

Statistics for Table 11 of dd5 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.1377

Sample Size = 41

Statistics for Table 1 of cc1 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2054

Effective Sample Size = 49

Statistics for Table 2 of cc1 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1486

Sample Size = 95

Statistics for Table 3 of cc1 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.1655

Effective Sample Size = 94

Statistics for Table 4 of cc1 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.1263

Sample Size = 95

Statistics for Table 5 of cc1 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1264

Sample Size = 95

Statistics for Table 6 of cc1 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1085

Effective Sample Size = 94

Statistics for Table 7 of cc1 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.2072

Sample Size = 95

Statistics for Table 8 of cc1 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1796

Sample Size = 95

Statistics for Table 9 of cc1 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1351

Sample Size = 95

Statistics for Table 1 of dd6 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.1465

Effective Sample Size = 49

Statistics for Table 2 of dd6 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.135

Sample Size = 95

Statistics for Table 3 of dd6 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.1559

Effective Sample Size = 94

Statistics for Table 4 of dd6 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.2344

Sample Size = 95

Statistics for Table 5 of dd6 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.0897

Sample Size = 95

Statistics for Table 6 of dd6 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1082

Effective Sample Size = 94

Statistics for Table 7 of dd6 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.2015

Sample Size = 95

Statistics for Table 8 of dd6 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1253

Sample Size = 95

Statistics for Table 9 of dd6 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.155

Sample Size = 95

Statistics for Table 10 of cc1 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.2262

Sample Size = 95

Statistics for Table 11 of cc1 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.185

Sample Size = 41

Statistics for Table 1 of cc2 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.3165

Effective Sample Size = 49

Statistics for Table 2 of cc2 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.2388

Sample Size = 95

Statistics for Table 3 of cc2 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.0727

Effective Sample Size = 94

Statistics for Table 4 of cc2 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.122

Sample Size = 95

Statistics for Table 5 of cc2 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1726

Sample Size = 95

Statistics for Table 6 of cc2 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.2413

Effective Sample Size = 94

Statistics for Table 7 of cc2 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.2283

Sample Size = 95

Statistics for Table 10 of dd6 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.108

Sample Size = 95

Statistics for Table 11 of dd6 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.1284

Sample Size = 41

Statistics for Table 1 of ee1 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2461

Effective Sample Size = 49

Statistics for Table 2 of ee1 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.203

Sample Size = 95

Statistics for Table 3 of ee1 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.183

Effective Sample Size = 94

Statistics for Table 4 of ee1 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.2288

Sample Size = 95

Statistics for Table 5 of ee1 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1131

Sample Size = 95

Statistics for Table 6 of ee1 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.2611

Effective Sample Size = 94

Statistics for Table 7 of ee1 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.2351

Sample Size = 95

Statistics for Table 8 of cc2 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1683

Sample Size = 95

Statistics for Table 9 of cc2 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1845

Sample Size = 95

Statistics for Table 10 of cc2 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1923

Sample Size = 95

Statistics for Table 11 of cc2 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.2825

Sample Size = 41

Statistics for Table 1 of dd1 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.2302

Effective Sample Size = 49

Statistics for Table 2 of dd1 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1328

Sample Size = 95

Statistics for Table 3 of dd1 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.2274

Effective Sample Size = 94

Statistics for Table 4 of dd1 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.0755

Sample Size = 95

Statistics for Table 5 of dd1 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.1579

Sample Size = 95

Statistics for Table 8 of ee1 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.2525

Sample Size = 95

Statistics for Table 9 of ee1 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.1703

Sample Size = 95

Statistics for Table 10 of ee1 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1856

Sample Size = 95

Statistics for Table 11 of ee1 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.1846

Sample Size = 41

Statistics for Table 1 of ee2 by Kcat
Controlling for YY=2000

Statistic	Value
Cramer's V	0.0471

Effective Sample Size = 49

Statistics for Table 2 of ee2 by Kcat
Controlling for YY=2001

Statistic	Value
Cramer's V	0.1929

Sample Size = 95

Statistics for Table 3 of ee2 by Kcat
Controlling for YY=2002

Statistic	Value
Cramer's V	0.1295

Effective Sample Size = 94

Statistics for Table 4 of ee2 by Kcat
Controlling for YY=2003

Statistic	Value
Cramer's V	0.1326

Sample Size = 95

Statistics for Table 5 of ee2 by Kcat
Controlling for YY=2004

Statistic	Value
Cramer's V	0.0789

Sample Size = 95

Statistics for Table 6 of dd1 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.2015

Effective Sample Size = 94

Statistics for Table 7 of dd1 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.1848

Sample Size = 95

Statistics for Table 8 of dd1 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.1848

Sample Size = 95

Statistics for Table 9 of dd1 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.0495

Sample Size = 95

Statistics for Table 10 of dd1 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.1251

Sample Size = 95

Statistics for Table 11 of dd1 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.1284

Sample Size = 41

Statistics for Table 6 of ee2 by Kcat
Controlling for YY=2005

Statistic	Value
Cramer's V	0.1529

Effective Sample Size = 94

Statistics for Table 7 of ee2 by Kcat
Controlling for YY=2006

Statistic	Value
Cramer's V	0.2731

Sample Size = 95

Statistics for Table 8 of ee2 by Kcat
Controlling for YY=2007

Statistic	Value
Cramer's V	0.2026

Sample Size = 95

Statistics for Table 9 of ee2 by Kcat
Controlling for YY=2008

Statistic	Value
Cramer's V	0.2053

Sample Size = 95

Statistics for Table 10 of ee2 by Kcat
Controlling for YY=2009

Statistic	Value
Cramer's V	0.218

Sample Size = 95

Statistics for Table 11 of ee2 by Kcat
Controlling for YY=2010

Statistic	Value
Cramer's V	0.3616

Sample Size = 41