

LIST OF ABBREVIATIONS USED

Abbreviations	Definitions
ANOVA	Analysis of Variance
BFA-Net	Bureau for Financial Analysis Network
BFR	Business Failure Rate
CFFO	Operating Cashflow / Total Liabilities
CHAID	Chi-square Automatic Interaction Detection
CPI	Consumer Price Index
D	Distressed State
EBIT	Earnings before Interest and Taxation
FRAM	Financial Risk Analysis Model
H	Healthy State
I	Intermittent State
MDA	Multiple Discriminant Analysis
NITA	Net Income / Total Assets
NOF	Net Income plus Depreciation and Amortization / Total Liabilities
NWC	Net Working Capital
OLR	Ordinal Logistic Regression
PAT	Profit (Earnings) after Taxation
REG	Real Earnings Growth
RPS	Ranked Probability Scoring methodology
RSA	Republic of South Africa
RSG	Real Sales Growth
SD	Severely Distressed State
SHE	Shareholder's Equity
SVA	Shareholder Value Added
TADV	Total advances from the banking sector
USA	United States of America
UK	United Kingdom

THE DEFINITION OF TERMS

1. CHAID or Chi-square Automatic Interaction Detection is an algorithm that primarily uses the chi-square function to determine the best relationship between a discrete response variable and one or more predictor variables. The result is a decision or classification tree.
2. Dichotomous refers to a variable that has two states, for example “Healthy” or “Failed”.
3. Distressed is the state a company is in, if it has a negative Profit after Tax (State -2).
4. Healthy is the state a company is in, if it has a positive Profit after Tax and a positive or zero Real Earnings Growth (State 0).
5. Holdout sample is a sample of companies that is used to determine the predictive accuracy of the models.
6. Intermediate is the state a company is in, if it has a positive Profit after Tax and a negative Real Earnings Growth (State -1).
7. Multiple Discriminant Analysis is a statistical technique that classifies an observation into one of several groups; the latter representing the different states of the discrete response variable. Each group consists

of a multivariate equation that is made up of one or more independent predictor variables, but with different co-efficients, that “best” discriminates between the groups.

8. Multivariate refers to the use of multiple variables.

9. Ordinal Logistic Regression performs logistic regression on an ordinal response variable. A model with one or more predictors is fitted using an iterative-reweighted least squares algorithm to obtain maximum likelihood estimates of the parameters. Parallel regression lines are assumed, and therefore, a unique slope is calculated for each predictor.

10. Paired sample is a sample in which a non-failed company is matched in asset size and industry classification to that of a failed company.

11. Severely Distressed is the state that a company is in, if it has a negative Profit after Tax (State -2) and it has negative Shareholder’s Equity.

12. State of Health categorises a company into one of three discrete states namely, Healthy (State 0), Intermediate (State -1) or Distressed (State -2).

13. Stepwise Regression performs regression by removing and adding variables, in order to identify a useful subset of the predictors. Three commonly used procedures are provided: standard stepwise regression (adds and removes variables), forward selection (adds variables), and backwards elimination (removes variables).

14. Test sample is a sample of companies that is used to develop the statistical equations for each of the models.

15. Univariate refers to a single variable.

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CHAPTER 1 – INTRODUCTION

1.1 BACKGROUND

The prediction of company financial distress/failure is of critical importance to all stakeholders. Each of these stakeholders, given their various roles, would have somewhat different agendas but with the common objective being that the company has the best possible State of Health and continues as a going concern into the foreseeable future:

- **Auditors** are interested in the company's ability to continue as a going concern.
- **Creditors** are interested in the company's ability to settle outstanding accounts.
- **Customers** are interested in the company's ability to make future deliveries.
- **Employees** are interested in the company's ability to provide stable employment.
- **Financial Institutions** are interested in the company's ability to make interest and capital repayments on loans.
- **Investors** are interested in the company's ability to provide expected returns.
- **Managements** are interested in "knowing what problems they are about to face". Eidleman (1995)

This study presents an overview of the various dichotomous and multi-state financial distress/failure studies that have featured prominently in prior

research and an argument is put forward on the limitations of these studies. Given these limitations and the fact that the South African studies follow the dichotomous approach, this study addresses the need for a multi-state model for South African companies which would analyse and predict financial health in an ordinal manner. In addition, a second stage analytical model, providing more detail, is also developed. Both these models would be of critical importance to all company stakeholders and they would be useful in aiding companies to determine their next strategy and future course of action.

1.2 PROBLEM STATEMENT

Fitzpatrick (1934) made the distinction between failing and failed companies and noted that companies generally passed through several transitional stages of financial distress prior to business failure. Companies cannot therefore simply be classified as “Healthy” or “Failed”. This argument is also supported by Poston *et al* (1994) who stated that:

“This artificial dichotomization does not explicitly recognise that a failing firm may be able to remedy its weakened position before it reaches the final stage of collapse”.

This leads to the first sub-problem:

The first sub-problem. To derive the States of Health in South African companies.

Honsberger (1979) stated:

“We tend to forget that bankruptcy does not strike like a bolt of lightning and that there are, in fact, many indicators or predictors of its approach”.

In their study, Hill *et al* (1996) observed that the financial ratio means for financially distressed companies differed from those of healthy and failed companies. This leads to the second sub-problem:

The second sub-problem. To determine financial ratio/s and macro-economic variables that will help to predict the States of Health.

Chapter Two details the Literature Review for the various studies conducted. Notwithstanding, it needs to be mentioned that with reference to the overseas studies; Deakin (1972), Zavgren (1985), Lau (1987) and Ward (1994) tested the predicted accuracy of their models against that of Holdout samples. For the South African studies, in the cases of Strebel and Andrews (1977), Daya (1977), Lukhwareni (2006); Holdout sample testing was not considered whilst with the De La Rey (1981), Clarke *et al* (1991) and Court *et al* (1999) studies; no information was found as to whether Holdout sample testing was considered or not. This leads to the third sub-problem:

The third sub-problem. To test the prediction models against an independent Holdout sample.

Apart from testing a developed model against a Holdout sample, the credibility of the said model should also be tested against at least one of the six South African models already developed. This leads to the fourth sub-problem:

The fourth sub-problem. To test the Y_n prediction model against a South African model using the Holdout sample.



Given that prediction models are not one hundred percent correct all of the time, they should be used as a first stage or initial screening process only. Stakeholders, particularly management, should then conduct a more in-depth analysis to ascertain if there are any underlying problems in the company and, if need be, revise their action plan. This leads to the fifth sub-problem:

The fifth sub-problem. To develop a second stage model to provide a more in-depth analysis of the company.

The objectives of this study are to address each of these sub-problems as shall be detailed in section 1.4.

1.3 IMPORTANCE OF THE PROBLEM

In the previous section, the weaknesses of the dichotomous “Healthy” or “Failed” approach were highlighted [Fitzpatrick (1934); Poston *et al* (1994) and Hill *et al* (1996)]. Regrettably, all the South African studies and even, Lukhwareni’s (2005) four models, adopted the dichotomous approach.

There have been researchers who have moved away from this dichotomous approach and developed multi-state models for the United States of America (USA). Notwithstanding, in the USA, information on financial distress can be obtained from the Wall Street Journal Index and company financial data can be extracted from the annual industrial and research COMPUSTAT tapes. However, from a South African perspective, information on “Debt accommodation and/or Loan/Interest default”, “Bankruptcy protection under

Chapter 11” and “Bankruptcy” is not readily available to the general public. This implies that a different set of financial states and criteria needs to be identified and adapted to enable the development of a multi-state model for South African businesses.

The Lukhwareni (2005) study was fairly recent and, given its multi-stage approach to wealth creation, warrants a bit more detail. The study is a fresh approach to analysing companies and provides good theoretical insight and guidance into issues possibly faced by companies in each of the eight identified stages. One of the drawbacks of the study was, that by using absolute values for Turnover and Operating income, the three-variable matrix would be biased towards the larger companies and thereby, penalise the medium to small companies, resulting in so-called misclassifications for these latter companies. Perhaps, as a consequence thereof, a single model to classify any of the eight stages could not be developed (like the single model/s developed in this study). As a result, four separate, dichotomous models were developed to group a company loosely into either a “Winning Cluster” or a “Losing Cluster”.

Notwithstanding all of the above arguments, all the above-mentioned models would be classified as first stage, initial screening models and the onus would be on the stakeholder to analyse the individual model parameters to get a broader insight into the company.

This study has focused on following a two stage approach to identifying (first stage) and analysing (second stage) the States of Health in a company. The first stage, multi-state model would avoid the limitations of the previously developed dichotomous and multi-state models in predicting a company's State of Health. An additional state/s is of immense value to stakeholders and provides them with the much needed information to avoid the dreaded final state; the latter having consequential market place repercussions. However, any first stage model taken in isolation, could in some cases incorrectly predict a company's health thereby placing it in a vulnerable situation. This points towards a need for a second stage analytical model that would provide underlying information or clues, independent of the first stage model, so as to enable the stakeholder, especially management, to establish a more meaningful picture of the company.

1.4 RESEARCH OBJECTIVES AND METHODOLOGY

Following on from the above, by adopting the two stage approach, this would enable the various stakeholders already mentioned, especially management, to determine the appropriate strategy and course of action to follow, to take the company to the next level; whether it be taking a company out of a Distressed situation or further improving on its Healthy status. The objectives, together with an overview of the methodology used in the study, are detailed below. A more detailed methodology will be provided in Chapters 6, 7 and 8.

1.4.1 To Identify the States of Health in each Company

A total of forty-two companies, with financial data from the 1970 to 1999 period, would be used in the study. The companies would consist of both failed and non-failed companies. The financial statements of these companies would be analysed to determine trends in earnings which would then lead to the identification of the key States of Health ('I' states).

1.4.2 To Derive Statistical Models to Predict the "I" States of Health

Financial ratios and statements to be considered for the model would be obtained from the database of the Bureau for Financial Analysis, University of Pretoria. Macro-economic variables would be obtained from the Economic Consultant's Office, Anglo American PLC.

The total sample of forty-two companies would be split into a Test sample and a Holdout sample; with the Test sample being confined to the 1970's. The Test sample would be used to develop the statistical equations for each of the models and the Holdout sample would be used to determine the predictive accuracy of the models. As a point of clarity, the Test sample companies would contain only one year of information for each company in the sample. This would prevent the developed models from being heavily biased towards a particular company. However, the Holdout sample would use all the available data from the 1970 to 1999 period to test the predictive accuracy of the models.

Three different types of models would be developed for prediction purposes:

- a Naïve model using the SVA ratio only
- a Multiple Discriminant Analysis (MDA) model
- a Chi-squared Automatic Interaction Detection(CHAID) model

The reason for this is to ascertain which model type would provide better predictive accuracy. These models would be developed to classify the ordinal 'i' States of Health in any year (Y_n). In addition, three time-based models would be developed to predict the ordinal 'i' States of Health of the companies, one (Y_{n-1}), two (Y_{n-2}), and three (Y_{n-3}) years in advance. The year, 1976, is used as an example to provide clarification. For the Y_n model, 1976 variable/s were used to predict the 1976 response variable. Similarly, for the Y_{n-1} , Y_{n-2} and Y_{n-3} models, 1975, 1974 and 1973 variable/s were used to predict the 1976 response variable, respectively. The same methodology was used for all the Y_n to Y_{n-3} models for any given company in any given year.

1.4.3 To Test the Predictive Ability of the Models

The predictive ability of the Y_n , Y_{n-1} , Y_{n-2} and Y_{n-3} models would be tested using the Holdout sample companies. The Holdout sample would consist of both failed and non-failed companies. Traditionally, those researchers that tested the predictive accuracy of their models against a Holdout sample, either used the Test sample companies but in a different year or an independent sample of companies. In both cases, only a single data point or year of information was used for each company. In this study, owing to the small sample size, a

somewhat radical approach would be adopted whereby all the available years of information for each company would be used in the Holdout sample, thereby comprising two hundred and thirty-one (231) years and one hundred and ninety-eight (198) years of information for the three and five year average models, respectively.

1.4.4 To Test the Y_n model against a notable South African model

Apart from testing the Y_n model against a Holdout sample, the credibility of the best two models would also be tested against at least one of the six South African models already developed. Since the De La Rey (1981) model is widely recognised and respected in the financial analytical circles of South Africa, this would be the model of choice. It should be noted that the developed “*l*” state Y_n model would need to be modified to facilitate a comparison with the dichotomous De La Rey (1981) model. As such, different approaches would have to be adopted.

1.4.5 To provide a more in-depth analysis of the company.

A second stage model would also be developed using Thompson’s (1993: 158-181) framework and the researcher’s managerial experience. This Financial Risk Analysis Model (FRAM) would provide a more in-depth analysis of the company to determine if there are any underlying problems in the company and/or the appropriate strategy to follow, to take the company to the next level. This model would be developed using the Test sample data and analysed using the Holdout sample data.

Whereas the development of a second stage model was not part of this study's original Scope of Work, the researcher felt that the study would be incomplete without this model.

1.5 LIMITATIONS OF THE RESEARCH

Companies to be researched were restricted to South African companies only. It needs to be mentioned that great difficulty in obtaining financial information was experienced. Attempts to get information from the Johannesburg Stock Exchange, Liquidators, and the Office of the Registrar of Companies, all proved futile with cross referrals to each other. Hence, the companies selected for the study were taken from the studies of Daya (1977), Court *et al* (1999) and De La Rey (1981) and, comprised a total of forty-two companies. Further, the financial statement data used in this study was all the available data as supplied by the Bureau for Financial Analysis, University of Pretoria.

Given the small sample size, which was further split into Test and Holdout samples, an analysis of industry effects on the models was not undertaken. Notwithstanding this limitation, the cut-off points of the second stage model (developed in Chapter 8) can be adjusted by the stakeholders to suit their industry and personal risk profiles.

All three of the statistical methods used in this study prefer large sample sizes for model derivation; with the MDA method also necessitating the sample to

conform to a multivariate normal distribution. Hence, it is acknowledged that the small sample size could pose a problem in this study.

The time frame for the research was restricted to companies from the 1970 to the 1999 period. The Test sample was developed using companies from the 1970 to 1979 period only.

1.6 ASSUMPTIONS MADE IN THE RESEARCH

As companies have different financial year-ends and in the interests of developing models that would be as simple as possible, it was decided that for all companies that had their financial year-ends from June to December, the current year's macro-economic variables would be used for that year whereas for the companies that had their year-end prior to June, the prior year's macro-economic variables would be used for that year.

1.7 STRUCTURE OF THE RESEARCH REPORT

Chapter 1 gives the background to the study, identifies the problem and its sub-problems. The importance of the problem is highlighted and the objectives of the study detailed. An overview of the methodology is presented with the detail provided in Chapters 6, 7 and 8. Limitations of and assumptions made in the study are also defined.

Chapter 2 covers the literature review. This is a summary of the prior research that has been conducted which is of relevance to this study. As such, the chapter presents firstly, both the overseas and South African dichotomous studies, respectively. Thereafter, the overseas multi-state studies are presented, followed by a South African matrix approach. In order to avoid repetition, the last section is dedicated to providing a critical analysis of all the research detailed in this chapter.

Chapter 3 presents the relevant statistical theory. In this chapter, Univariate Analysis, Multiple Discriminant Analysis and Chi-square Automatic Interaction Detection are explained. The statistical package used in this study is also noted.

Chapter 4 explains the methodology used to identify the “7” States of Health. In addition, for one of the identified states, two different approaches are presented to identify that particular state. The first approach uses a three year average of Profit after Tax (PAT) and the second, a five year average.

Chapter 5 highlights the financial and macro-economic variables used in the study.

Chapter 6 details the development of the three year average models. It explains the derivation of the Test sample and develops three different types of models for each of the years Y_n to Y_{n-3} . The models are then tested against

the Holdout sample and the best two models are then tested against the De La Rey model.

Chapter 7 details the development of the five year average models. It follows the same format as Chapter 6 by explaining the derivation of the Test sample and develops three different types of models for each of the years Y_n to Y_{n-3} . The models are then tested against the Holdout sample and the best two models are then tested against the De La Rey model.

Chapter 8 develops the Financial Risk Analysis Model (FRAM) as a second stage model to the best, first stage model developed between Chapters 6 and 7.

Chapter 9 presents the summary and conclusions. This chapter summarises the entire research undertaken, from Chapter 1 through to Chapter 8.

CHAPTER 2 – LITERATURE REVIEW

There has been considerable research in this field ranging from the univariate dichotomous approach of Beaver (1966) to the multivariate multi-state approach of Ward (1994). This chapter presents the summaries of the relevant prior research in a common format, by attempting to answer the below-mentioned questions, to enable ease of reading and comparison. Thereafter, the last section is reserved to provide a critical analysis of all research detailed in this chapter.

- Sampling Methodology
 - What was the definition of a failed company?
 - What was the sample size?
 - Was the samples paired?
 - From which sectors were the companies selected?
 - What time period were the samples taken from?

- Model Development
 - How many variables were initially selected to construct the model?
 - What type of analysis technique was used to generate the model?
 - What were the parameters of the model?
 - What was the model scoring system?

- Predictive Accuracy
 - What was the predictive accuracy for the original samples?
 - Was a holdout sample used to test the model?
 - What was the sample size?
 - What was the predictive accuracy?
 - Was the holdout sample taken from a different time period?
 - Was the model compared to other models?

Regrettably, researchers present their papers in different formats and with varying degrees of detail. Hence, an attempt is made to follow the suggested format as closely as possible whilst at the same time including any additional information which the researcher may have found to be important.

Tables 22 and 23 (at the end of the chapter) present a summary of all the distressed studies for ease of reference.

2.1 DICHOTOMOUS MODELS (OVERSEAS)

2.1.1 Beaver (1966)

Beaver's study tested the predictive ability of financial ratios to determine failure on a univariate basis. Failure was defined as the "inability of a firm to pay its financial obligations as they mature". Beaver listed the following events that classified a company as failed:

Bankruptcy

Bond default

Overdrawn Bank account

Non-payment of a Preferred Stock Dividend

Beaver used a sample of (59, 3, 1, 16) totalling seventy-nine United States of America (USA) companies for the four events, respectively, with financial data taken from the 1954 to 1964 period, covering thirty-eight different industries. In selecting the non-bankrupt (healthy) companies, each company was matched in asset size and industry classification to that of a failed company (paired samples). The study involved the prediction of failure from one year prior to failure (year-1) to five years prior to failure (year-5).

Beaver selected thirty financial ratios based on their frequent appearance and performance in prior studies and categorised them into the following six groups: Cashflow ratios, Net Income ratios, Debt to Total Asset ratios, Liquid Asset to Total Asset ratios, Liquid Asset to Current Debt ratios and Turnover ratios.

A classification test was used to predict whether a company was failed or non-failed (dichotomous prediction). This involved the computation of the ratio means for both bankrupt and non-bankrupt companies for each of the five years prior to failure, arranging the ratios in ascending order and visually inspecting them to determine an optimal cut-off point to minimise misclassifications. Beaver divided the original sample into two sub-samples, determined the optimal cut-off points for each sub-sample and conducted two tests. The first test involved each sub-sample using its own cut-off point to determine classification accuracy. The second test used the optimal cut-off point from the other sub-sample to determine classification accuracy. Six ratios, one from each group, were found to be important and the percentages of correct classification for Beaver's second test are listed in Table 1.

Table 1: Predictive Accuracy for Beaver's Second Test

Ratio	Year-1	Year-2	Year-3	Year-4	Year-5
Cash flow / Total Debt	87%	79%	77%	76%	78%
Net Income / Total Assets	87%	80%	77%	71%	72%
Total Debt / Total Assets	81%	75%	66%	73%	72%
Working Capital / Total Assets	76%	66%	67%	55%	59%
Current ratio	80%	68%	64%	62%	55%
No-credit interval	77%	62%	57%	62%	63%

2.1.2 Altman (1968)

Altman was the first person to develop a multivariate model, which was subsequently popularised by later bankruptcy studies. His data sample consisted of thirty-three pairs of failed and non-failed USA manufacturing companies, with the failed companies being those that filed a bankruptcy petition under Chapter X of the National Bankruptcy Act during the period 1946 to 1965. Twenty-two variables were selected based on their popularity in literature and relevance to his study. These variables were classified into five categories: Liquidity, Profitability, Leverage, Solvency and Activity.

Altman used a statistical methodology called Multiple Discriminant Analysis (MDA) which predicts the relationship between mainly dichotomous response variables and one or more independent predictor variables by determining a set of discriminant coefficients which 'best' results in mutually exclusive response variables, to generate his model. Financial statement data one year prior to bankruptcy was used to develop the following five-variable model:

$$Z = 1.2a + 1.4b + 3.3c + 0.6d + 0.999e$$

where,

- a = Working Capital / Total Assets
- b = Retained Earnings / Total Assets
- c = EBIT / Total Assets
- d = Market value of Equity / Book value of Total Debt
- e = Sales / Total Assets

A Z-score > 2.99 indicates the company would succeed, with a score below 1.81 indicating probable failure. A zone of ignorance, where misclassifications are likely to occur, exists between 1.81 to 2.99. The model was tested up to five years prior to bankruptcy and the predictive accuracy of the model is shown in Table 2.

Table 2: Predictive Accuracy of Altman's Z-score Model

	Predictive Accuracy
Year-1	95%
Year-2	72%
Year-3	48%
Year-4	29%
Year-5	36%

Whereas the model has good predictive accuracy one year prior to bankruptcy (year-1), the predictive accuracy decreases markedly over the five period. This suggests that the model is better suited to predicting bankruptcy in the last year (year-1) and perhaps the second last year (year-2), where the predictive accuracy is high and misclassifications less likely to occur.

2.1.3 Deakin (1972)

Using the approach of Beaver (1966), Deakin used a sample of thirty-two pairs of failed and non-failed USA companies taken from the 1964 to 1970 period to predict business failure. A failed company was defined as a company that was Bankrupt, Insolvent or "Liquidated for the benefit of

creditors”. This study deferred slightly from that of Beavers in that it excluded companies that defaulted on Loan obligations or missed Preferred Dividend payments.

Table 3: Ratios and Co-efficients for the Deakin Model

Ratio	Year - 1	Year - 2	Year - 3	Year-4	Year - 5
Cashflow / Total Debt	0.005	-0.046	0.104	0.094	-0.250
Net Income / Total Assets	0.083	0.378	-0.585	0.219	0.122
Total Debt / Total Assets	-0.184	-0.225	0.287	-0.133	0.220
Current Assets / Total Assets	-0.101	-0.410	0.436	-0.017	0.406
Quick Assets / Total Assets	0.212	0.394	-0.479	-0.062	0.230
Working Capital / Total Assets	-0.176	0.102	0.106	-0.054	0.487
Cash / Total Assets	-0.900	-0.626	-0.205	-0.701	0.621
Current Assets / Current Liabilities	0.052	0.020	-0.069	-0.001	0.003
Quick Assets / Current Liabilities	-0.068	-0.065	0.034	0.017	0.068
Cash / Current Liabilities	0.096	0.111	0.151	0.165	-0.077
Current Assets / Sales	-0.020	-0.060	0.057	0.283	-0.018
Quick Assets / Sales	-0.074	-0.014	0.176	0.138	0.123
Working Capital / Sales	0.069	0.132	-0.159	0.243	-0.009
Cash / Sales	0.209	-0.203	-0.055	0.492	-0.084

Fourteen financial ratios were selected for the study, the means of which were computed, and Multiple Discriminant Analysis (MDA) was employed to determine cut-off scores to discriminate between failed and non-failed companies. The discriminant analysis methodology provided a set of coefficients for each of the fourteen ratios (see Table 3), the summation of

which yielded a score for each company in the analysis. As the scores for each company were distributed over a broad range, the “Chi-square classification” method was used to determine the probability of group membership enabling the classification of a company as failed or non-failed.

The model was also tested using a Holdout sample of eleven failed and twenty-three non-failed companies taken from the 1963 and 1964 period. The predictive accuracy of the model using this approach for both the original and the Holdout samples is given in Table 4.

Table 4: Predictive accuracy of the Deakin Model

	Original	Holdout
Year-1	97%	78%
Year-2	95.5%	94%
Year-3	95.5%	88%
Year-4	79%	77%
Year-5	83%	85%

2.1.4 Altman, Haldeman and Narayanan (1977)

Owing to changes in financial reporting standards and accounting practices, Altman *et al* developed a new ZETA model, which included retailing companies and companies with large asset sizes. Their data sample consisted of fifty-three failed (filed bankruptcy petition) companies and fifty-eight non-failed USA manufacturing and retailing companies. Fifty of the companies failed during the 1969 to 1975 period, two in 1962 and one in

1967. Twenty-eight variables were selected based on their popularity in previous studies.

The new model also used MDA but somewhat different variables to predict bankruptcy. Unfortunately, the ZETA model parameters were not published, as the model is the property of a private USA company specialising in investment analysis. However, the seven variables used in the model are available and are presented below:

- a - EBIT / Total Assets
- b - Normalised measure of the standard error of estimate around a 10 year trend in "a"
- c - EBIT / Total Interest payments
- d - Retained Earnings / Total Assets
- e - Current Assets / Current Liabilities
- f - Common Equity / Total Capital
- g - Total Assets

For a Holdout sample, data from the original sample's financial statements two to five years prior to failure were applied to the ZETA model.

Table 5: ZETA cut-off scores

	Critical Cut-off Scores	Zone of Ignorance
Year-1	-0.33	-1.45 to 0.87
Year-2	-2.11	-2.4 to 1.6
Year-3	-0.21	-1.9 to 3.1
Year-4	-0.46	-3.3 to 5.5
Year-5	1.43	-3.1 to 4.6

ZETA cut-off scores to differentiate between failed and non-failed companies and zones of ignorance were derived for each of the five years prior to bankruptcy and are given in Table 5.

Both linear and quadratic models were developed for comparison purposes. It was noted that although there was no difference between the linear and quadratic models in the first year prior to bankruptcy, the linear models achieved better classifications in the two to five years prior to bankruptcy.

The predictive accuracy of the linear model using Test and Holdout samples are listed in Table 6.

Table 6: Predictive Accuracy of the ZETA Model

	Test Sample	Holdout Sample
Year-1	92.8%	not considered
Year-2	not considered	89.0%
Year-3	not considered	83.5%
Year-4	not considered	79.8%
Year-5	not considered	76.8%

The linear ZETA model was also compared to the earlier Altman (1968) model and the classification accuracy of the ZETA model was found to be superior.

2.1.5 Taffler (1977)

Taffler argued that companies with a strong asset base using the Altman (1968) model would tend to have good Z-scores but could still fail. Thus, Taffler developed an alternative model, which placed greater emphasis on Liquidity. By using a sample of forty-six pairs of UK companies, the failed companies having filed for bankruptcy during the 1969 to 1974 period, eighty different ratios were calculated for each of the companies. Failure was defined as entry into receivership, creditors' voluntary liquidation, compulsory windup by order of the court or government action undertaken as an alternative.

By using Multiple Discriminant Analysis (MDA), the following model was developed:

$$Z = 0.53a + 0.13b + 0.18c + 0.16d$$

where,

- a - PAT / Current Liabilities
- b - Current Assets / Total Debts
- c - Current Liabilities / Total Assets
- d - The no credit interval

$$= \frac{\text{Immediate Assets} - \text{Current Liabilities}}{\text{Operating costs} - \text{Depreciation}}$$

The parameters in the model cover Profitability, Working Capital, Financial risk and Liquidity. A Z-score > 0.2 indicates a company with good long term prospects, with a score below 0.0 indicating probable failure. A zone of ignorance, where misclassifications are likely to occur, exists between 0.0 to 0.2. The model was applied to the original ninety-two companies and the correct classification into the failed and non-failed categories was found to be 98.9% (only one misclassification).

2.1.6 Ohlson (1980)

Ohlson used a sample of one hundred and five (105) bankrupt and two thousand and fifty-eight (2058) non-bankrupt USA industrial companies to develop three conditional logit models. The failed companies filed for Bankruptcy under Chapter X or XI during the 1970 to 1976 period and were

taken from the Wall Street Journal Index. Model 1 predicts bankruptcy within one year, Model 2 within two years and Model 3 within one or two years. The variables used to generate the model were:

- a - SIZE [$\log(\text{Total Assets} / \text{GNP price level index})$]
- b - Total Liabilities / Total Assets (TLTA)
- c - Working Assets / Total Assets (WCTA)
- d - Current Liabilities / Current Assets (CLCA)
- e - OENEG
 = 1 if Total Liabilities exceeds total assets, 0 otherwise
- f - Net Income / Total Assets (NITA)
- g - Funds provided by operations / Total Liabilities (FUTL)
- h - INTWO
 = 1 if Net Income was negative for the last two years, 0 otherwise
- i - CHIN
 =
$$\frac{NI_t - NI_{t-1}}{(|NI_t| + |NI_{t-1}|)}$$
 where NI is the Net Income for the most recent period. The variable is intended to measure change in Net Income.

This study made use of the statistical methodology known as conditional logit analysis. This type of analysis is used to determine the probability that a company fails within a certain timeframe, given that the company belongs to a certain pre-specified population. The resultant model parameters are given in Table 7.

Table 7: Variable co-efficients for the Ohlson Model

	Year - 1	Year - 2	Year - 3
Constant	-1.32	1.84	1.13
a	-0.407	-0.519	-0.478
b	6.03	4.76	5.29
c	-1.43	-1.71	-0.99
d	0.076	-0.297	0.062
e	-2.37	-2.74	-4.62
f	-1.83	-2.18	-2.25
g	0.285	-0.78	-0.521
h	-1.72	-1.98	-1.91
i	-0.521	0.422	0.212

Ohlson also analysed the means and standard deviations of the above-mentioned variables and noted that the ratios deteriorated progressively from non-bankrupt companies to two years prior to bankruptcy to one year prior to bankruptcy. The predictive ability of the models is noted in Table 8.

Table 8: Predictive accuracy of the Ohlson Model

	Percent Correctly Predicted
Year-1	96%
Year- 2	96%
Year-1 or Year -2	93%

The major findings of Ohlson's (1980) study is that four variables were found to be statistically significant in assessing the probability of failure:

Size of the company	(SIZE)
A measure of the financial structure	(TLTA)
A measure of performance	(NITA and/or FUTL)
A measure of current liquidity	(WCTA or with CLCA)

2.1.7 Zavgren (1985)

Zavgren used logistic analysis to develop a model to predict financial distress over a five-year period. His data sample consisted of forty-five pairs of failed and non-failed USA industrial companies. The failed companies consisted of the entire population of companies that failed between 1972 to 1978, for which data was available. A failed company was defined as having filed for Chapter X or XI Bankruptcy proceedings. The variables used were those found to be significant in the study by Pinches *et al* (1973), with the only exception being the use of the Quick ratio instead of the Current ratio to measure Short-term Liquidity. The model variables were:

- a - Total income / Total Capital
- b - Sales / Net Plant
- c - Inventory / Sales
- d - Debt / Total Capital
- e - Receivables / Inventory
- f - Quick assets / Current Liabilities
- g - Cash / Total Assets

Five logit models for one to five years prior to failure were developed and the models coefficients are listed in Table 9.

Table 9: Variable co-efficients for the Zavgren Model

	Year - 1	Year - 2	Year - 3	Year - 4	Year - 5
Constant	-0.239	-2.611	-1.512	-5.946	-6.877
a	-0.005	-0.014	0.005	0.020	-0.023
b	-0.00110	0.00063	0.00002	0.00363	0.00798
c	0.001	0.042	0.063	0.092	0.088
d	0.044	0.045	0.018	0.041	0.044
e	0.016	0.022	0.008	0.017	0.007
f	-0.031	-0.027	-0.016	-0.004	0.0002
g	0.108	0.112	0.425	0.059	0.158

The outputs of the models were analysed for each company and an optimal cut-off probability for each of the five models that minimised classification errors was determined and used to classify the companies as either failed or non-failed.

A Holdout sample consisting of sixteen pairs of failed and non-failed companies taken from the 1979 to 1980 period was used to test the predictive accuracy of the models.

The predictive accuracy of the models for the Test and Holdout samples are given in Table 10.

Table 10: Predictive accuracy of the Zavgren Model

	Test Sample	Holdout Sample
Year-1	82%	69%
Year-2	83%	69%
Year-3	72%	69%
Year-4	73%	69%
Year-5	80%	69%

2.2 DICHOTOMOUS MODELS (SOUTH AFRICA)

2.2.1 Strebel & Andrews (1977)

By using a sample of sixteen failed and thirteen non-failed companies from the 1971 to 1976 period, the Cashflow to Total Debt ratio was found by Strebel and Andrews to be a powerful predictor of corporate failure in South Africa. This ratio was popularised by Beaver (1966) and was considered to be a “significant indicator of bankruptcy potential.” Cashflow was defined as the Annual funds from operations after taxes, Interest and lease payments; or Net Profit after Tax adjusted for non-cash items, and excluding all non-recurring extraordinary items. Total Debt included Long term and Short term Liabilities.

As a single ratio was used to predict bankruptcy, a cut-off score was devised to classify companies as either failures or survivors in the years preceding failure. The predictive accuracy of the univariate model is illustrated in Table11.

Table 11: Predictive accuracy of the Strebel and Andrews Model

Years prior to Bankruptcy	Ratio Cut-off	Number of Correct Classifications		% Correctly Classified
		Failures (16)	Survivors (13)	
Year-1	5%	14	12	90%
Year-2	11%	13	10	79%
Year-3	15%	12	8	69%
Year-4	15%	11	8	66%
Year-5	15%	12	8	69%

2.2.2 Daya (1977)

Likewise, Daya analyzed thirty-one pairs of failed and healthy South African companies taken from the 1966 to 1976 period. The definition of failure was the same as that used by Beaver (1966) and Altman (1968) in their studies. Whilst it was intended that the thirty ratios used by Beaver (1966) be used in the study, lack of financial information resulted in the analysis of only seventeen ratios.

The research approach was similar to that followed by Beaver (1966) and the percentages of correct classification for Daya's second test are noted in Table 12:

Table 12: Predictive Accuracy for Daya's Second Test

Ratio	Year-1	Year-2	Year-3	Year-4	Year-5
Cash flow / Average Total Current Liabilities	82%	60%	52%	52%	57%
Net Income / Total Assets	81%	66%	67%	65%	56%
Total Current and Long-term Liabilities / Total Finance	81%	77%	65%	60%	62%
Cash and Bank / Total Assets	60%	55%	60%	55%	56%
Cash and Bank / Current Liabilities	68%	52%	60%	53%	63%

Daya found the Cash flow to Average Total Current Liabilities ratio to be the best predictor one-year prior to failure. However, he also noted that the best overall predictor over the five-year period was Net Income to Total Assets. With reference to Table 12, this ratio is closely contested by the Total Current and Long-term Liabilities to Total Finance ratio, the latter could arguably be considered to be the superior overall ratio.

2.2.3 De La Rey (1981)

De La Rey developed a model using financial information on twenty-six pairs of failed and non-failed South African listed companies, with the failed companies taken from the 1972 to 1979 period. Unlike Altman's Z-score model which used "Market value of Equity / Book value of Total Debt" as a variable implying its use only on listed companies, the De La Rey model could be used for both listed and unlisted companies. By using Multiple

Discriminant Analysis (MDA) and twenty-five variables, the following model was developed:

$$k = - 0.01662a + 0.0111b + 0.0529c + 0.076d + 0.0174e + 0.01071f - 0.068811$$

where,

- a = Total Outside Funding / Total Assets x 100
- b = EBIT / Average Total Assets x 100
- c = (Total Current Assets+Listed Investments) /Total Current Liabilities
- d = PAT / Average Total Assets x 100
- e = Cashflow Profit after Tax / Inflation adjusted Total Assets x 100
- f = Inventory / Inflation adjusted Total Real Assets x 100

A k-score < -0.19 implies potential failure, with a k-score > 0.20 implying a “Healthy” company and a zone of ignorance exists between a score of -0.19 and +0.20 implying that a company cannot be classified as either “Healthy” or “a candidate for potential failure”.

The model was found to classify companies as either “Healthy” or “Likely to Fail” with a 96% overall accuracy one year prior to failure. This model forms part of the BFA-Net financial analysis service.



2.2.4 Clarke, Hamman and Van der Smit (1991)

Clarke *et al* (1991) developed a discriminant model for privately owned industrial companies. Their data sample consisted of twenty-nine companies that failed or experienced financial distress between 1985 and 1990 and forty-three healthy companies. A company was defined as failed if it was liquidated or in the process of being liquidated; and distressed if it was unable to make scheduled loan repayments.

By using thirteen variables and stepwise discrimination analysis, four models were developed for each of the four years prior to failure. The models were analysed and an optimal model was selected based on its consistent predictive accuracy over the four years and similar classification accuracy between the failed and healthy samples. The model parameters are:

$$Z = -11.907 + 1.524a + 0.506b + 1.606c + 2.226d + 5.136e$$

where:

- a = $\log (\text{Total Assets} / \text{Production Price Index})$
- b = $\text{Turnover} / \text{Total Assets}$
- c = $\text{Shareholder's Funds} / \text{Total Assets}$
- d = $\text{Net Working Capital} / \text{Total Assets}$
- e = $\exp [(\text{NPAT} + \text{Depreciation}) / \text{Total Assets}] / \exp [\text{Interest} / \text{Total Assets}]$

Companies having Z-scores greater than zero are classified as “Healthy” and those with Z-scores below zero are classified as “Failed”. The model was

tested up to four years prior to failure and the predictive accuracy of the model is shown in Table 13. The model was tested for predictive accuracy by using the holdout technique prescribed by Lachenbruch (1975). This technique involves the derivation of successive models by leaving out one company at a time. Each model is then tested against the company ignored during the respective model derivation.

Table 13: Predictive Accuracy of the Clarke *et al* Model

	Predictive Accuracy
Year-1	78%
Year-2	74%
Year-3	75%
Year-4	77%

2.2.5 Court, Radloff and van der Walt (1999)

Court *et al* (1999) deviated from the traditional dichotomous approach by using the Bayes-Fisher discriminant analysis technique to develop a two-stage model to classify a company as “Healthy” or “Failed”. A failed company was defined as “a company which had delisted from the Johannesburg Stock Exchange due to poor financial performance and which was later liquidated. For the study, a sample of nineteen non-failed and twenty-one failed companies taken from the 1974 to 1985 period was used to develop one-year prior to failure (Year-1) and two-years prior to failure (Year-2) dichotomous models.

In the first stage, by using fourteen macroeconomic variables and regression analysis, four macro-economic variables were found to explain 95% of the variability of the Business Failure Rate (BFR). These variables were:

Total advances from the banking sector

Visits by foreigners

Consumer Price Index

Index of the value of share transactions

The first two variables accounted for 66% and 22% of the variation in BFR, respectively. However, further statistical analysis illustrated that an equation using only Total advances from the banking sector (TADV) but lagged for two months could adequately predict the BFR:

$$\mathbf{BFR = 18.628 - 0.149 TADV_{-2 \text{ months}}}$$

For the second stage, by using initial twenty financial and non-financial variables and the Bayes-Fisher discriminant analysis technique, six variables were found to be suitable predictor variables for the dichotomous model:

- a - Total owner's interest / Total Assets
- b - Operating Profit / Average Operating Assets
- c - Current Assets / Current Liabilities
- d - Directors appointments and resignations
- e - Change in delay in publishing Annual report
- f - Director shareholdings

Table 14: Discriminant score coefficients for the Court *et al* models

Business Failure Rate	a	b	c	d	e	f *
0,01	0,0063	0,0186	-0,1417	-0,176	-0,372	-1,20
0,02	0,0103	0,0305	-0,1843	-0,252	-0,530	-1,62
0,03	0,0136	0,0400	-0,2093	-0,295	-0,662	-2,46
0,04	0,0164	0,0480	-0,2274	-0,320	-0,671	-3,63
0,05	0,0189	0,0550	-0,2419	-0,337	-0,704	-5,04
0,06	0,0212	0,0612	-0,2540	-0,347	-0,725	-6,59
0,07	0,0232	0,0667	-0,2643	-0,353	-0,737	-8,22
0,08	0,0251	0,0761	-0,2733	-0,356	-0,745	-9,91
0,09	0,0267	0,0788	-0,2811	-0,358	-0,746	-11,6
0,10	0,0283	0,0801	-0,2880	-0,359	-0,747	-13,3

* These figures to the power of E-5

The statistical analysis technique used, yielded a different set of co-efficients for each level of the BFR. The model co-efficients for the year prior to failure are listed in Table 14.

In summary, in the first stage, a macro-economic variable was used to determine a Business Failure Rate between 0.01 and 0.10. The second stage used the co-efficients in Table 14 corresponding to the calculated BFR, and company financial variables to obtain a “failure prediction score”. This score was then compared to the predetermined cut-off scores in Table 15 to classify the company as “Healthy” or “Failed”.

The classification results for the various BFRs are also presented in Table 15.

Table 15: Cut-off scores and classification results for the Court *et al* models

BFR	Year-1 Model			Year-2 Model		
	Cut-off scores	Success (19)	Failures (21)	Cut-off scores	Success (19)	Failures (21)
0.01	0.154	100%	95%	0.139	78%	71%
0.02	0.351	100%	100%	0.280	78%	71%
0.03	0.515	100%	100%	0.411	78%	76%
0.04	0.656	100%	100%	0.537	78%	76%
0.05	0.764	100%	100%	0.655	78%	76%
0.06	0.848	100%	100%	0.767	78%	76%
0.07	0.933	100%	100%	0.872	78%	76%
0.08	1.000	100%	100%	0.968	78%	76%
0.09	1.057	100%	100%	1.057	78%	76%
0.10	1.107	100%	100%	1.139	78%	76%

2.3 MULTI-STATE MODELS (OVERSEAS)

2.3.1 Fitzpatrick (1934)

Fitzpatrick (1934) made the distinction between failing and failed companies. He noted that companies generally passed through several transitional stages of financial distress prior to business failure:

Incubation (Stage 1)

Financial Embarrassment (Stage 2)

Financial Insolvency (Stage 3)

Total Insolvency (Stage 4)

Confirmed Insolvency (Stage 5)

The period of Incubation occurred when unfavourable conditions were starting to develop and this stage was unlikely to be noticed by the company's management. In the Financial Embarrassment stage, the company's earnings power was adequate with physical assets in excess of liabilities but the assets were not sufficiently liquid to meet cash needs. Financial Insolvency occurred when the company was unable to acquire essential funds to meet its maturing or demanding obligations. Total Insolvency occurred when the company's liabilities were greater than its physical assets. Confirmed Insolvency involved the legal process of filing for bankruptcy.

Fitzpatrick highlighted that the regular analysis of financial statements and accounting ratios would be instrumental in detecting financial distress thus enabling appropriate action to be taken by management.

2.3.2 Lau (1987)

Lau improved on the use of dichotomous models by using a five-state model to analyse the state of a company's health. These states were:

Financial stability	(State 0)
Omitting or reducing Dividend Payments	(State 1)
Default of loan interest or principle payments	(State 2)
Protection under Chapter X or XI of the Bankruptcy Act	(State 3)
Bankruptcy and Liquidation	(State 4)

The ranking of the states indicate the continuum and increasing severity of financial distress. Lau used Test and Holdout samples to develop and test predictive models with three different time horizons. Each sample consisted of (350, 20, 15, 10, 5) totalling four hundred (400) USA companies for the five states, respectively; comprising three hundred and fifty (350) healthy, thirty-five (35) distressed and fifteen (15) failed companies. Data for the sample was obtained from The Wall Street Journal Index and Compustat tapes. The “year-1” models used 1974/75 financial data to predict financial distress in 1976, the “year-2” models used 1973/74 financial data to predict financial distress in 1976 and the “year-3” models used 1972/73 financial data to predict financial distress in 1976. The predictive accuracy of each model was then validated with a Holdout sample of 1977 firms.

In developing the models, Lau defined the ten variables as follows:

- a - Loan restrictive terms
 - = 1 if one of the firm’s loan agreements contains 3 or more restrictive terms and the loan’s interest is above the prime rate
 - = 0 otherwise
- b - Industry normalised Debt / Equity
- c - Working Capital flow / Total Debt
- d - Stock price trend
 - =
$$\frac{(H_t - H_{t-1}) + (L_t - L_{t-1})}{H_t + H_{t-1} + L_t + L_{t-1}}$$
 - where H_t and L_t are the respective high and low values of the stock prices in Year t

- e - Industry normalised Operating Expenses / Sales
- f - Distribution of common Stock Dividends
 = 1 if no dividend is being paid currently
 = 0 otherwise
- g - Liquidation of Operating Assets
 = 1 if the firm liquidates its operating assets in the period and there is no decreasing trend of earnings flow
 = 0 otherwise
- h - Trend of Capital Expenditure
 =
$$\frac{(K_i - K_{i-1})}{(K_i + K_{i-1} + K_{i-2} + K_{i-3})/4}$$
 where K_i is the capital expenditure in Year i
- i - Trend of Working Capital flow
 =
$$\frac{(WF_t - WF_{t-1})}{(WF_t + WF_{t-1} + WF_{t-2} + WF_{t-3})/4}$$
 where WF_t is the working capital in Year t
- j - Omission or reduction of Dividend payments
 = 1 if dividend payments are omitted or reduced more than 40% in the period
 = 0 otherwise

Lau states that the variable j “indicates whether a distress action has been taken” whereas variable f “indicates whether a financial flexibility resource exists”. Since nominal logistic regression was used to generate the three prediction models, this implies that each model has five logit functions, one for each of the five states. Lau provides logit coefficients for the “year-1” model only (Table16).

Table 16: Logit co-efficients for the Lau Year-1 model

	a	b	c	d	e	f	g	h	i	j
State 0	-137.8	2.0	1252.0	113.8	14.6	-12.5	-114.7	-62.0	-289.5	12.9
State 1	-132.5	1.5	1250.0	110.1	11.6	-37.6	-115.1	-63.9	-295.0	17.6
State 2	90.8	-1.4	-836.9	-72.6	-8.8	19.4	75.2	42.6	194.2	-7.8
State 3	89.1	-1.2	-835.3	-78.6	77.2	17.8	-8.3	42.1	197.8	-11.0
State 4	90.4	-1.0	-829.8	-72.8	-9.1	13.0	77.4	41.1	192.5	-11.7

The probabilities that a company would enter each of the five states were computed and the Ranked Probability Scoring methodology (RPS), developed by Epstein (1969), was applied to determine the probabilistic score for each company. For any company the maximum score that can be obtained is 1. By summing the scores obtained for each state, the overall predictive performance of the model/s can be determined for example, the maximum possible score for the model would be 400 (total number companies in sample) and the maximum possible score for State 2 would be 15 (total number of companies in State 2 of the sample). The percentage RPS scores for both the Test and Holdout samples are given in Table 17.

Table 17: Predictive Accuracy for Lau Model using RPS scores

Test Sample				Holdout Sample			
	Year-1	Year-2	Year-3		Year-1	Year-2	Year-3
Overall	99%	98%	97%	Overall	94%	93%	94%
State 0	100%	99%	99%	State 0	96%	96%	96%
State 1	93%	86%	82%	State 1	87%	84%	83%
State 2	96%	88%	84%	State 2	88%	75%	82%
State 3	95%	75%	77%	State 3	78%	78%	75%
State 4	93%	100%	87%	State 4	35%	50%	57%

To facilitate comparison with earlier models [Beaver (1966), Altman (1968), Deakin (1972), Blum (1974), Altman *et al* (1977), Ohlson (1980) and Zmijewski (1984)], that did not use RPS, Lau also provided the percentages of correctly classified firms for her Test and Holdout samples. Classification into a state was based on the highest predicted probability. (see Table 18)

Table 18: Predictive Accuracy for Lau Model using Classification accuracy

Test Sample				Holdout Sample			
	Year-1	Year-2	Year-3		Year-1	Year-2	Year-3
Overall	96%	92%	90%	Overall	80%	79%	85%
State 0	99%	99%	99%	State 0	85%	87%	94%
State 1	65%	15%	10%	State 1	50%	20%	10%
State 2	87%	67%	47%	State 2	67%	33%	47%
State 3	70%	40%	30%	State 3	20%	10%	20%
State 4	60%	100%	80%	State 4	20%	20%	20%

2.3.3 Ward (1994)

Ward developed four-state ordinal logistic regression models to compare the predictive ability of NOF (Net income plus Depreciation and Amortization scaled by Total Liabilities) with CFFO (Operating Cashflow scaled by Total Liabilities) and NITA (Net Income/Total Assets). The ordinal states of financial distress were based on the empirical research of Giroux and Wiggins (1984) and DeAngelo and DeAngelo (1990). The four states were:

Financially Healthy	(State 0)
Cash Dividend reduction > 40%	(State 1)
Loan principal / Interest default or Debt accommodation	(State 2)
Chapter XI protection	(State 3)

Ward noted that:

“A major limitation of Lau’s (1987) study is that the statistical technique she used did not incorporate the ordinal structure of her dependent variable into her model; she used a nominal based logit model. For ordinally scaled dependent variables, nominal logistic models are inferior to ordinal logistic regression models. [Agresti (1984)].”

Ward therefore used ordinal logistic regression to generate his four-state prediction models.

Ward used a non-financial sample of (164, 22, 23, 18) totalling two hundred and twenty-seven (227) USA companies for each of the four states, respectively; comprising one hundred and sixty-four (164) healthy, forty-five (45) distressed and eighteen (18) failed companies, to develop predictive models with three different time horizons. Data for the sample was obtained from Compustat, SEC 10-K and Annual reports. His study used 1984/5 financial data to develop a year-3 model, 1985/6 data for a year-2 model and

1986/7 data for a year-1 model, to predict the financial distress of 1988 businesses. The predictive accuracy of each model was then validated with a Holdout sample of 1989 companies. In developing the models, six variable definitions found to be significant in prior bankruptcy studies, as well as CFFO, NITA and NOF were used:

- a - Size (Total Assets)
- b - Sales / Current Assets
- c - Current Assets / Current Liabilities
- d - Owner's Equity / Total Liabilities
- e - Current Assets / Total Assets
- f - Cash plus marketable securities / Total Assets
- g - Cashflow from operating activities / Total Liabilities
(CFFO)
- h - Net Income / Total Assets (NITA)
- i - Net income plus Depreciation and Amortization (NOF) /
Total Liabilities

Ward developed two full models, one with all the independent variables excluding NOF and the other including NOF and the model co-efficients are presented in Table 19.

Table 19: Logit co-efficients for the Ward model

	Model without NOF			Model with NOF		
	Year - 1	Year - 2	Year - 3	Year - 1	Year - 2	Year - 3
Constant 1	1.74	2.03	0.53	1.78	2.2	0.57
Constant 2	0.7	1.18	-0.12	0.57	1.41	-0.07
Constant 3	-0.89	-0.19	-1.17	-0.83	0.02	-1.11
a	-0.0002	-0.0003	-0.0003	-0.0002	-0.0004	-0.0003
b	-0.09	-0.16	-0.13	-0.08	-0.14	-0.13
c	-0.49	-0.49	-0.2	-0.47	-0.44	-0.22
d	-1.07	-0.4	-0.11	-1.11	-0.65	-0.07
e	-0.3	-0.68	0.16	0.34	-0.78	0.14
f	-0.88	-4.41	-3.49	-0.74	-4.31	-3.62
g	-3.18	-1.49	-0.11	-3.1	-0.83	-0.03
h	-1.44	-2.02	-1.28	-0.86	0.4	-0.6
i	-	-	-	-0.6	-2.24	-0.43

For testing purposes, he also used NOF as a single measure, which he refers to as a Naïve measure of Cashflow.

Ward found NOF to be a strong predictor of financial distress because he attributed NOF to be a “better measure of Economic Income than Net Income”. Similar to Lau (1987), the Ranked Probability Scoring methodology was used to assess the predictive ability of each model. The percentage RPS for each of the models using the two hundred and twenty-seven (227) Test samples (164, 22, 23, 18) and the one hundred and fifty-eight (158) non-

financial Holdout samples (111, 17, 14, 16) for each of the four states are listed in Table 20.

Table 20: Predictive Accuracy for Ward Model using RPS scores

	Test Sample				Holdout Sample			
	Year - 1	Year - 2	Year - 3	Naïve	Year - 1	Year - 2	Year - 3	Naïve
Overall	92%	91%	88%	86%	89%	88%	86%	85%
State 0	97%	97%	96%		97%	96%	96%	
State 1	81%	81%	81%		79%	81%	81%	
State 2	84%	78%	72%		81%	74%	69%	
State 3	69%	64%	40%		51%	57%	35%	

2.4 MULTI-STATE MODEL (SOUTH AFRICA)

There has only been one multi-stage/state model that has been developed in South Africa. Whereas it is not in the field of financial distress but rather on wealth creation, given its multi-stage/state approach, it warrants discussion in this study.

2.4.1 Lukhwareni (2005)

Lukhwareni developed a wealth creation matrix that classified a company from a “Winner” through to a “Loser” depending on its performance against its sector average, based on three variables. The study focused on forty profit seeking companies listed on the Johannesburg Stock Exchange spanning the period from 1992 to 2002.

The matrix adopted a dichotomous approach by classifying a company as either above its sector average (State 1) or below its sector average (State 0) for each of the three variables (Turnover, Operating Income and Return on Capital Employed) thus, yielding eight possible outcomes or stages. The stages were:

Stage A	(1,1,1)	Sustainable, Profitable Growth (Winner)
Stage B	(1,1,0)	Sub-optimal, Capital Structure Disadvantage
Stage C	(1,0,1)	Strategic Profit Sacrifice
Stage D	(1,0,0)	Simple Growers
Stage E	(0,1,1)	Profit Seekers
Stage F	(0,1,0)	Cost Cutting Obsession
Stage G	(0,0,1)	Optimal Capital Structure Advantage
Stage H	(0,0,0)	Under-performers (Loser)

Broadly speaking, the study separated companies into “Winning Clusters” (Stages A, C, E, G) and “Losing Clusters” (Stages B, D, F, H). This is supported by observing the various groups of ratios used namely, Profitability, Solvency, Liquidity, Efficiency and Market valuation, in which at least one ratio in each category clearly illustrated the cluster differentiation. Further, regression equations were developed to differentiate between each stage and its complimentary stage (one from each cluster) and are noted in Table 21. A single regression equation differentiating between the eight stages was not developed.

Table 21: Regression co-efficients for the four Lukhwareni models

	A & H	B & G	C & F	D & E
Intercept	4.8	2.89	2.58	3.85
Standardized Economic Value Added	2.22	2.02	2.62	2.42
Profitability Index	1.58	2.4		2.21
Return on Shareholders' Funds	2.52	1.53	2.66	2.34
Return on Total Assets	1.1			
Earnings per Share Growth	1.27	1.6		
Operating Profit Margin				1.21
Debt to Equity			0.93	

In summary, each of the eight stages (or clusters) separated companies into above or below sector average companies and apart from generalizing that “The companies (Stage H) are at advanced stages of decay”, Lukhwareni does not classify a company as “Healthy” or “Likely to Fail” but rather stressed that the focus of his study was on wealth creation and sustainable growth.

2.5 CRITICAL ANALYSIS OF PRIOR RESEARCH

2.5.1 General Observations

The Literature Review has examined sampling methodology, model development and predictive accuracy. The following conclusions can be drawn from this analysis, some of which previous researchers have also mentioned:

- The definition of the "year prior to failure" (Year-1), whether it is the last set of published results or the year prior to that, is crucial in determining the predictive accuracy of the models.
- The choice of statistical technique, whether it is Multiple Discriminant Analysis or Logistic Regression, has all produced reasonably good prediction models; and does not appear to adversely affect a model's predictive ability.
- Although the models employed a wide variety of financial variables, they can be categorized into measures of Financial performance, Cashflow position, Leverage, Liquidity and Company size.
- The means and standard deviations of the financial variables, used in the models, for failed companies deteriorated progressively as bankruptcy approached whilst that of the non-failed companies were fairly stable over the same period of analysis.

- The models achieve the best results, in terms of predictive accuracy, for the specific countries and industries for which they were developed.

2.5.2 Dichotomous Studies (All)

As was pointed out earlier, Fitzpatrick (1934) made the distinction between failing and failed companies and noted that companies generally passed through several transitional stages of financial distress prior to business failure. This argument is also supported by Poston *et al* (1994) who stated that:

“This artificial dichotomization does not explicitly recognise that a failing firm may be able to remedy its weakened position before it reaches the final stage of collapse”.

In their study, Hill *et al* (1996) observed that the financial ratio means for financially distressed companies differed from those of healthy and failed companies. As such, companies cannot simply be dichotomously classified as either “Healthy” or “Failed”.

The overseas studies namely; Beaver (1966), Altman (1968), Deakin (1972), Altman *et al* (1977), Taffler (1977), Ohlson (1980) and Zavgren (1985) have all produced good results and are well recognised globally. Notwithstanding, all these studies are dichotomous in nature.

The South African studies namely, Strebel and Andrews (1977), Daya (1977), De La Rey (1981), Clarke *et al* (1991) and Court *et al* (1999), have all produced fairly good results. The De La Rey (1981) study is well received

and forms part of the BFA-Net database, University of Pretoria. Regrettably, even these studies are also dichotomous in nature providing either a “Healthy” or “Failed/Likely to Fail” classification.

2.5.3 Lau (1987) and Ward (1994)

Both Lau’s (1987) and Ward’s (1994) multi-state models were an improvement to the prior dichotomous studies and both have produced excellent results. A model that can provide additional information to all stakeholders is of immense value. However, these models also have some drawbacks as will be outlined below.

An inspection of the two sets of models indicates that different “States of Distress” were used to classify unhealthy companies and only a single state for non-failed companies. The limitation of this approach is that non-failed companies would also have different “States of Health” and an incorrect grouping of the different “States of Health” into one state whilst at the same time specifying different “States of Distress” could result in an inefficient or skewed model being developed.

Whereas “Dividend reduction” has been identified as important when analysing and attempting to identify distressed companies, its general use to classify a company as “Distressed” can be misleading especially if the said company omitted Dividend payments to fund growth/investments. Thus, in using these models, the precise reason for “omitting or reducing Dividend

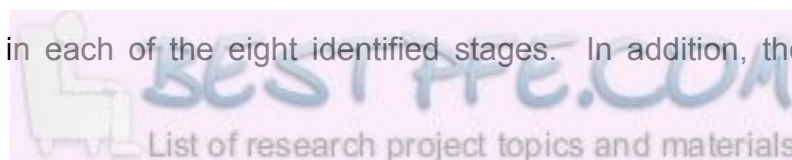
payments” needs to be clearly understood to avoid a misclassification which could have serious repercussions for the company and hence its stakeholders in the market place.

Lau (1987) and Ward (1994) also classified their last “State” as “Bankruptcy and Liquidation” and; “Chapter XI protection”, respectively. This is merely a legal formality and financial ratios cannot theoretically be used to predict this legal event. Thus, this state should not be used in developing a multi-state model.

Notwithstanding the above arguments, information on financial distress for USA companies can be obtained from the Wall Street Journal Index and company financial data can be extracted from the annual industrial and research COMPUSTAT tapes. However from a South African perspective, information on “Debt accommodation and/or loan/interest default, “Bankruptcy protection under Chapter 11” and “Bankruptcy” is not readily available to the general public. This implies that a different set of financial health states needs to be identified to enable the development of a multi-state model for South African businesses.

2.5.4 Lukhwareni (2005)

The Lukhwareni’s (2005) study is a fresh approach to analysing companies and provides good theoretical insight and guidance into issues possibly faced by companies in each of the eight identified stages. In addition, the study



would appeal to sector specific investors with the primary aim of investing in companies that show wealth creation and sustainable growth. However, the study as a whole has some drawbacks.

Each of the stages (or clusters) of the study, separated companies into above or below sector average companies in each of three variables (Turnover, Operating Income and Return on Capital Employed). One of the drawbacks of the study was that by using absolute values for Turnover and Operating income, the matrix would be biased towards the larger Turnover and Operating Income companies and thereby, penalise the medium to small ones. This would result in so-called misclassifications for these latter companies and hence, result in an inefficient or skewed model/matrix. It would, perhaps, have made more sense to use Turnover and Operating Income as ratios so as to ensure a fair approach to a company's stage classification.

Perhaps, as a consequence thereof, a single model to classify any of the eight stages could not be developed. As a result, four separate, dichotomous models were developed to group a company loosely into either a "Winning Cluster" or a "Losing Cluster". Ward (1994) pointed out that Lau (1987) had developed inefficient models owing to her using binary logistics regression to develop separate model equations for each of her defined states. A similar argument would also apply to the Lukhwareni's (2005) models. Having corrected for the matrix inefficiency, it would have been more meaningful to develop a single, eight-stage/state model; if at all possible.

Further, the study classifies a company that is below sector average in each of the three above-mentioned variables as a “Loser”. It can be argued that this company could have one of two possible outcomes:

- The company could most probably be distressed or failed and be a “Loser”.
- However, if the company were relatively close to the sector average, it could still be non-failed and in good health.

If the last outcome were indeed the true situation then, Lukhwareni’s (2005) generalization that “The companies (Stage H) are at advanced stages of decay”, with Stage H referring to the so-called “Loser”; could have serious repercussions for this company in the market place from an investment perspective. It cannot be overly stressed that whereas this outcome could apply to a company of any size, medium to small companies are more susceptible to being classified as a “Loser” and risking adverse market place reputation.

Looking at it from the other perspective, Lukhwareni (2005), classifies a company that is above sector average in each of the three above-mentioned variables as a “Winner”. Here again, there are two possible outcomes.

- The company could, indeed, be a star performer, healthy and a “Winner”.
- However, on the off chance that the sector as a whole performed absolutely dismally, it could also be in distress.

Given these drawbacks, if the current study was not conducted, South African stakeholders would still have to rely on any of the South African first stage models namely, Strebel and Andrews (1977), Daya (1977), De La Rey (1981), Clarke *et al* (1991) and/or Court *et al* (1999), to classify a company as either “Healthy” or “Likely to Fail”. Not intending to labour this point, this study not only provides an additional state/s in the first stage model but also develops a second stage, Financial Risk Analysis Model.

Tables 22 and 23 summarise all the Financial Distress studies in this Chapter. As the Lukhwareni study focuses on wealth creation and not financial distress, it is excluded from the tables.

Table 22: Dichotomous Distressed Studies (overseas)

Dichotomous Studies (overseas)							
Researcher	Beaver	Altman	Deakin	Altman <i>et al</i>	Taffler	Ohlson	Zavgren
Year of Publication	1966	1968	1972	1977	1977	1980	1985
Country	USA	USA	USA	USA	UK	USA	USA
Sampling Methodology							
Original Sample Size	79f, 79nf	33f, 33nf	32f, 32nf	53f, 58nf	46f, 46nf	105f, 2058nf	45f, 45nf
Original Sample Time period	1954 - 1964	1946-1965	1964 - 1970	1962, 1967, 1969-1975	1969 - 1974	1970 - 1976	1972 - 1978
Holdout Sample Size	not considered	not considered	11f, 23nf	same as original	not considered	not considered	16f, 16nf
Holdout Sample Time period	not considered	not considered	1963-1964	same as original	not considered	not considered	1979 - 1980
Industry Sectors	Various	Manufacturing	Various	Manufacturing & Retailing	Various	Industrial	Industrial
Model Development							
Number of initial variables	30	22	14	28	80	9	7
Number of final variables	1	5	14	7	4	9	7
Type of Test	ratio classification	MDA	MDA	MDA	MDA	logit analysis	logit analysis
Type of Model	dichotomous	dichotomous	dichotomous	dichotomous	dichotomous	dichotomous	dichotomous
Predictive Accuracy							
Original Sample							
Year-1 Model	87%	95%	97%	93%	99%	96%	82%
Year-2 Model	79%	72%	96%	not considered	not considered	96%	83%
Year-3 Model	77%	48%	96%	not considered	not considered	not considered	72%
Holdout Sample							
Year-1 Model	not considered	not considered	78%	not considered	not considered	not considered	69%
Year-2 Model	not considered	not considered	94%	89%	not considered	not considered	69%
Year-3 Model	not considered	not considered	88%	84%	not considered	not considered	69%

Notes: f = failed, d = distressed, nf = non-failed/healthy

Table 23: Dichotomous (RSA) & Multi-state Distressed Studies(overseas)

	Dichotomous Studies (RSA)					Multistate Studies (overseas)	
Researcher	Strebel & Andrews	Daya	De La Rey	Clarke <i>et al</i>	Court <i>et al</i>	Lau	Ward
Year of Publication	1977	1977	1981	1991	1999	1987	1994
Country	RSA	RSA	RSA	RSA	RSA	USA	USA
Sampling Methodology							
Original Sample Size	16f, 13nf	31f, 31nf	26f, 26nf	29f, 43nf	21f, 19nf	15f, 35d, 350nf	18f, 45d, 164nf
Original Sample Time period	1971 - 1976	1966 - 1976	1972 - 1979	1985 - 1990	1974 - 1985	1976	1988
Holdout Sample Size	not considered	not considered	no info	same as original	no info	15f, 35d, 350nf	16f, 31d, 111nf
Holdout Sample Time period	not considered	not considered	no info	same as original	no info	1977	1989
Industry Sectors	Various	Various	Industrial & Industrial Financial	Industrial	Various	Various	Various (Non - financial)
Model Development							
Number of initial variables	1	17	25	13	14, 20	10	9
Number of final variables	1	1 (2)	6	5	1, 6	10	9
Type of Test	ratio classification	ratio classification	MDA	MDA	regression, Bayes-Fisher DA	nominal logistic regression	ordinal logistic regression
Type of Model	dichotomous	dichotomous	dichotomous	dichotomous	2 stage, dichotomous	5 state model	4 state model
Predictive Accuracy							
Original Sample							
Year-1 Model	90%	82% (81%)	96%	78%	100%	96%	92% *
Year-2 Model	79%	60% (66%)	no info	74%	77%	92%	91% *
Year-3 Model	69%	52% (67%)	no info	75%	not considered	90%	88% *
Holdout Sample							
Year-1 Model	not considered	not considered	no info	no info	no info	80%	89% *
Year-2 Model	not considered	not considered	no info	no info	no info	79%	88% *
Year-3 Model	not considered	not considered	no info	no info	no info	85%	86% *

Notes: f = failed, d = distressed, nf = non-failed/healthy; * Ward (1994) used RPS scores to determine Predictive Accuracy

CHAPTER 3 – STATISTICAL TECHNIQUES

3.1 UNIVARIATE ANALYSIS FOR THE NAÏVE MODEL

The mathematical expression for the Univariate Analysis ordinal 'i' state models is fairly simplistic:

$$Y_m = \alpha_m + \beta_m x_m$$

where m is the model number, 1 to 4, referring to the years $Y_n, Y_{n-1}, Y_{n-2},$ and Y_{n-3}

x_m is the variable determined to be of significance for model m .

β_m is the ratio coefficient for the x_m variable for model m .

α_m is the y intercept for model m .

and Y_m is the predicted State of Health for model m .

Alternatively, the univariate model can be developed using cut-off points which were the chosen method in this study. As an example, for a three state model:

$$\begin{array}{rcll} & & x_m > \phi_m & (\text{State } 0) \\ \sigma_m \leq & & x_m \leq \phi_m & (\text{State } -1) \\ & & x_m < \sigma_m & (\text{State } -2) \end{array}$$

where m is the model number, 1 to 4, referring to the years $Y_n, Y_{n-1}, Y_{n-2},$ and Y_{n-3} .

x_m is the variable determined to be of significance.

ϕ_m is the upper cut-off limit for model m to determine

State 0.

σ_m is the lower cut-off limit for model m to determine

State -2.

3.2 MULTIVARIATE DISCRIMINANT ANALYSIS (MDA)

Multiple Discriminant Analysis (MDA) is both a well known and a generally accepted statistical method employed by researchers for comparative studies. According to Balcaen & Ooghe (2006), Altman (1968) introduced the technique to business failure prediction and the former refer to an excerpt from Altman (1968:592) on describing MDA:

“A statistical technique used to classify an observation into one of several a priori groups dependent upon the observation’s individual characteristics... [it] attempts to derive a linear [or quadratic] combination of these characteristics which ‘best’ discriminates between the groups”.

Owing to its mathematical simplicity, the classification function used in this study is Fisher’s Linear Discriminant Analysis. In this technique, a classification function is derived for each group. Group scores are then calculated for each observation, with the observation being classified into the group that has the highest score.

The mathematical expression for the Fisher's Linear Discriminant Analysis '1' state models is:

$$F_{m,p} = \alpha_p + \sum_{q=1}^k \beta_{pq} x_q$$

where m is the model number, 1 to 4, referring to the years $Y_n, Y_{n-1}, Y_{n-2},$ and Y_{n-3} .

p is the states from 1 to " r "

x_q is the variable/s determined to be of significance ranging from 1 to k variables.

β_{pq} is the ratio coefficient for the x_q variable and for each of the p states.

α_p is the y intercept for each of the p states.

and $F_{m,p}$ is the classification score for each state p and model m .

3.3 CHI-SQUARE AUTOMATIC INTERACTION DETECTION (CHAID)

Chi-square Automatic Interaction Detection (CHAID) is an algorithm that determines the best relationship between a discrete response variable and one or more predictor variables. The result is a decision or classification tree.

CHAID consists of three components:

- Chi-square test statistic
- Bonferroni adjustment
- Algorithm for the combination of categories

The chi-square test is used to determine which categories of each of the predictor variables to merge and which to separate. As the number of degrees of freedom affects the significance of a chi-square test, the Bonferroni adjustment to the p -value is used to provide for situations when the number of degrees of freedom becomes too small. The algorithm follows a stepwise procedure which reduces the original categories into smaller, combined ones until the most significant variable has been determined. If the most significant variable clearly differentiates between each level of the response variable (for example, each of the “ i ” states) then the process stops. If not, and if a further level can be determined, the process continues to the next “branch” level using the next most significant variable and so forth, until the resultant decision tree can “best” differentiate between the different levels of the response variable.

3.4 STATISTICAL SOFTWARE

The statistical package used for ANOVA and the development of the MDA and CHAID models is SPSS version 13. Originally, it was intended to use Ordinal Logistic Regression (OLR). However, a limitation of the SPSS software was that it was unable to perform Stepwise Ordinal Logistic Regression. In the “Literature Review”, it was pointed out that both MDA and OLR yielded similar results and considering that MDA was being used in this study, CHAID was used as a substitute for OLR. An advantage of CHAID is that, in following a tree structure, it is easier for management to follow compared to the complex mathematic theory of both MDA and OLR.

CHAPTER 4 – IDENTIFICATION OF THE STATES OF HEALTH

Owing to difficulty in obtaining financial information, the companies selected for the study were taken from the studies of Daya (1977), Court *et al* (1999) and De La Rey (1981). All in all, a total of forty-two companies from various sectors, were used in the study. The financial statements of these companies were analysed by looking at trends in its Earnings. In defining Earnings, both EBIT (Earnings before Interest and Taxation) and PAT (Profit after Tax) were considered. Whereas EBIT reflects the company as a trading concern, Taxation and Interest are the costs of running the business. Further, the capitalisation of a company affects a company's net worth especially if it has been over extended. As a result thereof, the study favoured the use of PAT over EBIT.

Considering that financial data for the forty-two companies spanned from 1970 to 1999, PAT was inflation adjusted (CPI) using 1995 as a base year. In defining the States of Health, Real Earnings Growth (REG) was also calculated. The formula for REG is shown later in this chapter.

By using both PAT and REG, three financial states were identified:

State 0	HEALTHY	-	Positive Real Earnings Growth
State -1	INTERMEDIATE	-	Negative Real Earnings Growth
State -2	DISTRESS	-	Negative Earnings

Whereas the above States are indicative of the natural order of financial health, it needs to be mentioned that in developing the models, a company's State of Health was assigned by mathematical deduction and as such it was assigned "back to front". In other words, a company was first tested for State -2, then State -1 and then State 0. As a result thereof, these States will be explained in this order.

4.1 DISTRESS - Negative Earnings (State -2)

Failure to react quickly to a dynamic and ever changing business environment and/or a continuum of negative REG will ultimately lead to financial distress namely, Negative Earnings (State -2). It can be argued that one should look for at least two successive negative Earnings prior to considering the company as being in Distress. However, a single year of negative Earnings could be adequate to adversely affect the company's share price and in the worst case scenario, threaten its survival. This study regards even a single loss as a sign of Distress in that year. This is not to say that in the subsequent year, the company cannot improve its Earnings and hence, obtain a higher state for that year.

Hence, a company is classified as being in State -2 if:

$$E_n = \text{Profit after Tax} < 0 \text{ for Year } n$$

When the company reaches this state, the financial circumstances of the company are apparent to all the interested parties namely, creditors, customers, employees, financial institutions and investors, all of whom have a vested interest in the company. This state could possibly refer to the Financial Insolvency state (Stage 3) or the Total Insolvency state (Stage 4) in the Fitzpatrick model (1934).

4.2 INTERMEDIATE - Negative Real Earnings Growth (State -1)

Thompson (1993:228) identified “falling profitability” as one of the symptoms of decline. Further, Slatter (1984:55) noted:

“Where the profitability trend is lower in absolute terms, the firm is clearly in decline, but it is usually more meaningful to adjust for inflation and show profits in real terms.”

Thompson (1993:174) also shares a similar view:

“...it is important to take some account of inflation when looking at growth rates for actual data such as ... profits as otherwise companies appear to be doing far better than in reality they are.”

Hence, in this study, this State is defined as the Intermediate Stage which displays negative Real Earnings Growth. Two different approaches were used to define this State. The first approach involved using a three year PAT average to determine REG and the second, a five year PAT average. The choice of three years was to ensure that the stakeholders could pick up a problem with a company as quickly as possible. However, taking into consideration that a single year of poor Earnings has a 33% impact on the average and could result in a company fluctuating between the States unnecessarily and thus indicating instability; it was also decided to test the five

year average thereby reducing the said impact to 20%. This implies that in addition to the different statistical techniques employed in this study, two different sets of models would be developed to ascertain the superior definition for this state.

For the three year model, a company is said to experience Negative Real Earnings Growth if the PAT of the said year is less than the average PAT of the previous three years, with the Consumer Price Index (1995 CPI) being used to adjust the Earnings. Similarly, for the five year model, a company is said to experience Negative Real Earnings Growth if the PAT of the said year is less than the average PAT of the previous five years, with the Consumer Price Index (1995 CPI) being used to adjust the Earnings.

The formula for REG is given below and a company is classified as being in State –1 if $REG < 0$ for Year n .

For the three year model:

$$REG = \frac{E_n \cdot CPI_{factor} - \frac{1}{3} \sum_{i=n-1}^{n-3} E_i \cdot CPI_{factor}}{ABS \left[\frac{1}{3} \sum_{i=n-1}^{n-3} E_i \cdot CPI_{factor} \right]}$$

Similarly, for the five year model:

$$REG = \frac{E_n \cdot CPI_{factor} - \frac{1}{5} \sum_{i=n-1}^{n-5} E_i \cdot CPI_{factor}}{ABS \left[\frac{1}{5} \sum_{i=n-1}^{n-5} E_i \cdot CPI_{factor} \right]}$$

where,

n is the current year

i is the year ranging from $n-1$ to $n-3$ (for the three year model)

and $n-5$ (for the five year model)

$CPI_{factor} = CPI_{base\ year} / CPI_n$ for year n

$CPI_{factor} = CPI_{base\ year} / CPI_i$ for year i

$E_n =$ Profit after Tax for year n

$E_i =$ Profit after Tax for year i

This state could possibly refer to the Incubation stage (Stage 1) or the Financial Embarrassment Stage (Stage 2) in the Fitzpatrick model (1934).

4.3 HEALTHY – Positive Real Earnings Growth (State 0)

A company is considered to be Healthy if it meets two conditions. Firstly, it must have positive Earnings which in this study would imply a positive PAT. Secondly, its Real Earnings Growth (REG) has to be at worst case equal to zero but preferably greater than zero. As mentioned earlier, a company's State of Health was assigned by mathematical deduction and therefore by using the process of elimination, if a company was neither in State -2 or State -1, then it was taken to automatically have a positive Real Earnings Growth and positive Earnings and was therefore classified as being Healthy (State 0). With reference to the REG equations indicated in the previous section, $REG \geq 0$ for a company to be in this state and to be considered as Healthy.

CHAPTER 5 – VARIABLE SELECTION

All financial data used in this study was obtained from the database of the Bureau of Financial Analysis (BFA), University of Pretoria. Whereas the BFA also supplied ratios as well, it was noted that some of them were incorrect when cross referenced to the financial statements. Therefore, the ratios used for the development of the various models were recalculated. A further nine financial ratios not supplied by the BFA were calculated using the Financial Statements supplied. These ratios were Profit after Tax/Sales (PAT/SALES), Sales/Total Assets (SALES/TA), Earnings before Interest and Taxation/Sales (EBIT/SALES), Net Working Capital/Sales (NWC/SALES), Payable Days (PAY Days), Inventory Days (INV Days), Receivable Days (REC Days), Retained Earnings/Total Assets (RE/TA) and Shareholder Value Added (SVA). Unfortunately, only a few companies provided their Turnover information and as such these ratios did not come out to be significant in the statistical analyses.

A simple Shareholder Value Added (SVA) ratio was created and is defined as:

$$SVA = \frac{\textit{Profit} \cdot \textit{after} \cdot \textit{Tax}}{\textit{Prime} \cdot \textit{Rate} \times \textit{Total} \cdot \textit{Assets}}$$

Whereas it is understood that different industries have different risk profiles, lack of information resulted in the Prime Rate being taken as the rate at which to calculate the Cost of Capital for all of the companies. Further, owing to a lack of financial detail as presented in the financial statements, Net Operating

Profit after Tax could not be calculated and as such Profit after Tax was used as an alternative in the calculation of SVA.

In analysing the data for the Profit after Taxation to Shareholder's Equity (PAT/SHE) ratio, it was noticed that there were a number of data years in which the Shareholder's Equity was negative. This posed a problem as, if both PAT and SHE were negative, then a positive ratio would emerge. To cater for this, the absolute value for SHE was used to calculate the PAT/SHE ratio. In addition, to differentiate between a positive and negative SHE, a discrete dummy variable (PAT/SHED) was created; with "0" referring to a positive SHE and "1" referring to a negative SHE. Both these variables were used in the development of the first stage models in Chapters 6 and 7. However, for the Financial Risk Analysis Model (FRAM) which is developed in Chapter 8, a PAT/SHE2 ratio was created. Simply put, if SHE was negative, the ratio result would yield "-ve SHE" otherwise, the ratio value would be presented. This ensures that the "-ve SHE" is made clearly visible.

Macro-economic variables used in this study were obtained from the Economic Consultant's Office of Anglo American PLC.

A total of thirty-four variables, comprising twenty-six financial variables, six macro-economic variables and two lagged macro-economic variables, were considered for the development of the models. A complete list of the ratios used is presented in Table 24.

Table 24: Table of Ratios used for Model Development

Ratio Number	Ratio Name	Definition
Financial Variables		
F1	CA/CL	Total Current Assets / Total Current Liabilities
F2	CA/TA	Total Current Assets / Total Assets
F3	CA2/CL	Total Current Assets excluding Inventory / Total Current Liabilities
F4	CA2/TA	Total Current Assets excluding Inventory / Total Assets
F5	CL/TA	Total Current Liabilities / Total Assets x 100%
F6	CL/TL	Total Current Liabilities / Total Liabilities x 100%
F7	EBIT/SALES	Earnings before Interest & Tax / Sales x 100%
F8	EBIT/TA	Earnings before Interest & Tax / Total Assets x 100%
F9	Inventory Days	Inventory / Sales * 365 days
F10	INV/TA	Inventory / Total Assets x 100%
F11	LTL/TA	Long term Liabilities / Total Assets x 100%
F12	NWC/Sales	Net Current Assets / Sales x 100%
F13	NWC/TA	Net Current Assets / Total Assets x 100%
F14	PAT/SALES	Profit after Tax / Sales x 100%
F15	PAT/SHE	Profit after Tax / Absolute value of Shareholder's Equity x 100%
F16	PAT/SHED	Discrete variable: "0" if SHE is positive and "1" if SHE is negative.
F17	PAT/TA	Profit after Tax / Total Assets x 100%
F18	PAT/TL	Profit after Tax / Total Liabilities x 100%
F19	Payable days	Payables / Sales * 365 days
F20	Receivable Days	Receivables / Sales * 365 days
F21	REC/TA	Receivables / Total Assets x 100%
F22	SALES/TA	Sales / Total Assets
F23	SHE/TA	Shareholder's Equity / Total Assets x 100%
F24	SVA	Profit after Tax / (Prime Rate x Total Assets)
F25	TEBIT/SALES	Earnings before Interest & Tax less Abnormal items / Sales x 100%
F26	TL/TA	Total Liabilities / Total Assets
Macro-economic Variables		
E1	AllShInd	All Share Index
E2	AllShIndL	All Share Index (lagged by one year)
E3	CPI	Consumer Price Index %
E4	GDFI	Gross Domestic Fixed Investment
E5	GDP	Gross Domestic Product
E6	IndustInd	Industrial Index
E7	IndustIndL	Industrial Index (lagged by one year)
E8	Prime	Prime Rate

De La Rey Ratio		
DLR	R2512	De La Rey Model (insolvency ratio)
		$=-0.01662a+0.01111b+0.0529c+0.086d-0.0174e+0.01071f+0.36119$
	R2530 = a	Total Outside Financing / Total Assets
	R2531 = b	Earnings before Interest & Tax / Average Total Assets
	R2532 = c	Total Current Assets+Listed investments at market value/Total Current Liabilities
	R2533 = d	Profit after Tax / Average Total Assets
	R2534 = e	Cash flow Profit after Tax / Inflation adjusted Total Real Assets
	R2535 = f	Inventory / Inflation adjusted Total Real Assets

An Analysis of Variance (ANOVA) was performed on all forty-two companies, using all the data years and all the above-mentioned variables in Table 24. The best variable came out to be SVA with a p-value of 0.00 and the highest F-value at 173.89 (see Appendix A). Hence, this ratio is used firstly, to separate the companies into Test and Holdout samples and secondly, owing to its significance; it is used as a univariate ratio to develop the Naïve set of models in this study.

CHAPTER 6 – MODEL DEVELOPMENT (3 year average)

This chapter details the development of the three year average models - this set of models use the three year average of Profit after Tax to calculate Real Earnings Growth. It explains the derivation of the Test sample and develops three different types of statistical models for each of the years Y_n to Y_{n-3} . The three different types of models developed are:

- a Naïve model using the SVA ratio only
- a Multiple Discriminant Analysis (MDA) model
- a Chi-squared Automatic Interaction Detection (CHAID) model

Hence, a total of twelve models are developed. The models are then tested against the Holdout sample and the best two Y_n models are then tested against the De La Rey model (1981). Thereafter, the last section is reserved to provide an analysis of all the models detailed in this chapter. Further, owing to the sheer volume of computations undertaken, these are presented in the various Appendices for perusal with only the summary Tables presented in this Chapter.

The scoring system to determine the models' predictive accuracy entails comparing the actual State to the predicted State for any given company in any given year. If the actual State is equal to the predicted one, a score of "1" is assigned for that data point, otherwise a "0". This procedure is carried out for all the data points, with the summation of all the "1s" as a percentage of the total number of data points yielding the predictive accuracy.

6.1 DEVELOPMENT OF TEST AND HOLDOUT SAMPLES

The Shareholder Value Added ratio was used to separate the total sample of forty-two companies into Test and Holdout samples. In determining the Test sample, Microsoft Excel's Conditional formatting with colour-coded analysis and arbitrary cut-off points for the SVA ratio were used on all of the companies. The colour coded analysis was used to optimise the SVA cut-off points so as to match the similarly "colour coded" actual States thereby providing superior Test sample models¹. The Test model was chosen based on:

- Test model confined to the 1970 to 1979 period only.
- Having at least four years of data (with one or two exceptions owing to the above stipulation).
- Matching of all the actual States (as closely as possible) to the "colour-coded" SVA ratio for the years Y_n to Y_{n-3} .

By visual screening, twenty of the best companies, using a single data point for each company, were selected to be the Test sample; with the remaining twenty-two companies and all its data points being used as the Holdout sample. The only exception was, where a company had either no or missing information and as a result thereof, that particular year and subsequently affected years were excluded from the Holdout sample.

¹ The colour coded analysis used "green" for State 0, "yellow" for State -1 and "red" for State -2.

The Test sample consisted of ten companies in State 0, five companies in State -1 and five companies in State -2 for each of the years Y_n to Y_{n-3} . The total number of data points or years of information that are used in the development of models for each of the three states are shown in Table 25.

Table 25: Summary of Holdout Data points

	Y_n	Y_{n-1}	Y_{n-2}	Y_{n-3}
State 0	105	105	105	105
State -1	80	80	80	80
State -2	46	44	41	34
	231	229	226	219

A complete list showing both the Test and Holdout Samples, together with the years of information used, missing information and status namely, Non-failed (H) or Failed (F), is detailed in Table 26.

Table 26: Summary of Test and Holdout Samples

Test Sample				Holdout Sample			
	COMPANY	STATUS	DATA YEAR	COMPANY	STATUS	DATA YEARS	MISSING INFO
1	Alderson & Plitton Holdings	H	1978	Back Clothing Corporation	F	1970-1974	1970
2	Avbak	H	1973	Bidvest	H	1970-1998	1970-1972
3	Berzack Brothers	H	1978	Brick Clay Holdings	H	1970-1988	1970, 1972, 1980-1982
4	Bromain Holdings	F	1977	Bristol Industries	H	1970-1994	1970-1971
5	BTR	H	1979	Burlington Hosiery Mills	H	1970-1979	1970-1972, 1977-1979
6	Chemical Services	H	1974	Consolidated Jersey Holdings	F	1970-1975	1970-1972, 1976-1980?

7	Coate Brothers	H	1976	DRG SA Ltd	F	1978-1982	1978-1980
8	Desiree International	H	1977	Fairweather Fashion Holdings	F	1970-1976	1970-1971
9	Dubin Investments	H	1976	Hugh Parker	F	1970-1982	1970-1971
10	Fintech	H	1976	IL Back	F	1970-1982	1970-1971, 1976
11	Fowler Holdings	F	1979	KTL	H	1970-1999	1970-1972
12	Frasers	H	1977	Omnia Fertilizers	H	1970-1998	1970-1972
13	Glen Anil	F	1976	Pan Textiles	F	1970-1974	1970-1972
14	Hanhill Industries	F	1976	Pioneer H	H	1973-1979	1973-1975
15	Hepworths	F	1979	Romatex	H	1970-1998	1970-1972
16	Lawson Motors	F	1976	Schachat Holdings	H	1970-1977	1970-1972
17	LTA	H	1977	Spectro	F	1970-1975	1970-1972
18	Lucy Holdings	F	1975	Stuttafords	H	1970-1978	1970-1972
19	Marshall Industries	F	1977	Tapsa	F	1970-1975	1970-1972
20	Simba-Quix	F	1973	Tiger Industrial Holdings	F	1970-1973	1970
21	-	-	-	Triomf	F	1970-1987	1970-1972, 1984, 1988-1990?
22	-	-	-	Tuckers	H	1970-1982	1970-1972

Table 27 summarises the number of companies used for each of the years 1970 to 1999 for the Year n model only. Owing to the fact that the Holdout sample has more data points for the 1970s than the 1980s and 1990s, results will be presented splitting the Holdout Data into the 1970s, 1980s, 1990s and All Holdout Data (combined).

Table 27: Summary of Test and Holdout Data for Year n

YEAR	TEST SAMPLE	HOLDOUT SAMPLE	YEAR	HOLDOUT SAMPLE	YEAR	HOLDOUT SAMPLE
1970	-	-	1980	9	1990	5
1971	-	3	1981	10	1991	5
1972	-	6	1982	10	1992	5
1973	2	20	1983	7	1993	5
1974	1	19	1984	6	1994	5
1975	1	17	1985	7	1995	4
1976	6	14	1986	7	1996	4
1977	5	13	1987	7	1997	4
1978	2	12	1988	6	1998	4
1979	3	11	1989	5	1999	1
Total	20	115	Total	74	Total	42

6.2 YEAR n MODELS

The Y_n models use ratios that are taken from the same year as the response variable.

6.2.1 Naïve Model

Using the Test sample, cut-off points were determined by examining the range of the values for the SVA ratio (Y_n) for each of the States in the Test sample, as per Table 28. The optimal cut-off points were selected to be 0.49 for the upper cut-off point (State 0) and 0 for the lower one (State -2). It should be pointed out that the upper cut-off could have been chosen to be 0.5. However, in comparing the Holdout Sample results to the two different cut-off points, the upper cut-off point of 0.49 yielded a result of 81.8% compared to 80.5% for the upper cut-off point of 0.5. The results for the Test data stayed at 100% for both cut-off points.

Table 28: Cut-off points for the Y_n Naïve model

State	Range	Cut-off point
State 0	0.51 to 1.32	> 0.49
State -1	0.05 to 0.30	
State -2	-11.2 to -0.41	< 0

A summary of the Test and Holdout sample results for the Naïve model are noted in Table 29. The predictive accuracy for the 1970s and 1980s are very good but the small sample size also provides very satisfactory results for the

1990s. Detailed computations on a per company basis can be found in Appendices B1 and B2 for the Test and Holdout samples, respectively.

Table 29: Summary of the Test and Holdout sample results for the Y_n Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	115	74	42	231
% Accuracy	100% ²	84.3%	83.8%	71.4%	81.8%

6.2.2 MDA Model

This model used Stepwise MDA and the Test sample of twenty companies to develop the best Y_n model. Variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. Tables 30 to 32 show the resultant MDA model and data.

Table 30: Y_n MDA Model - Stepwise Statistics

Step	Variables in the Analysis			Wilks' Lambda
		Tolerance	F to Remove	
1	PAT/TL	1.000	19.618	
2	PAT/TL	.262	32.131	.738
	CA/CL	.262	6.437	.234
3	PAT/TL	.056	29.269	.336
	CA/CL	.219	6.861	.116
	PAT/SHE D	.098	6.023	.108

² As explained earlier, Microsoft Excel's Conditional formatting with colour coded analysis was used to optimize the SVA cut-off points so as to provide superior Naïve Test sample models. This applies to all the Naive Test sample models for the years Y_n to Y_{n-3} in both Chapters 6 and 7. There are instances where there are deviations from this methodology and these will be noted as such in the body of the text.

Table 31: Y_n MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	3Year n		
	-2	-1	0
CA/CL	63.727	44.138	27.618
PAT/SHE D	-71.746	-37.817	5.969
PAT/TL	-2.271	-1.290	-.392
(Constant)	-75.425	-34.319	-18.229
Fisher's linear discriminant functions			

Table 32: Y_n MDA Model - Classification Statistics

Classification Results(a)						
		3Year n	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	4	1	0	5
		-1	1	4	0	5
		0	0	1	9	10
		Ungrouped cases	4	28	28	60
	%	-2	80	20	.0	100
		-1	20	80	.0	100
		0	.0	10	90	100
	Ungrouped cases	6.7	46.7	46.7	100	
a 85% of original grouped cases correctly classified.						

The MDA model predicted 90% of State 0, 80% of State -1 and 80% of State -2 for the Test sample correctly, achieving an overall accuracy of 85%. Using Fisher's Discriminant Function Coefficients as per Table 31, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 32 and 33. Detailed computations on a per company basis can be found in Appendices B1 and B2 for the Test and Holdout samples, respectively.

Table 33: Summary of the Test and Holdout sample results for the Y_n MDA model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	115	74	42	231
% Accuracy	85%	48.7%	63.5%	54.8%	54.5%

6.2.3 CHAID Model

The Test sample and all the variables in Table 24 were used to derive the CHAID model. Using SPSS, the resulting Tree structure is illustrated overleaf in Figure 1.

A single variable, PAT/SHE came out to be the variable of choice. The lower cut-off point was given as ≤ 1.59 and the upper cut-off point was given as > 12.31 (both rounded off³). This yielded a 100% classification accuracy for States -2 and 0, and an 80% classification accuracy for State -1. A summary of the Test and Holdout sample results are noted in Tables 34 and 35. Detailed computations on a per company basis can be found in Appendices B1 and B2 for the Test and Holdout samples, respectively.

³ These values are rounded off for the purposes of the text only. The full value is used for computations in the Appendices. This applies to all the CHAID models in both Chapters 6 and 7.

Table 34: Y_n CHAID Model - Classification Statistics

Classification				
Observed	Predicted			
	-2	-1	0	Percent Correct
-2	5	0	0	100%
-1	1	4	0	80%
0	0	0	10	100%
Overall Percentage	30%	20%	50%	95%
Growing Method: CHAID				
Dependent Variable: 3Year n				

Figure 1: Y_n CHAID Model – Tree structure

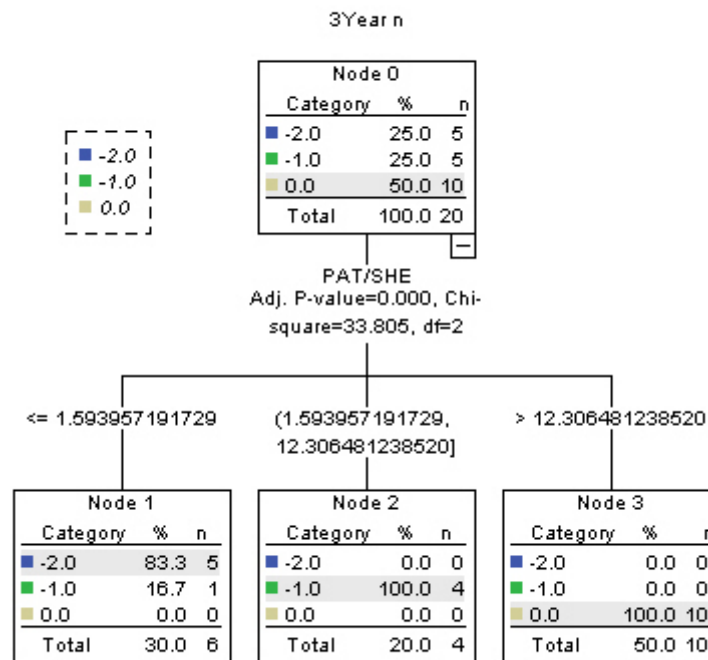


Table 35: Summary of the Test and Holdout sample results for the Y_n CHAID model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	115	74	42	231
% Accuracy	95%	81.7%	82.4%	69%	79.7%

6.3 YEAR $n-1$ MODELS

The Y_{n-1} models use ratios that are taken one year prior to the response variable.

6.3.1 Naïve Model

Cut-off points were determined by examining the range of the values for the SVA ratio (1 year prior) for each of the States in the Test sample, as per Table 36. The optimal cut-off points were selected to be 0.59 for the upper cut-off point (State 0) and 0 for the lower one (State -2).

Table 36: Cut-off points for the Y_{n-1} Naïve model

State	Range	Cut-off point
State 0	0.59 to 1.14	> 0.59
State -1	0.03 to 0.39	
State -2	-3.91 to -0.43	< 0

A summary of the Test and Holdout sample results for the Naïve model are noted in Table 37. Detailed computations on a per company basis can be found in Appendices C1 and C2 for the Test and Holdout samples, respectively.

Table 37: Summary of the Test and Holdout sample results for the Y_{n-1}

Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	123	69	37	229
% Accuracy	100%	54.5%	52.2%	51.4%	53.3%

6.3.2 MDA Model

The best Y_{n-1} model was developed by using Stepwise MDA and the Test sample. Variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. The resultant MDA model and data are presented in Tables 38 to 40.

Table 38: Y_{n-1} MDA Model - Stepwise Statistics

Variables in the Analysis									
Step	Entered	Wilks' Lambda							
		Statistic	df1	df2	df3	Exact F			
Statistic	df1					df2	Sig.		
1	PAT/TA	.089	1	2	10.000	51.459	2	10.000	.000

Table 39: Y_{n-1} MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	3Year n-1		
	-2	-1	0
PAT/TA	-1.452	.490	2.127
(Constant)	-6.058	-1.664	-11.734
Fisher's linear discriminant functions			

Table 40: Y_{n-1} MDA Model - Classification Statistics

Classification Results(a)						
		3Year n-1	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	5	0	0	5
		-1	0	5	0	5
		0	0	0	10	10
		Ungrouped cases	8	25	27	60
	%	-2	100	.0	.0	100
		-1	.0	100	.0	100
		0	.0	.0	100	100
		Ungrouped cases	13.3	41.7	45	100

a 100% of original grouped cases correctly classified.

The MDA model achieved an accuracy of 100% in all three States of Health. Using Fisher's Discriminant Function Coefficients as per Table 39, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 40 and 41. Detailed computations on a per company basis can be found in Appendices C1 and C2 for the Test and Holdout samples, respectively.

Table 41: Summary of the Test and Holdout sample results for the Y_{n-1} MDA model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	123	69	37	229
% Accuracy	100%	49.6%	49.3%	48.6%	49.3%

6.3.3 CHAID Model

The CHAID model was derived using the Test sample and all the variables in Table 24. Using SPSS, the resulting Tree structure is illustrated in Figure 2.

PAT/TA came out to be the only variable of choice. The lower cut-off point was given as ≤ 0.416 and the upper cut-off point was given as > 4.57 (both rounded off). This yielded a 100% classification accuracy for States -2 and 0, and an 80% classification accuracy for State -1. A summary of the Test and Holdout sample results are noted in Tables 42 and 43. Detailed computations on a per company basis can be found in Appendices C1 and C2 for the Test and Holdout samples, respectively.

Table 42: Y_{n-1} CHAID Model - Classification Statistics

Observed	Classification			
	Predicted			
	-2	-1	0	Percent Correct
-2	5	0	0	100%
-1	1	4	0	80%
0	0	0	10	100%
Overall Percentage	30%	20%	50%	95%
Growing Method: CHAID				
Dependent Variable: 3Year n-1				

Figure 2: Y_{n-1} CHAID Model – Tree structure

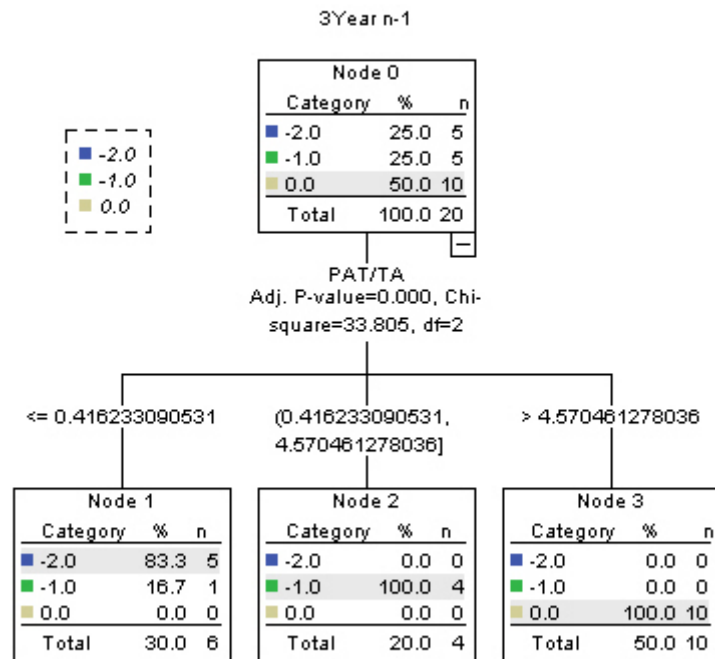


Table 43: Summary of the Test and Holdout sample results for the Y_{n-1} CHAID model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	123	69	37	229
% Accuracy	95%	49.6%	47.8%	48.6%	48.9%

6.4 YEAR n-2 MODELS

The Y_{n-2} models use ratios that are taken two years prior to the response variable.

6.4.1 Naïve Model

By examining the range of values for the SVA ratio (2 years prior) in the Test sample, cut-off points were determined as per Table 44. The optimal cut-off points were selected to be 0.59 for the upper cut-off point (State 0) and 0.25 for the lower one (State -2). It should be pointed out that the upper cut-off could have been chosen to be 0.52 which would have given the Test sample a 100% result. However, taking into consideration that the upper cut-off limit for the Y_{n-1} model was set at 0.59, it did not make sense to reduce this value.

Table 44: Cut-off points for the Y_{n-2} model

State	Range	Cut-off point
State 0	0.521 to 0.97	> 0.59
State -1	0.26 to 0.517	
State -2	-0.93 to 0.09	< 0.25

A summary of the Test and Holdout sample results for the Naïve model can be found in Table 45. Detailed computations on a per company basis can be found in Appendices D1 and D2 for the Test and Holdout samples, respectively.

Table 45: Summary of the Test and Holdout sample results for the Y_{n-2}

Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	130	64	32	226
% Accuracy	95%	46.2%	39.1%	50%	44.7%

6.4.2 MDA Model

Similar to the previous MDA models, Stepwise MDA and the Test sample were used to develop the best Y_{n-2} model. Here, as well, variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. The resultant MDA model and data are presented in Tables 46 to 48.

Table 46: Y_{n-2} MDA Model - Stepwise Statistics

Variables in the Analysis									
Step	Entered	Wilks' Lambda							
		Statistic	df1	df2	df3	Exact F			
						Statistic	df1	df2	Sig.
1	SVA	.178	1	2	10.000	23.145	2	10.000	.000

Table 47: Y_{n-2} MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	3Year n-2		
	-2	-1	0
SVA	-1.362	13.914	30.223
(Constant)	-1.123	-3.601	-12.904
Fisher's linear discriminant functions			

Table 48: Y_{n-2} MDA Model - Classification Statistics

Classification Results(a)						
		3Year n-2	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	4	1	0	5
		-1	0	5	0	5
		0	0	1	9	10
		Ungrouped cases	19	10	31	60
	%	-2	80	20	.0	100
		-1	.0	100	.0	100
		0	.0	10	90	100
		Ungrouped cases	31.7	16.7	51.7	100
a 90% of original grouped cases correctly classified.						

The MDA model predicted 90% of State 0, 100% of State -1 and 80% of State -2 for the Test sample correctly, achieving an overall accuracy of 90%. Using Fisher's Discriminant Function Coefficients as per Table 47, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 48 and 49. Detailed computations on a per company basis can be found in Appendices D1 and D2 for the Test and Holdout samples, respectively.

Table 49: Summary of the Test and Holdout sample results for the Y_{n-2} MDA model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	130	64	32	226
% Accuracy	90%	46.9%	37.5%	53.1%	45.1%

6.4.3 CHAID Model

The Test sample and all the variables in Table 24 were used to derive the CHAID model. Using SPSS, the resulting Tree structure is illustrated in Figure 3.

Similar to the Y_{n-1} model, PAT/TA came out to be the variable of choice. The lower cut-off point was given as ≤ 3.11 and the upper cut-off point was given as > 5.25 (both rounded off). This yielded a 100% classification accuracy for States -2 and 0, and an 80% classification accuracy for State -1. A summary of the Test and Holdout sample results are noted in Tables 50 and 51. Detailed computations on a per company basis can be found in Appendices D1 and D2 for the Test and Holdout samples, respectively.

Table 50: Y_{n-2} CHAID Model - Classification Statistics

Observed	Classification			Percent Correct
	-2	-1	0	
-2	5	0	0	100%
-1	1	4	0	80%
0	0	0	10	100%
Overall Percentage	30%	20%	50%	95%
Growing Method: CHAID				
Dependent Variable: 3Year n-2				

Figure 3: Y_{n-2} CHAID Model – Tree structure

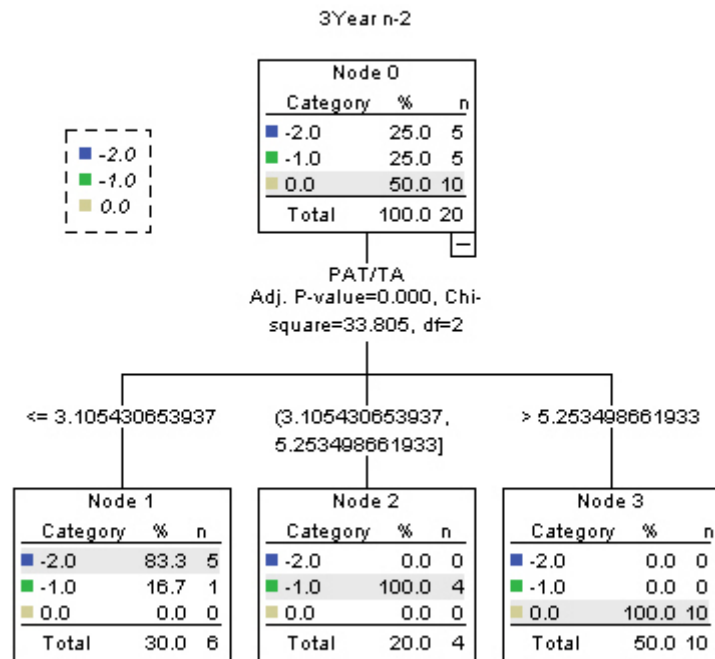


Table 51: Summary of the Test and Holdout sample results for the Y_{n-2} CHAID model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	130	64	32	226
% Accuracy	95%	46.2%	31.3%	40.6%	41.2%

6.5 YEAR $n-3$ MODELS

The Y_{n-3} models use ratios that are taken three years prior to the response variable.

6.5.1 Naïve Model

Cut-off points were determined by examining the range of the values for the SVA ratio (3 years prior) for each of the States in the Test sample, as per Table 52. The optimal cut-off points were selected to be 0.7 for the upper cut-off point (State 0) and 0.25 for the lower one (State -2). It should be pointed out that the lower cut-off point could have been chosen to be 0.30 which would have given the Test Data an 80% instead of a 75% result. However, in comparing the Holdout Data results to the two different cut-off points, the lower cut-off point of 0.25 yielded a result of 33.3% compared to 32% for the lower cut-off point of 0.30.

Table 52: Cut-off points for the Y_{n-3} Naïve model

State	Range	Cut-off point
State 0	0.47 to 1.52	> 0.70
State -1	0.34 to 0.80	
State -2	-0.33 to 0.74	< 0.25

A summary of the Test and Holdout sample results for the Naïve model can be found in Table 53. Detailed computations on a per company basis can be found in Appendices E1 and E2 for the Test and Holdout samples, respectively.

Table 53: Summary of the Test and Holdout sample results for the Y_{n-3}

Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	134	58	27	219
% Accuracy	75%	34.3%	36.2%	22.2%	33.3%

6.5.2 MDA Model

The model was developed using Stepwise MDA and the Test sample. Once again, variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. The resultant MDA model and data are presented in Tables 54 to 56.

Table 54: Y_{n-3} MDA Model - Stepwise Statistics

Variables in the Analysis				
Step		Tolerance	F to Remove	Wilks' Lambda
1	PAT/TA	1.000	9.581	
2	PAT/TA	.486	11.323	.561
	CL/TL	.486	4.281	.295
3	PAT/TA	.021	10.500	.204
	CL/TL	.222	6.133	.138
	TEBIT/TA	.030	5.768	.132

Table 55: Y_{n-3} MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	3Year n-3		
	-2	-1	0
CL/TL	5.806	4.365	3.988
PAT/TA	-59.863	-45.312	-37.570
TEBIT/TA	27.860	21.783	17.937
(Constant)	-	-	-
	309.716	180.021	150.016
Fisher's linear discriminant functions			

Table 56: Y_{n-3} MDA Model - Classification Statistics

Classification Results(a)						
		3Year n-3	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	3	1	1	5
		-1	0	4	1	5
		0	0	3	7	10
		Ungrouped cases	22	11	27	60
	%	-2	60	20	20	100
		-1	.0	80	20	100
		0	.0	30	70	100
		Ungrouped cases	36.7	18.3	45	100

a 70% of original grouped cases correctly classified.

The MDA model predicted 70% of State 0, 80% of State -1 and 60% of State - 2 for the Test sample correctly, achieving an overall accuracy of 70%. Using Fisher’s Discriminant Function Coefficients as per Table 55, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 56 and 57. Detailed computations on a per company basis can be found in Appendices E1 and E2 for the Test and Holdout samples, respectively.

Table 57: Summary of the Test and Holdout sample results for the Y_{n-3} MDA model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	134	58	27	219
% Accuracy	70%	37.3%	24.1%	40.7%	34.2%

6.5.3 CHAID Model

The Test sample and all the variables in Table 24 were used to derive the CHAID model. Using SPSS, the resulting Tree structure is illustrated in Figure 4.

Unlike the previous CHAID models, for this model, two variables, EBIT/TA and NWC/TA came out to be the variables of choice. The cut-off points were given as 6.65 and 32.63 (both rounded off) for the two ratios, respectively. If a company had an EBIT/TA of ≤ 6.65 , it was classified as being in State -2. However, if the company had an EBIT/TA of > 6.65 , then NWC/TA ratio was used to classify a company into State 0 if $NWC/TA \leq 32.62$ or State -1, if $NWC/TA > 32.62$. The resultant classification accuracy was 80% for States -2 and -1, and 90% for State 0. A summary of the Test and Holdout sample results are noted in Tables 58 and 59. Detailed computations on a per company basis can be found in Appendices E1 and E2 for the Test and Holdout samples, respectively.

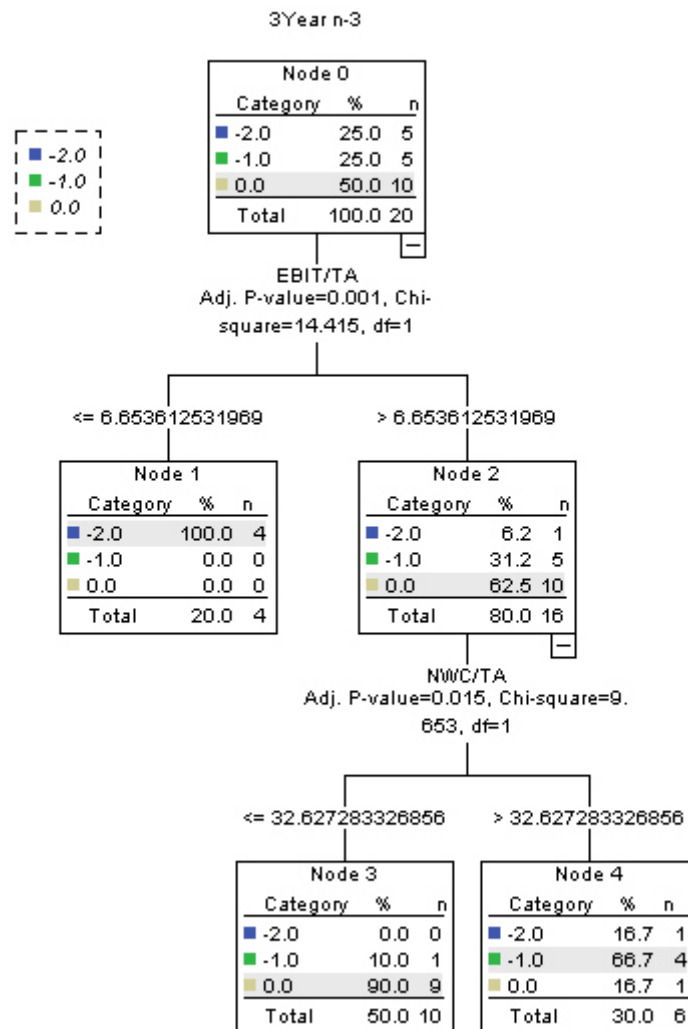
Table 58: Y_{n-3} CHAID Model - Classification Statistics

Observed	Classification			
	Predicted			Percent Correct
	-2	-1	0	
-2	4	1	0	80%
-1	0	4	1	80%
0	0	1	9	90%
Overall Percentage	20%	30%	50%	85%
Growing Method: CHAID				
Dependent Variable: 3Year n-3				

Table 59: Summary of the Test and Holdout sample results for the Y_{n-3} CHAID model

	Test Sample	Holdout Sample			All Hold
		1970s	1980s	1990s	
# Data points	20	134	58	27	219
% Accuracy	85%	41.8%	43.1%	40.7%	42%

Figure 4: Y_{n-3} CHAID Model – Tree structure



6.6 DE LA REY COMPARISON

As noted in Chapter 2, the De La Rey model (1981) uses a six variable MDA model to differentiate between “Healthy” companies and those that are “Likely to Fail”. Table 24 contains the mathematical equation together with the ratios used in this model. A company is classified as “Healthy” if it has a k-score of > 0.20 whereas a k-score < -0.19 implies potential failure and a zone of ignorance (unknown) exists between a score of -0.19 and $+0.20$ implying that a company cannot be classified as either “Healthy” or “Likely to Fail”. The model data (R2512) was obtained from the Bureau for Financial Analysis, University of Pretoria.

With reference to Tables 29 and 35, both the Naïve and the CHAID models produced very good results for Year n. Considering that the De La Rey model is well respected amongst the financial analytical circles in South Africa, it was decided to test the Naïve and the CHAID models against this model. As the De La Rey model is a dichotomous model, three different approaches with modifications to the Naïve and the CHAID models, had to be adopted to perform the test - hence, the addition of the “M” in front of the model name. In order to avoid any biasness, the models were not tested against the Test Sample but rather only on the Holdout Sample of two hundred and thirty-one (231) data points or years of information. In order to facilitate the comparison process, a De La Rey “Healthy” company was assigned a State 0 whilst a company “Likely to Fail” was assigned a State -2. Detailed comparisons of the three approaches on a per company basis can be found in Appendix F.

6.6.1 Approach 1

The first approach followed a fairly simplistic one using an exception rule, whereby the three models were penalised if a company was actually in State 0 but had a score predicting State -2 and vice versa. State -1 was ignored in this approach. Further, the De La Rey model was penalised (scoring a “0”) if the model score was in the zone of ignorance or unknown region. The results of the three models are noted in Table 60.

Table 60: De La Rey Comparison (Approach 1)

	MNAÏVE (1)	MCHAID (1)	De La Rey
# Data points	231	231	231
% Accuracy	100%	99.6%	82.3%

6.6.2 Approach 2

The second approach combined States -1 and -2 and compared them to State 0 thus enabling a dichotomous differentiation. Hence, for the modified Naïve and CHAID models only the upper cut-off points of 0.49 and 12.31 (rounded off) were used, respectively. All three of the models were penalised if a company was actually in State 0 but had a score predicting State -1 or State -2. Similarly, the models were penalised if a company was actually in State -1 or State -2 but had a score predicting State 0. Further, the De La Rey model was penalised if its score was in the zone of ignorance or unknown region. The results of the three models are noted in Table 61.

Table 61: De La Rey Comparison (Approach 2)

	MNAÏVE (2)	MCHAID (2)	De La Rey
# Data points	231	231	231
% Accuracy	81.8%	81.8%	64.5%

6.6.3 Approach 3

Once again, in order to conduct a dichotomous differentiation, the third approach combined States 0 and -1 and compared them to State -2. Hence, for the modified Naïve and CHAID models only the lower cut-off points of 0.0 and 1.59 (rounded off) were used, respectively. The models were penalised if a company was actually in State 0 or State -1 but had a score predicting State -2. Similarly, the models were penalised if a company was actually in State -2 but had a score predicting State 0 or State -1. Further, the De La Rey model was penalised if its score was in the zone of ignorance or unknown region. The results of the three models are noted in Table 62.

Table 62: De La Rey Comparison (Approach 3)

	MNAÏVE (3)	MCHAID (3)	De La Rey
# Data points	231	231	231
% Accuracy	100%	97.4%	72.7%

6.7 ANALYSIS OF MODELS

The summary of the Test and Holdout sample results for all of the models from Y_n to Y_{n-3} can be found in Table 63.

Table 63: Summary of the Test and Holdout sample results for all of the models from Y_n to Y_{n-3}

Year n						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	231	20	231	20	231
% Accuracy	100%	81.8%	85%	54.5%	95%	79.7%
Year n-1						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	229	20	229	20	229
% Accuracy	100%	53.3%	100%	49.3%	95%	48.9%
Year n-2						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	226	20	226	20	226
% Accuracy	95%	44.7%	90%	45.1%	95%	41.2%
Year n-3						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	219	20	219	20	219
% Accuracy	75%	33.3%	70%	34.2%	85%	42%

All three of the models developed for the Y_n year, yielded excellent results for the Test sample: Naïve (100%), MDA (85%) and CHAID (95%). Holdout sample testing also yielded good results for the Naïve (81.8%) and CHAID (79.7%) models. The MDA result (54.5%) was very disappointing.

For the Y_{n-1} year, the Naïve, MDA and CHAID models also, all produced excellent Test sample results at 100%, 100% and 95%, respectively. However, the corresponding Holdout sample results were satisfactory at

53.3%, 49.3% and 48.9%, respectively. Likewise for the Y_{n-2} year, Test sample figures of 95%, 90% and 95%, respectively were very good but the models displayed below-average results of 44.7%, 45.1% and 41.2%, respectively for the Holdout sample.

For the Y_{n-3} year, the CHAID model produced the best Test sample results at 85%, with the Holdout sample at a satisfactory 42%. The Naïve and MDA models came in at 75% and 70% for the Test sample and a poor 33.3% and 34.2% for the Holdout sample, respectively.

More Holdout sample data was available for the 1970s as opposed to the 1980s and 1990s. As such, separate Holdout results were tabled for each of the three periods. The 1970s and 1980s yielded favourable and comparable results to the Holdout sample as a whole for each of the years Y_n to Y_{n-3} . Notwithstanding the relatively small sample size in the 1990s, the results were fairly good.

Whereas it is understood that different statistical methods make different assumptions, it is interesting to note that the Naïve model produced overall superior Holdout sample results to the more complicated statistical methods of MDA and CHAID. However, it needs to be pointed out that all three statistical methods prefer large samples for model derivation; with the MDA method also requiring the sample to conform to a multivariate normal distribution. It is perhaps for these reasons that the MDA models produced poor results.

The best two Y_n models namely, the Naïve and the CHAID models, were compared to the notable De La Rey (1981) model. As pointed out earlier, this model is a dichotomous one and as such, modifications had to be made to both the Naïve and CHAID models to facilitate a comparison. Three different approaches were adopted and are summarised in Table 64.

Table 64: De La Rey Comparison (All Three Approaches)

	Approach 1			Approach 2			Approach 3		
	MNAÏVE (1)	MCHAID (1)	De La Rey	MNAÏVE (2)	MCHAID (2)	De La Rey	MNAÏVE (3)	MCHAID (3)	De La Rey
Data Points	231	231	231	231	231	231	231	231	231
% Accuracy	100%	99.6%	82.3%	81.8%	81.8%	64.5%	100%	97.4%	72.7%

In all approaches, both the modified Naïve (100%, 81.8%, 100%) and the modified CHAID (99.6%, 81.8%, 97.4%) produced superior results to the De La Rey model (82.3%, 64.5%, 72.7%). Notwithstanding the modified models; the unmodified Naïve (81.8%) and the unmodified CHAID (79.7%) models also displayed favourable results in comparison. The added advantage, though, of the unmodified Naïve and CHAID models is that they provide an extra state (Intermediate State) of information.

CHAPTER 7 – MODEL DEVELOPMENT (5 year average)

This chapter details the development of the five year average models - this set of models use the five year average of Profit after Tax to calculate Real Earnings Growth. Similar to Chapter 6, it explains the derivation of the Test sample and develops the three different types of statistical models for each of the years Y_n to Y_{n-3} , namely, the Naïve, MDA and CHAID models. The models are then tested against the Holdout sample and the best two Y_n models are then tested against the De La Rey model (1981). Like Chapter 6, the last section is reserved to provide an analysis of all the models detailed in this chapter. Further, owing to the sheer volume of computations undertaken, these are presented in the various Appendices for perusal with only the summary Tables presented in this Chapter. The scoring system used to determine the predictive accuracy of the models is the same as that used in Chapter 6.

7.1 DEVELOPMENT OF TEST AND HOLDOUT SAMPLES

Rather than re-inventing the wheel, the same Test sample companies as developed for the three year average models was used for this model development. However, owing to no data, two companies (Avbak and Chemical Services) had their Test year changed. In addition, another company's (Fintech) Test year was changed as it provided superior predictive (SVA) results for the years Y_n to Y_{n-3} .

Despite the above-mentioned changes, this Test sample also consisted of ten companies in State 0, five companies in State -1 and five companies in State -2 for each of the years Y_n to Y_{n-3} . The total number of data points or years of information that are used in the development of models for each of the three states are shown in Table 65.

Table 65: Summary of Holdout Data points

	Y_n	Y_{n-1}	Y_{n-2}	Y_{n-3}
State 0	73	73	73	73
State -1	79	79	79	79
State -2	46	44	41	34
	198	196	193	186

Table 66: Summary of Test and Holdout Samples

Test Sample				Holdout Sample			
	COMPANY	STATUS	DATA YEAR	COMPANY	STATUS	DATA YEARS	MISSING INFO
1	Alderson & Plitton Holdings	H	1978	Back Clothing Corporation	F	1970-1974	1970
2	Avbak	H	1979	Bidvest	H	1970-1998	1970-1974
3	Berzack Brothers	H	1978	Brick Clay Holdings	H	1970-1988	1970, 1972-1974, 1980-1982, 1984
4	Bromain Holdings	F	1977	Bristol Industries	H	1970-1994	1970-1971 1973-1974
5	BTR	H	1979	Burlington Hosiery Mills	H	1970-1979	1970-1974, 1977-1979
6	Chemical Services	H	1979	Consolidated Jersey Holdings	F	1970-1975	1970-1972 1974, 1976-1980?

7	Coate Brothers	H	1976	DRG South Africa Ltd	F	1978-1982	1978-1981
8	Desiree International	H	1977	Fairweather Fashion Holdings	F	1970-1976	1970-1971 1973
9	Dubin Investments	H	1976	Hugh Parker	F	1970-1982	1970-1971 1974
10	Fintech	H	1977	IL Back	F	1970-1982	1970-1971, 1976
11	Fowler Holdings	F	1979	KTL	H	1970-1999	1970-1974
12	Frasers	H	1977	Omnia Fertilizers	H	1970-1998	1970-1974
13	Glen Anil	F	1976	Pan Textiles	F	1970-1974	1970-1972
14	Hanhill Industries	F	1976	Pioneer H	H	1973-1979	1973-1977
15	Hepworths	F	1979	Romatex	H	1970-1998	1970-1974
16	Lawson Motors	F	1976	Schachat Holdings	H	1970-1977	1970-1974
17	LTA	H	1977	Spectro	F	1970-1975	1970-1974
18	Lucy Holdings	F	1975	Stuttafords	H	1970-1978	1970-1974
19	Marshall Industries	F	1977	Tapsa	F	1970-1975	1970-1973
20	Simba-Quix	F	1973	Tiger Industrial Holdings	F	1970-1973	1970 1973
21	-	-	-	Triomf	F	1970-1987	1970-1974, 1984, 1988-1990?
22	-	-	-	Tuckers	H	1970-1982	1970-1974

Table 66 shows a complete list of both the Test and Holdout Samples, together with the years of information used, missing information and status namely, Non-failed (H) or Failed (F). In addition, Table 67 summarises the number of companies used for each of the years 1970 to 1999.

Table 67: Summary of Test and Holdout Data for Year n

YEAR	TEST SAMPLE	HOLDOUT SAMPLE	YEAR	HOLDOUT SAMPLE	YEAR	HOLDOUT SAMPLE
1970	-	-	1980	9	1990	5
1971	-	3	1981	9	1991	5
1972	-	6	1982	10	1992	5
1973	1	5	1983	7	1993	5
1974	-	5	1984	5	1994	5
1975	1	17	1985	7	1995	4
1976	5	13	1986	7	1996	4
1977	6	12	1987	7	1997	4
1978	2	12	1988	6	1998	4
1979	5	11	1989	5	1999	1
Total	20	84	Total	72	Total	42

For this set of models, the results will be presented splitting the Holdout Data into the 1970s, 1980s, 1990's and All Holdout Data (combined), as well.

7.2 YEAR n MODELS

The Y_n models use ratios that are taken from the same year as the response variable.

7.2.1 Naïve Model

Cut-off points were determined by examining the range of values for the SVA ratio (Y_n) for each of the States in the new Test sample, as per Table 68. Similar to the three year average Y_n model, the optimal upper and lower cut-off points were selected to be 0.49 and 0, respectively.

Table 68: Cut-off points for the Y_n Naïve model

State	Range	Cut-off point
State 0	0.51 to 1.32	> 0.49
State -1	0.05 to 0.30	
State -2	-11.2 to -0.41	< 0

A summary of the Test and Holdout sample results for the Naïve model are noted in Table 69. Detailed computations on a per company basis can be found in Appendices G1 and G2 for the Test and Holdout samples, respectively.

Table 69: Summary of the Test and Holdout sample results for the Y_n Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	84	72	42	198
% Accuracy	100%	83.3%	84.7%	71.4%	81.3%

7.2.2 MDA Model

This model used Stepwise MDA and the new Test sample of twenty companies to develop the best Y_n model. Variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. The resultant MDA model and data are presented in Tables 70 to 72.

Table 70: Y_n MDA Model - Stepwise Statistics

Variables in the Analysis				
Step		Tolerance	F to Remove	Wilks' Lambda
1	TEBIT/TA	1.000	26.576	
2	TEBIT/TA	.661	39.232	.923
	CPI%	.661	4.212	.231

Table 71: Y_n MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	5Year n		
	-2	-1	0
TEBIT/TA	1.038	1.614	1.975
CPI%	12.329	13.811	15.629
(Constant)	-67.035	-83.831	-109.177
Fisher's linear discriminant functions			

Table 72: Y_n MDA Model - Classification Statistics

Classification Results(a)						
		5Year n	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	5	0	0	5
		-1	0	5	0	5
		0	0	1	9	10
		Ungrouped cases	8	23	29	60
	%	-2	100	.0	.0	100
		-1	.0	100	.0	100
		0	.0	10	90.0	100
		Ungrouped cases	13.3	38.3	48.3	100

a 95.0% of original grouped cases correctly classified.

The MDA model predicted 90% of State 0, 100% of State -1 and 100% of State -2 for the Test sample correctly, achieving an overall accuracy of 95%. Using Fisher's Discriminant Function Coefficients as per Table 71, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 72 and 73. Detailed computations on a per company basis can be found in Appendices G1 and G2 for the Test and Holdout samples, respectively.

Table 73: Summary of the Test and Holdout sample results for the Y_n MDA model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	84	72	42	198
% Accuracy	95%	63.1%	51.4%	33.3%	52.5%

7.2.3 CHAID Model

The new Test sample and all the variables in Table 24 were used to derive the CHAID model. Using SPSS, the resulting Tree structure is illustrated in Figure 5.

Similar to the three year average model, PAT/SHE came out to be the variable of choice and with the same lower and upper cut-off points of ≤ 1.59 and > 12.31 (both rounded off), respectively. This yielded a 100% classification accuracy for States -2 and 0, and an 80% classification accuracy for State -1. A summary of the Test and Holdout sample results are noted in Tables 74 and 75. Detailed computations on a per company basis can be found in Appendices G1 and G2 for the Test and Holdout samples, respectively.

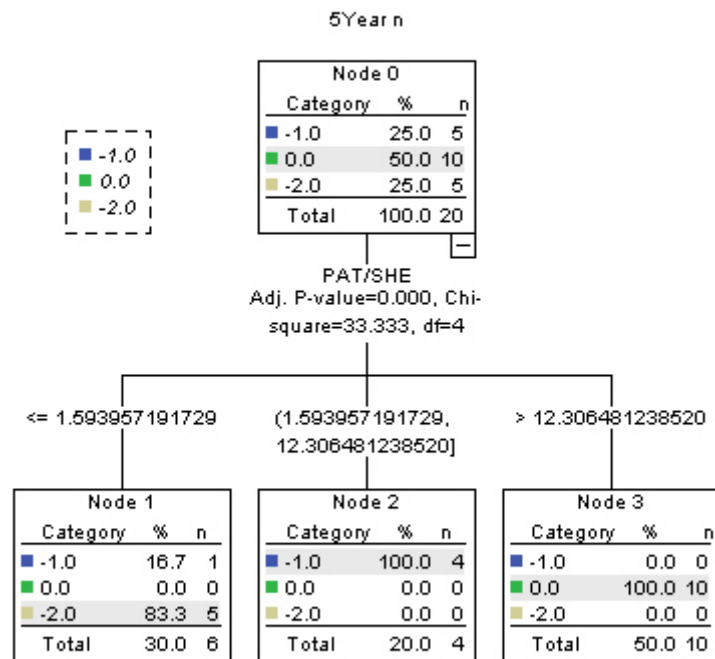
Table 74: Y_n CHAID Model - Classification Statistics

Observed	Classification			Percent Correct
	-2	-1	0	
-2	5	0	0	100%
-1	1	4	0	80%
0	0	0	10	100%
Overall Percentage	30%	20%	50%	95%
Growing Method: CHAID				
Dependent Variable: 5Year n				

Table 75: Summary of the Test and Holdout sample results for the Y_n CHAID model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	84	72	42	198
% Accuracy	95%	85.7%	87.5%	73.8%	83.8%

Figure 5: Y_n CHAID Model – Tree structure



7.3 YEAR $n-1$ MODELS

The Y_{n-1} models use ratios that are taken one year prior to the response variable.

7.3.1 Naïve Model

Cut-off points were determined by examining the range of the values for the SVA ratio (1 year prior) for each of the States in the Test sample, as per Table 76. The optimal cut-off points were selected to be 0.57 for the upper cut-off point (State 0) and 0 for the lower one (State -2). It should be pointed out that the upper cut-off could have been chosen to be 0.39. However, it did not make sense for this model to have a smaller cut-off point than the Y_n model. Hence, the next lowest State 0 SVA score was used to determine the cut-off point.

Table 76: Cut-off points for the Y_{n-1} Naïve model

State	Range	Cut-off point
State 0	0.39 to 1.14	> 0.57
State -1	0.03 to 0.39	
State -2	-3.91 to -0.43	< 0

A summary of the Test and Holdout sample results for the Naïve model are noted in Table 77. Detailed computations on a per company basis can be found in Appendices H1 and H2 for the Test and Holdout samples, respectively.



Table 77: Summary of the Test and Holdout sample results for the Y_{n-1}

Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	92	67	37	196
% Accuracy	95%	55.4%	59.7%	59.5%	57.7%

7.3.2 MDA Model

The best Y_{n-1} model was developed by using Stepwise MDA. Here too, variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. The resultant MDA model and data are presented in Tables 78 to 80.

Table 78: Y_{n-1} MDA Model - Stepwise Statistics

Variables in the Analysis				
Step		Tolerance	F to Remove	Wilks' Lambda
1	PAT/TL	1.000	23.302	
2	PAT/TL	.228	53.869	.844
	PAT/SHE D	.228	11.074	.256

Table 79: Y_{n-1} MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	5Year n-1		
	-2	-1	0
PAT/SHE D	-13.915	6.827	32.917
PAT/TL	-.515	.196	.947
(Constant)	-3.863	-1.442	-9.082
Fisher's linear discriminant functions			

Table 80: Y_{n-1} MDA Model - Classification Statistics

Classification Results						
		5Year n-1	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	5	0	0	5
		-1	0	5	0	5
		0	0	0	10	10
		Ungrouped cases	8	24	28	60
	%	-2	100	.0	.0	100
		-1	.0	100	.0	100
		0	.0	.0	100	100
Ungrouped cases		13.3	40	46.7	100	

a 100% of original grouped cases correctly classified.

The MDA model predicted 100% for each of the States in the Test sample correctly. Using Fisher’s Discriminant Function Coefficients as per Table 79, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 80 and 81. Detailed computations on a per company basis can be found in Appendices H1 and H2 for the Test and Holdout samples, respectively.

Table 81: Summary of the Test and Holdout sample results for the Y_{n-1} MDA model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	92	67	37	196
% Accuracy	100%	42.4%	49.3%	45.9%	45.4%

7.3.3 CHAID Model

The CHAID model was derived using the Test sample and all the variables in Table 24. Using SPSS, the resulting Tree structure is illustrated in Figure 6.

Similar to the three year average Y_{n-1} model, PAT/TA came out to be the significant variable, with the upper and lower cut-off points also being the same at ≤ 0.416 and > 4.57 (both rounded off), respectively. This yielded a 100% classification accuracy for States -2 and 0, and an 80% classification accuracy for State -1. A summary of the Test and Holdout sample results are noted in Tables 82 and 83. Detailed computations on a per company basis can be found in Appendices H1 and H2 for the Test and Holdout samples, respectively.

Table 82: Y_{n-1} CHAID Model - Classification Statistics

Classification				
Observed	Predicted			Percent Correct
	-2	-1	0	
-2	5	0	0	100%
-1	1	4	0	80%
0	0	0	10	100%
Overall Percentage	30%	20%	50%	95%
Growing Method: CHAID				
Dependent Variable: 5Year n-1				

Figure 6: Y_{n-1} CHAID Model – Tree structure

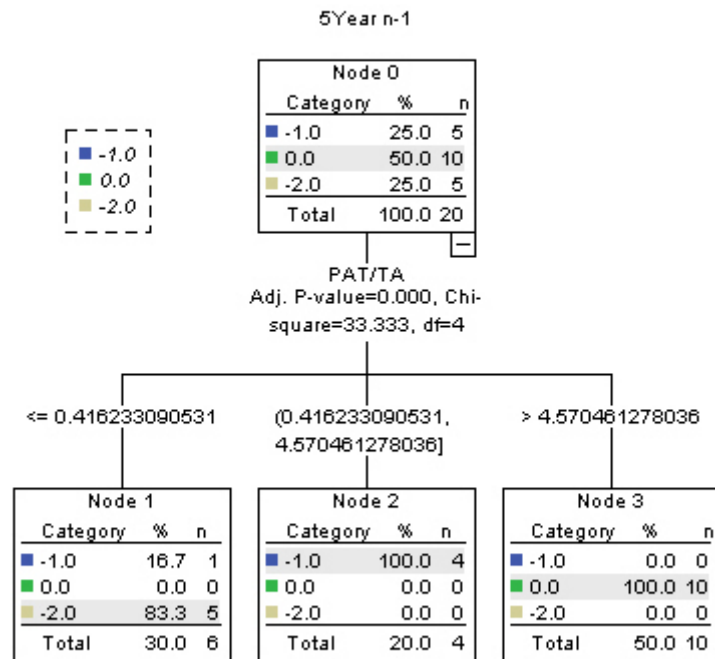


Table 83: Summary of the Test and Holdout sample results for the Y_{n-1} CHAID model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	92	67	37	196
% Accuracy	95%	45.7%	53.7%	48.6%	49%

7.4 YEAR n-2 MODELS

The Y_{n-2} models use ratios that are taken two years prior to the response variable.

7.4.1 Naïve Model

By examining the range of values for the SVA ratio (2 years prior) in the new Test sample, cut-off points were determined as per Table 84. The optimal cut-off points were selected to be 0.57 for the upper cut-off point (State 0) and 0.25 for the lower one (State -2). It should be pointed out that the upper cut-off could have been chosen to be 0.52 which would have given the Test sample a 90% result instead of 85%. Here too, taking into consideration that the upper cut-off limit for the Y_{n-1} model was set at 0.57, it did not make sense to reduce this value.

Table 84: Cut-off points for the Y_{n-2} model

State	Range	Cut-off point
State 0	0.40 to 1.05	> 0.57
State -1	0.26 to 0.517	
State -2	-0.93 to 0.23	< 0.25

A summary of the Test and Holdout sample results for the Naïve model can be found in Table 85. Detailed computations on a per company basis can be found in Appendices I1 and I2 for the Test and Holdout samples, respectively.

Table 85: Summary of the Test and Holdout sample results for the Y_{n-2}

Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	98	63	32	193
% Accuracy	85%	46.9%	44.4%	46.9%	46.1%

7.4.2 MDA Model

Similar to the previous MDA models, Stepwise MDA and the new Test sample were used to develop the best Y_{n-2} model. Here, as well, variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. The resultant MDA model and data are presented in Tables 86 to 88.

Table 86: Y_{n-2} MDA Model - Stepwise Statistics

Variables in the Analysis									
Step	Entered	Wilks' Lambda							
		Statistic	df1	df2	df3	Exact F			
						Statistic	df1	df2	Sig.
1	PAT/TA	.259	1	2	16.000	22.841	2	16.000	.000

Table 87: Y_{n-2} MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	5Year n-2		
	-2	-1	0
PAT/TA	-.242	.544	1.128
(Constant)	-1.310	-2.170	-5.707
Fisher's linear discriminant functions			

Table 88: Y_{n-2} MDA Model - Classification Statistics

Classification Results(a)						
		5Year n-2	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	4	1	0	5
		-1	0	5	0	5
		0	0	1	9	10
		Ungrouped cases	16	15	29	60
	%	-2	80	20	.0	100
		-1	.0	100	.0	100
		0	.0	10	90	100
		Ungrouped cases	26.7	25	48.3	100
a 90% of original grouped cases correctly classified.						

The MDA model predicted 90% of State 0, 100% of State -1 and 80% of State -2 for the Test sample correctly, achieving an overall accuracy of 90%. Using Fisher's Discriminant Function Coefficients as per Table 87, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 88 and 89. Detailed computations on a per company basis can be found in Appendices I1 and I2 for the Test and Holdout samples, respectively.

Table 89: Summary of the Test and Holdout sample results for the Y_{n-2} MDA model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	98	63	32	193
% Accuracy	90%	48%	38.1%	50%	45.1%

7.4.3 CHAID Model

The new Test sample and all the variables in Table 24 were used to derive the CHAID model. Using SPSS, the resulting Tree structure is illustrated in Figure 7.

Here too, PAT/TA came out to be the variable of choice. The lower cut-off point was given as ≤ 0.88 and the upper cut-off point was given as > 6.14 (both rounded off). This yielded an 80% classification accuracy for States -2 and 0, and 100% classification accuracy for State -1. A summary of the Test and Holdout sample results are noted in Tables 90 and 91. Detailed computations on a per company basis can be found in Appendices I1 and I2 for the Test and Holdout samples, respectively.

Table 90: Y_{n-2} CHAID Model - Classification Statistics

Classification				
Observed	Predicted			Percent Correct
	-2	-1	0	
-2	4	1	0	80%
-1	0	5	0	100%
0	0	2	8	80%
Overall Percentage	20%	40%	40%	85%
Growing Method: CHAID				
Dependent Variable: 5Year n-2				

Figure 7: Y_{n-2} CHAID Model – Tree structure

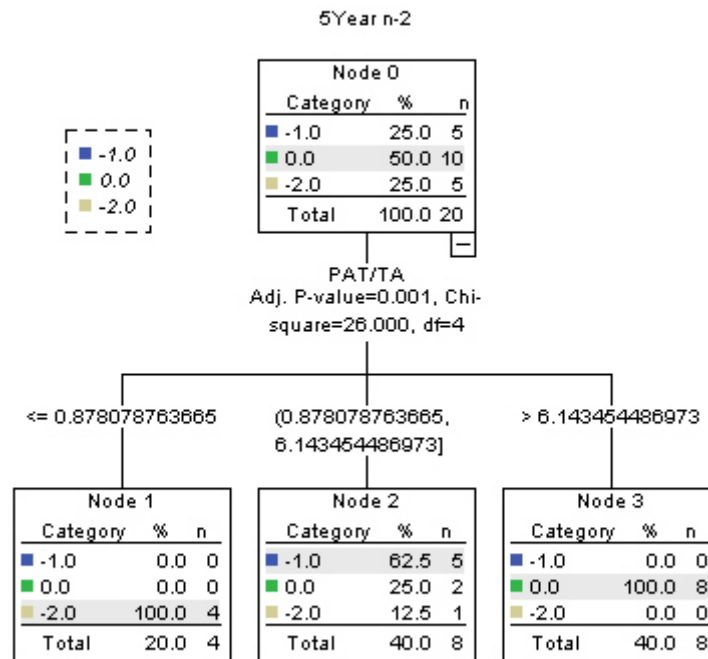


Table 91: Summary of the Test and Holdout sample results for the Y_{n-2} CHAID model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	98	63	32	193
% Accuracy	85%	45.9%	39.7%	50%	44.6%

7.5 YEAR $n-3$ MODELS

The Y_{n-3} models use ratios that are taken three years prior to the response variable.

7.5.1 Naïve Model

Cut-off points were determined by examining the range of the values for the SVA ratio (3 years prior) for each of the States in the new Test sample, as per Table 92. The optimal cut-off points were selected to be 0.7 for the upper cut-off point (State 0) and 0.25 for the lower one (State -2). The cut-off points could have been chosen to be 0.30 and 0.69, respectively which would have given the Test Data an 80% instead of a 70% result. However, in comparing the Holdout Data results to the two different cut-off points, the chosen cut-off points yielded a result of 37.1% compared to 34.4%.

Table 92: Cut-off points for the Y_{n-3} Naïve model

State	Range	Cut-off point
State 0	0.47 to 1.52	> 0.70
State -1	0.34 to 0.80	
State -2	-0.33 to 0.74	< 0.25

A summary of the Test and Holdout sample results for the Naïve model can be found in Table 93. Detailed computations on a per company basis can be found in Appendices J1 and J2 for the Test and Holdout samples, respectively.



Table 93: Summary of the Test and Holdout sample results for the Y_{n-3}

Naïve model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	102	57	27	186
% Accuracy	70%	38.2%	36.8%	33.3%	37.1%

7.5.2 MDA Model

The model was developed using Stepwise MDA. Here as well, variables that had inadequate data such as the Sales related variables, the All Share Index and its lagged variable, and the Industrial Index and its lagged variable were removed from the model development. The resultant MDA model and data are presented in Tables 94 to 96.

Table 94: Y_{n-3} MDA Model - Stepwise Statistics

Variables in the Analysis									
Step	Entered	Wilks' Lambda							
		Statistic	df1	df2	df3	Exact F			
						Statistic	df1	df2	Sig.
1	SVA	.493	1	2	16.000	8.228	2	16.000	.003

Table 95: Y_{n-3} MDA Model - Summary of Fisher's Discriminant Functions

Classification Function Coefficients			
	5Year n-3		
	-2	-1	0
SVA	.880	4.969	7.774
(Constant)	-1.139	-2.375	-4.222
Fisher's linear discriminant functions			

Table 96: Y_{n-3} MDA Model - Classification Statistics

Classification Results(a)						
		5Year n-3	Predicted Group Membership			Total
			-2	-1	0	
Original	Count	-2	4	0	1	5
		-1	0	3	2	5
		0	0	2	8	10
		Ungrouped cases	24	18	18	60
	%	-2	80	.0	20	100
		-1	.0	60	40	100
		0	.0	20	80	100
	Ungrouped cases	40	30	30	100	

a 75% of original grouped cases correctly classified.

The MDA model predicted 80% of State 0, 60% of State -1 and 80% of State -2 for the Test sample correctly, achieving an overall accuracy of 75%. Using Fisher's Discriminant Function Coefficients as per Table 95, the multivariate functions for each of the States were computed and the highest value was taken as the predicted State. A summary of the Test and Holdout sample results are noted in Tables 96 and 97. Detailed computations on a per company basis can be found in Appendices J1 and J2 for the Test and Holdout samples, respectively.

Table 97: Summary of the Test and Holdout sample results for the Y_{n-3} MDA model

	Test Sample		Holdout Sample		
	1970s	1980s	1990s	All Hold	
# Data points	20	102	57	27	186
% Accuracy	75%	35.3%	36.8%	29.6%	34.9%

7.5.3 CHAID Model

All the variables in Table 24 were used to derive the CHAID model. Using SPSS, the resulting Tree structure is illustrated in Figure 8.

EBIT/TA came out to be the variable that was chosen. However, this time only a single cut-off of 6.65 (rounded off) was given to differentiate between State 0 and State -2. The model could not categorise State -1. This yielded an 80% classification accuracy for State -2, 100% for State 0, and hence, 0% for State -1. A summary of the Test and Holdout sample results are noted in Tables 98 and 99. Detailed computations on a per company basis can be found in Appendices J1 and J2 for the Test and Holdout samples, respectively.

Table 98: Y_{n-3} CHAID Model - Classification Statistics

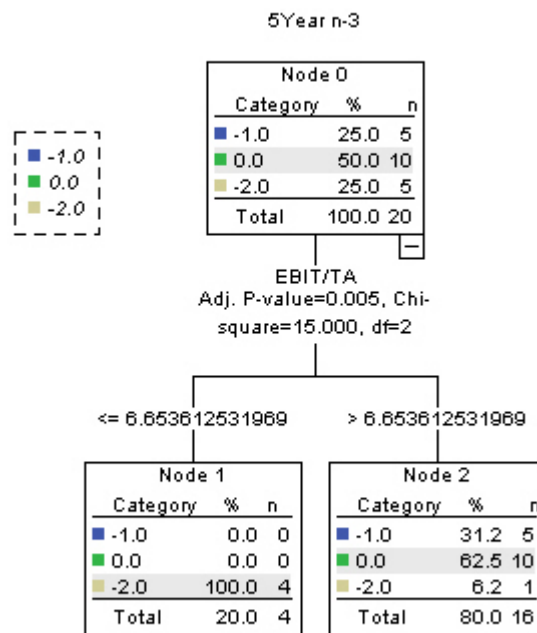
Classification				
Observed	Predicted			Percent Correct
	-2	-1	0	
-2	4	0	1	80%
-1	0	0	5	.0%
0	0	0	10	100%
Overall Percentage	20%	.0%	80%	70%
Growing Method: CHAID				
Dependent Variable: 5Year n-3				

Table 99: Summary of the Test and Holdout sample results for the Y_{n-3}

CHAID model

	Test Sample		Holdout Sample		
		1970s	1980s	1990s	All Hold
# Data points	20	102	57	27	186
% Accuracy	70%	35.3%	35.1%	44.4%	36.6%

Figure 8: Y_{n-3} CHAID Model – Tree structure



7.6 DE LA REY COMPARISON

With reference to Tables 69 and 75, both the Naïve and the CHAID models produced very good results for Year n. Similar to Chapter 6, three different approaches with modifications to the Naïve and the CHAID models had to be adopted to perform the test. Detailed comparisons of the three approaches on a per company basis can be found in Appendix K.

6.6.1 Approach 1

The first approach followed a fairly simplistic one using an exception rule, whereby the three models were penalised if a company was actually in State 0 but had a score predicting State -2 and vice versa. State -1 was ignored in this approach. Further, the De La Rey model was penalised (scoring a “0”) if the model score was in the zone of ignorance or unknown region. The results of the three models are noted in Table 100.

Table 100: De La Rey Comparison (Approach 1)

	MNAÏVE (1)	MCHAID (1)	De La Rey
# Data points	198	198	198
% Accuracy	100%	100%	84.8%

6.6.2 Approach 2

The second approach combined States -1 and -2 and compared them to State 0 thus enabling a dichotomous differentiation. Hence, for the modified Naïve and CHAID models only the upper cut-off points of 0.49 and 12.31 (rounded

off) were used, respectively. All three of the models were penalised if a company was actually in State 0 but had a score predicting State -1 or State -2. Similarly, the models were penalised if a company was actually in State -1 or State -2 but had a score predicting State 0. Further, the De La Rey model was penalised if its score was in the zone of ignorance or unknown region. The results of the three models are noted in Table 101.

Table 101: De La Rey Comparison (Approach 2)

	MNAÏVE (2)	MCHAID (2)	De La Rey
# Data points	198	198	198
% Accuracy	81.3%	85.9%	62.6%

6.6.3 Approach 3

Once again, in order to conduct a dichotomous differentiation, the third approach combined States 0 and -1 and compared them to State -2. Hence, for the modified Naïve and CHAID models only the lower cut-off points of 0.0 and 1.59 (rounded off) were used, respectively. The models were penalised if a company was actually in State 0 or State -1 but had a score predicting State -2. Similarly, the models were penalised if a company was actually in State -2 but had a score predicting State 0 or State -1. Further, the De La Rey model was penalised if its score was in the zone of ignorance or unknown region. The results of the three models are noted in Table 102.

Table 102: De La Rey Comparison (Approach 3)

	MNAÏVE (3)	MCHAID (3)	De La Rey
# Data points	198	198	198
% Accuracy	100%	98%	75.3%

7.7 ANALYSIS OF MODELS

The summary of the Test and Holdout sample results for all of the models from Y_n to Y_{n-3} can be found in Table 103.

Table 103: Summary of the Test and Holdout sample results for all of the models from Y_n to Y_{n-3}

Year n						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	198	20	198	20	198
% Accuracy	100%	81.3%	95%	52.5%	95%	83.8%
Year n-1						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	196	20	196	20	196
% Accuracy	95%	57.7%	100%	45.4%	95%	49%
Year n-2						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	193	20	193	20	193
% Accuracy	85%	46.1%	90%	45.1%	85%	44.6%
Year n-3						
	NAÏVE		MDA		CHAID	
	Test	Hold	Test	Hold	Test	Hold
Data Points	20	186	20	186	20	186
% Accuracy	70%	37.1%	75%	34.9%	70%	36.6%

Similar to the three year average models, all three of the models developed for the Y_n year, yielded excellent results for the Test sample: Naïve (100%),

MDA (95%) and CHAID (95%). Holdout sample testing also yielded good results for the Naïve (81.3%) and CHAID (83.8%) models; the latter being superior results to that achieved in the three year average model. Here too, the MDA result (52.5%) was very disappointing for, perhaps, the same reasons as given at the end of Chapter 6.

For the Y_{n-1} year, the Naïve, MDA and CHAID models also, all produced very good Test sample results at 95%, 100% and 95%, respectively. However, the corresponding Holdout sample results were satisfactory at 57.7%, 45.4% and 49%, respectively.

Likewise for the Y_{n-2} year, Test sample figures of 85%, 90% and 85%, respectively were good but the models displayed below-average results of 46.1%, 45.1% and 44.6%, respectively for the Holdout sample.

For the Y_{n-3} year, the MDA model produced the best Test sample results at 75%, with the Holdout sample at an unsatisfactory 34.9%. The Naïve and CHAID models came in at 70% each for the Test sample and an unsatisfactory 37.1% and 36.6% for the Holdout sample, respectively.

The CHAID model was the best model for the Y_n year, with the Naïve model being superior for the Y_{n-1} to Y_{n-3} years.

Similar to the three year average models, the 1970s and 1980s yielded favourable and comparable results to the Holdout sample as a whole.

Notwithstanding the relatively small sample size in the 1990s, the results were fairly good.

Similar to the three year average models, the best two Y_n models namely, the Naïve and the CHAID models were compared to the notable De La Rey (1981) model. Similar to the three year average model, three different approaches were adopted and are summarised in Table 104.

Table 104: De La Rey Comparison (All Three Approaches)

	Approach 1			Approach 2			Approach 3		
	MNAÏVE (1)	MCHAID (1)	De La Rey	MNAÏVE (2)	MCHAID (2)	De La Rey	MNAÏVE (3)	MCHAID (3)	De La Rey
Data Points	198	198	198	198	198	198	198	198	198
% Accuracy	100%	100%	84.8%	81.3%	85.9%	62.6%	100%	98%	75.3%

In all the approaches, both the modified Naïve (100%, 81.3%, 100%) and the modified CHAID (100%, 85.9%, 98%) produced superior results to the De La Rey model (84.8%, 62.6%, 75.3%). Despite the modified models; the unmodified Naïve (81.3%) and CHAID (83.8%) models also displayed favourable results in comparison. The added advantage, though, of the unmodified Naïve and CHAID models is, once again, the benefit of an extra state (Intermediate State) of information.

From a statistical perspective, in order to ascertain which was the superior set of models between the three and five year average models, the combined average of all three types of statistical models were computed for each of the years Y_n to Y_{n-3} (see Table 105).

Table 105: Statistical comparison of the Three and Five year average models

	Total	Naïve	MDA	CHAID	Average %
3Yn	231	81.8%	54.5%	79.7%	72.0%
5Yn	198	81.3%	52.5%	83.8%	72.6%
3Yn-1	229	53.3%	49.3%	48.9%	50.5%
5Yn-1	196	57.7%	45.4%	49.0%	50.7%
3Yn-2	226	44.7%	45.1%	41.2%	43.7%
5Yn-2	193	46.1%	45.1%	44.6%	45.3%
3Yn-3	219	33.3%	34.2%	42.0%	36.5%
5Yn-3	186	37.1%	34.9%	36.6%	36.2%
Overall 3 Year					50.9%
Overall 5 Year					51.4%

The results are a “much of a much ness”. Overall, the five year set of models came out to be marginally superior with an average of 51.4%, compared to the three year average of 50.9%. Notwithstanding the statistical analysis and more importantly, the five year average models do provide some degree of smoothing of the Real Earnings Growth (REG) thus possibly minimising incidents of misclassifications and unnecessary “hopping” between the States. Hence, the five year average models were included in the second stage, Financial Risk Analysis Model (FRAM).

CHAPTER 8 – FINANCIAL RISK ANALYSIS MODEL (FRAM)

Chapters 6 and 7 focused on the development of models to predict the States of Health in a company. These models are first stage models and should be used for initial screening only. The reason for this is that prediction models, in general, are not 100% accurate all of the time and their results should not be looked at in isolation. Misclassifications can place a company in a precarious position when analysing its State of Health. Another drawback of first stage models is that the onus is on the stakeholder to scrutinize the first stage model parameters to analyse its predicted State of Health.

In addition, Thompson (1993:159) provides a quotation by Tom W Cain, ex-Director, Human Resources, The Channel Tunnel Group Ltd:

“The most important facts are not always the obvious ones. It is a key attribute of the successful manager that he can assimilate a lot of information, and identify instinctively which particular items indicate that the business may be in danger of losing its direction.”

As such, the purpose of this chapter is to develop a Financial Risk Analysis Model (FRAM) which would provide underlying information or clues, independent of the first stage model, so as to enable the stakeholder, especially management, to establish a more meaningful picture of the company. In addition, FRAM presents five years of financial analysis using key variables of interest thus enabling a trend analysis as well. General observations and findings in this chapter are presented in the last section. Detailed information on a per company basis can be found in Appendices L1 and L2 for the Test and Holdout samples, respectively. Notwithstanding that the development of a second stage model was outside the scope of work for

this research, the researcher felt that given the above, the research would be all but incomplete.

8.1 VARIABLES OF INTEREST

In determining the key variables of interest, the researcher drew on his broad management experience, as well as on the work of Thompson (1993:158-181) to categorise the variables into the following groups:

- Growth
- Performance Analysis
- Investment Analysis
- Financial Status

8.1.1 Growth

Thompson (1993:132) refers to a study by Baumol (1959) in which the latter argued that:

“Firms seek to maximise sales rather than profits but within the constraint of a minimum acceptable profit level.”

Thus, in analysing the growth of a company both Sales and Profit need to be looked at in conjunction with each other. In addition, the importance of inflation in determining real growth must be taken into account with the pitfalls of the absolute value approach of Lukhwareni (2005) being avoided. Hence, two key ratios are used namely, Real Sales Growth (RSG) and Real Earnings

Growth (REG). Real Sales Growth looks at year on year growth but is discounted for inflation (CPI). Real Earnings Growth is defined in Chapter 4.

8.1.2 Performance Analysis

Thompson (1993:163) states that these categories of ratios are used to determine how successfully the company is being managed as a trading concern and how well it utilises its capital to generate revenue. Gross Margin takes into account the effects of direct labour and material costs whilst the Earnings before Interest and Taxation to Sales looks at the profits that the company has generated as a trading concern relative to its turnover. An Abnormal Income Ratio (AIR) is also included to note the percentage of Abnormal Income to Sales. By also showing the Profit after Tax to Sales, the influence of AIR on this ratio can also be determined. Net Working Capital to Sales, including the Inventory, Receivables and Payable Days provide an indication of how efficiently the business is being managed in terms of how quickly the stock is turned, credit collected and supplier terms granted to the business. Asset Turnover is a measure of how efficiently the company's assets are utilised to generate Sales.

8.1.3 Investment Analysis

In essence, Investment Analysis compares the profitability of a company to that of the funds provided by shareholders. Thompson (1993:166) refers to a study by Reid and Myddelton (1974) in which the latter stated:

“The return on shareholder’s funds is probably the most important single measure of all. It takes into account the return on net assets, the company’s tax position, and the extent to which capital employed has been supplied other than by the ordinary shareholders (for example by loans)”.

As such, this is the only ratio selected to be used in this category.

8.1.4 Financial Status

The health of a company is observed from a Solvency and Liquidity perspective. For Solvency, the Debt ratio is used. The Debt ratio (Total Liabilities to Total Assets) indicates a company’s gearing and provides an indication as to how well a company is cushioned against fluctuating profits. In terms of Liquidity, the ability to meet short term commitments affects the cashflow position of a company and the Current ratio was selected in this regard. It should, perhaps, be pointed out that modern management thinking favours the various Net Working Capital (NWC) ratios, which are used in this study. However, taking into consideration that Turnover information was lacking in many of the sample companies, the Current ratio was used as a substitute. As such, commentary on the Current ratio would only be provided in the absence of the NWC ratios.

As noted in the previous chapter, the statistical comparison between the three and five year average models yielded the latter to be the superior set of models, albeit marginally. Notwithstanding, for the Naïve and CHAID models, the cut-off points for the three and five year average models are exactly the same. The actual State of Health, Naïve and CHAID Y_n models, as well as

the De La Rey ratio (R2512) for each of the five years are also included in this category.

In analysing the States of Health that were derived in the development of the first stage models, it was felt that for FRAM, State -2 should be separated into two categories that is, Distressed and Severely Distressed. This distinction is of vital importance as the identifying variable is whether Shareholder's Equity (SHE) is positive or negative, respectively. Zero SHE would be classified into the latter category. Hence, a company would be categorised as:

- Healthy (H) (State 0)
- Intermittent (I) (State -1)
- Distressed (D) (State -2 & SHE>0)
- Severely Distressed (SD) (State -2 & SHE≤0)

8.2 FRAM CUT-OFF POINTS

In determining the cut-off points for FRAM, a similar procedure to that adopted for the Naïve models was primarily used. In addition, in all cases the researcher used his managerial experience as well.

8.2.1 Growth

The cut-off points were determined by examining the range of the values for the Real Sales Growth ratio for each of the States in the five year average Test sample, as per Table 106. The optimal cut-off points were selected to be

2% for the upper cut-off point (State 0) and 0% for the lower one (State -2), respectively.

Table 106: Cut-off points for Real Sales Growth

State	Range	Cut-off point
State 0	-0.9% to 66.1%	$\geq 2\%$
State -1	-10.1% to 18.5%	
State -2	-82.4% to -31.3%	$< 0\%$

Using the same methodology, the optimal cut-off points for Real Earnings Growth (Table 107) were selected to be 0% for the upper cut-off point (State 0) and -100% for the lower one (State -2), respectively.

Table 107: Cut-off points for Real Earnings Growth

State	Range	Cut-off point
State 0	19% to 135%	$\geq 0\%$
State -1	-3% to -90%	
State -2	-6644% to -159%	$\leq -100\%$

8.2.2 Performance Analysis

Regrettably, very few companies provided their Gross Margins. The researcher, therefore, drew from his experience and set the cut-off points to be 20% for the upper cut-off point (State 0) and 0% for the lower one (State -2), respectively.

In analysing the company from a trading perspective, the Abnormal Income ratio was desired to be 0% for State 0 and any value above 2% or below -2% was taken as being in State -2. State -1 was the value in between.

The methodology adopted in the section 8.2.1 was used to develop the optimal cut-off points for the ratios as listed in Tables 108 to 111.

Table 108: Cut-off points for EBIT to SALES

State	Range	Cut-off point
State 0	3.6% to 15.9%	$\geq 10\%$
State -1	2.6% to 7%	
State -2	-53.5% to 0.8%	$\leq 2\%$

Table 109: Cut-off points for PAT to SALES

State	Range	Cut-off point
State 0	2.7% to 8.3%	$\geq 5\%$
State -1	0.7% to 1.4%	
State -2	-55% to -3.4%	$\leq 0\%$

Table 110: Cut-off points for Asset Turnover

State	Range	Cut-off point
State 0	1.23 to 2.70	≥ 1.5
State -1	1.28 to 2.89	
State -2	1.45 to 2.40	≤ 1

Table 111: Cut-off points for Net Working Capital to SALES

State	Range	Cut-off point
State 0	1.6% to 25.1%	$\leq 15\%$
State -1	10.3% to 16.3%	
State -2	-38.9% to 23.1%	$\geq 20\%$

The ranges for Inventory, Receivables and Payables days were ignored in favour of modern thinking and experience; and are defined in Tables 112 and 113.

Table 112: Cut-off points for Inventory and Receivables Days

State	Cut-off point
State 0	≤ 30 days
State -1	
State -2	≥ 60 days

Table 113: Cut-off points for Payables Days

State	Cut-off point
State 0	≥ 60 days
State -1	
State -2	≤ 30 days

8.2.3 Investment Analysis

Here too, the methodology adopted in the section 8.2.1 was used to develop the optimal cut-off points for the PAT to Shareholder's Equity ratio as shown in Table 114.

Table 114: Cut-off points for PAT to Shareholder's Equity

State	Range	Cut-off point
State 0	13.6% to 40.4%	$\geq 15\%$
State -1	1.6% to 12.3%	
State -2	-11.3% to -46%*	$< 0\%$

* negative SHE is recorded as -ve SHE

8.2.4 Financial Status

Here too, the methodology adopted in the section 8.2.1 was used to develop the optimal cut-off points for each of the ratios as shown in Tables 115 and 116.

Table 115: Cut-off points for Total borrowed Funds to Total Funds

State	Range	Cut-off point
State 0	0.24 to 0.70	≤ 0.65
State -1	0.50 to 0.70	
State -2	0.48 to 1.49	≥ 1.00

Table 116: Cut-off points for the Current Ratio

State	Range	Cut-off point
State 0	1.07 to 2.04	≤ 1.5
State -1	1.37 to 3.35	
State -2	0.37 to 1.84	≥ 2

Thompson (1993:173) noted 1.5:1 and 2:1 as indicative targets for the Current ratio and this was instrumental in selecting appropriate cut-off points. In analysing the Current ratio, care should be taken in looking at the Net Working Capital group of ratios as well.

As was pointed out earlier in this section, the cut-off points were developed by a combination of Test sample data analysis and the researcher using his managerial experience. Having said that, it is acknowledged that different companies have different risk profiles and different stakeholders, in themselves, have different appetites for risk. Therefore, FRAM was developed with this in mind, giving the stakeholders, especially management, the flexibility to change the cut-off points to suit their different management styles and needs.

A colour coded analysis was developed to clearly highlight potential areas of concern. As such, using the above-mentioned cut-off points for each of the variables, State 0 was assigned “green”, State -1 “yellow” and State -2 “red”. In addition, “grey” is used for the De La Rey unknown region.



8.3 ANALYSIS OF HOLDOUT SAMPLE COMPANIES

For the failed and non-failed companies, the last five years of information are presented and analysed. However, there are one or two cases where lack of information resulted in earlier information years being chosen.

8.3.1 Back Clothing

Back Clothing is a failed company with its last set of available financial statements being 1974. The company was in Distress between 1971 and 1973 and in Severe Distress in 1974. From a growth perspective, the company performed poorly in Real Sales Growth (RSG) from 1971 to 1973 regaining some market share in its last year (see Table 117). No Real Earnings Growth (REG) information is available. Abnormal Income was a key variable in affecting this company's profitability. In the absence of Gross Margin information, the only comment that can be made is that expenditure was too high. It is shocking to note that Inventory and Receivables were very poorly managed right from 1970, implying endless cash flow problems. From 1971 onwards, the Shareholder's Returns deteriorated remarkably with SHE becoming negative in 1974. From the prediction and De La Rey models it can be seen that Back Clothing was in trouble right from the beginning and became progressively worse; with the two prediction models implying that the company was in the Intermittent State in 1970.

Table 117: FRAM for Back Clothing

BACKCLOTHING					
Failed	Hold				
Year	1970	1971	1972	1973	1974
Growth					
Sales Growth %	no data	-3.5	-1.3	-10.8	13.7
Real Earnings Growth %	no data	no data	no data	no data	no data
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	7.4	3.9	-4.9	-5.8	-5.8
AIR/Sales %	0.0	-0.4	-7.2	-4.1	-1.8
PAT/Sales	2.3	-0.9	-8.6	-10.1	-12.5
NWC/Sales %	20.1	18.2	7.5	32.1	18.1
Inventory Days	115.2	126.8	137.5	168.0	162.4
Receivable Days	139.4	145.4	139.6	140.6	137.1
Payable Days	44.5	57.1	66.0	89.8	94.9
Asset Turnover	1.2	1.1	1.1	1.1	1.1
Investment Analysis					
PAT/Shareholders Equity %	7.1	-2.9	-45.8	-88.9	-ve SHE
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.61	0.66	0.79	0.88	1.04
Liquidity (Current Ratio)	1.4	1.3	1.1	1.6	1.3
Actual Yn State					
Actual Yn State	no data	D	D	D	SD
Naïve Model (SVA)	-1	-2	-2	-2	-2
CHAID Model (PAT/SHE)	-1	-2	-2	-2	-2
De La Rey	-0.13	-0.68	-1.89	-2.10	-2.82

8.3.2 Consolidated Jersey Holdings

Consolidated Jersey Holdings is a failed company with its last set of meaningful financial statements being 1975. It was clearly in Distress in 1973 and 1975. Having said that, the company did make a profit in 1974. Regrettably, earlier growth information is unavailable (Table 118). In 1975, both RSG and REG were a serious problem. Notwithstanding, the loss of

50% of its Sales in real terms in 1975 is very disturbing and this in itself spelt the end for the company. Here too, Inventory and Receivables were very poorly managed implying that cash flow would have been a serious problem. The predictive accuracy of the models was in line with the company's performance.

Table 118: FRAM for Consolidated Jersey Holdings

CONJERS					
Failed	Hold				
Year	1971	1972	1973	1974	1975
Growth					
Sales Growth %	no data	no data	no data	1.0	-50.4
Real Earnings Growth %	no data	no data	no data	no data	-219.0
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	2.1	10.9	-9.0
AIR/Sales %	no data	no data	-5.4	-0.4	0.0
PAT/Sales	no data	no data	-1.0	6.1	-13.9
NWC/Sales %	no data	no data	15.0	24.9	23.3
Inventory Days	no data	no data	164.9	117.1	154.0
Receivable Days	no data	no data	82.6	102.3	106.3
Payable Days	no data	no data	90.0	43.2	81.2
Asset Turnover	no data	no data	0.9	1.1	0.9
Investment Analysis					
PAT/Shareholders Equity %	19.8	17.3	-2.3	13.4	-24.1
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.58	0.55	0.59	0.48	0.50
Liquidity (Current Ratio)	1.5	1.5	1.3	1.7	1.5
Actual Yn State					
Actual Yn State	no data	no data	D	no data	D
Naïve Model (SVA)	0	0	-2	0	-2
CHAID Model (PAT/SHE)	0	0	-2	0	-2
De La Rey	0.58	0.58	-0.58	0.48	-1.63

8.3.3 DRG South Africa Ltd

Table 119: FRAM for DRG South Africa Ltd

DRG					
Failed	Hold				
Year	1978	1979	1980	1981	1982
Growth					
Sales Growth %	no data	12.7	25.3	2.0	-7.8
Real Earnings Growth %	no data	no data	no data	no data	no data
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	12.2	11.2	10.2	5.9	4.3
AIR/Sales %	0.0	0.0	0.6	0.0	0.7
PAT/Sales	7.8	7.9	6.4	3.3	-0.2
NWC/Sales %	27.6	29.4	19.3	19.0	18.0
Inventory Days	62.2	96.8	70.6	65.7	46.3
Receivable Days	67.8	82.3	78.2	80.9	80.0
Payable Days	30.5	48.9	40.1	50.1	44.2
Asset Turnover	1.7	1.4	1.7	1.4	1.5
Investment Analysis					
PAT/Shareholders Equity %	24.2	21.1	21.6	9.5	-0.5
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.36	0.41	0.43	0.42	0.44
Liquidity (Current Ratio)	3.1	2.3	1.8	1.9	2.0
Actual Yn State					
Naïve Model (SVA)	0	0	0	-1	-2
CHAID Model (PAT/SHE)	0	0	0	-1	-2
De La Rey	1.32	1.18	0.92	0.26	-0.40

DRG South Africa Ltd is a failed company with its last set of available financial statements being 1982, during which it was in the Distressed State. The company showed good Sales growth from 1979 to 1981 but a decline in 1982 (Table 119). Real Earnings data is unavailable. In 1981, the total expenditure increased by 4.3% of Sales and appears to have stayed at a similar level in 1982, as well. Whereas Inventory was gradually managed down, Receivables collection was a serious problem especially when

creditors demanded their money between 30 to 40 days earlier, once again pointing to a cash flow problem. The predictive accuracy of the models was in line with expectations, with the Naïve and CHAID models indicating that the company was in the Intermittent State in 1981. The De La Rey model did not pick up a problem in 1981.

8.3.4 Fairweather Fashion Holdings

Fairweather Fashion Holdings is a failed company with its last set of available financial statements being 1976. It was in Distress in 1972, 1974 and 1976. This company went through the “yo-yo” syndrome battling with both RSG and REG. This is clearly visible when analysing the Shareholder’s Returns (Table 120). The loss of Sales in 1974 explains the drop in EBIT when compared to the prior year. However, whatever Sales was gained in 1975 was clearly lost in 1976 plunging the company into a loss situation. Abnormal items were responsible for the loss in 1974 and exacerbating the situation in 1976. Poorly managed Inventory and Receivables, coupled with mismatched Payables would also point to cash flow problems. It is noted, however, that the company did make an effort to reduce both the Inventory and Receivables over the five year period. Over the five period, shareholders averaged a negative 6.9% return on their investment. The predictive accuracy of the models is in line with expectations, with the Naïve model indicating that the company was in the Intermittent State in 1975.

Table 120: FRAM for Fairweather Fashion Holdings

FAIRWEATHER					
Failed	Hold				
Year	1972	1973	1974	1975	1976
Growth					
Sales Growth %	no data	no data	-7.3	6.5	-11.8
Real Earnings Growth %	no data	no data	no data	26.1	-445.1
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	10.8	3.3	8.3	-1.7
AIR/Sales %	no data	0.0	-4.1	0.0	-5.1
PAT/Sales	no data	4.1	-2.6	3.0	-5.6
NWC/Sales %	no data	29.9	26.6	27.0	19.9
Inventory Days	no data	165.0	166.1	114.6	100.2
Receivable Days	no data	108.8	88.4	84.8	80.3
Payable Days	no data	58.7	63.4	44.3	63.8
Asset Turnover	no data	1.1	1.3	1.6	1.7
Investment Analysis					
PAT/Shareholders Equity %	-19.2	14.4	-10.8	12.8	-31.9
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.91	0.68	0.69	0.61	0.70
Liquidity (Current Ratio)	1.3	1.6	1.6	1.9	1.6
Actual Yn State					
Actual Yn State	D	no data	D	H	D
Naïve Model (SVA)	-2	0	-2	-1	-2
CHAID Model (PAT/SHE)	-2	0	-2	0	-2
De La Rey	-1.11	-0.04	-0.79	0.21	-1.62

8.3.5 Hugh Parker

Table 121: FRAM for Hugh Parker

H PARKER					
Failed	Hold				
Year	1978	1979	1980	1981	1982
Growth					
Sales Growth %	-46.9	-1.1	-13.5	6.2	11.9
Real Earnings Growth %	-44.2	86.4	-40.0	30.5	-63.1
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	5.5	12.5	7.4	9.0	8.0
AIR/Sales %	-2.2	7.1	0.2	0.4	0.1
PAT/Sales	1.2	7.4	2.7	4.5	1.4
NWC/Sales %	2.9	0.6	0.7	7.1	2.9
Inventory Days	82.1	88.0	89.9	93.9	89.8
Receivable Days	44.7	62.7	43.2	41.8	49.7
Payable Days	80.3	101.7	79.2	75.0	98.2
Asset Turnover	1.5	1.4	1.5	1.4	1.4
Investment Analysis					
PAT/Shareholders Equity %	7.6	42.2	14.7	17.4	5.0
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.77	0.75	0.72	0.64	0.61
Liquidity (Current Ratio)	1.1	1.0	1.0	1.2	1.1
Actual Yn State					
Naïve Model (SVA)	-1	0	-1	0	-1
CHAID Model (PAT/SHE)	-1	0	0	0	-1
De La Rey	-0.59	0.39	-0.27	0.23	-0.29

Hugh Parker is a failed company with its last set of available financial statements being 1982. This company also went through the “yo-yo” syndrome (Table 121). Analysing the Sales growth over the five year period, the company never recovered from the 46.9% drop in real Sales in 1978. The company did make some inroads into cutting down its expenditure and improving Receivables collection. However, the inability to convert its stock into much needed Sales would have caused Payables problems. The sudden and widened gap between EBIT/Sales and PAT/Sales in 1982 points to a hike

in Interest Paid implying creditors' wariness over the business's viability. The predictive accuracy of the models is in line with expectations with the De La Rey model highlighting the company's troubled state of affairs.

8.3.6 IL Back

Table 122: FRAM for IL Back

IL BACK					
Failed	Hold				
Year	1978	1979	1980	1981	1982
Growth					
Sales Growth %	no data	no data	no data	no data	no data
Real Earnings Growth %	no data	no data	no data	no data	78.4
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	no data	no data
AIR/Sales %	no data	no data	no data	no data	no data
PAT/Sales	no data	no data	no data	no data	no data
NWC/Sales %	no data	no data	no data	no data	no data
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	no data	no data	no data	no data	no data
Payable Days	no data	no data	no data	no data	no data
Asset Turnover	no data	no data	no data	no data	no data
Investment Analysis					
PAT/Shareholders Equity %	-139.8	-59.0	-23.8	-58.8	-11.9
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.79	0.81	0.53	0.78	0.03
Liquidity (Current Ratio)	1.3	1.2	1.8	1.2	33.0
Actual Yn State					
Naïve Model (SVA)	-2	-2	-2	-2	-2
CHAID Model (PAT/SHE)	-2	-2	-2	-2	-2
De La Rey	-3.59	-1.95	-1.56	-2.25	1.28

IL Back is a failed company with its last set of available financial statements being 1982. The company was in Distress throughout the five year period. The lack of Sales information makes it fairly difficult to comment on Sales growth and Net Working Capital management (Table 122). The company experienced straight losses over the five year period. The positive REG in 1982 only serves to point out that there was an improvement in the losses when compared to its average over the five year period. Shareholders would have been clearly unimpressed with this company's performance. The Solvency and Liquidity information in 1982 is suspect. The predictive accuracy of the models is in line with expectations although the De La Rey model produced a surprising result in the final year. This could also perhaps be attributed to suspect information being present in 1982.

8.3.7 Pan Textiles

Pan Textiles is a failed company with its last set of available financial statements being 1974. It was in Distress in both 1973 and 1974. The company experienced phenomenal Sales growth in 1973 which it then lost in 1974 (Table 123). The deteriorating EBIT/Sales points to a sudden increase in expenditure, exacerbated by Abnormal items, and resulting in losses. Despite an attempt to manage down both Inventory and Receivables in 1973; overall the picture was still bleak, with creditors demanding payments earlier each year and management losing control of both Inventory and Receivables again in 1974. The Current ratio of 3.8 is appalling! The company also increased its gearing over the period implying an increase in Interest

payments. Over the period, Shareholder's Returns became progressively worse. The predictive accuracy of the models was good.

Table 123: FRAM for Pan Textiles

PAN					
Failed	Hold				
Year	1970	1971	1972	1973	1974
Growth					
Sales Growth %	no data	no data	no data	102.4	-46.3
Real Earnings Growth %	no data	no data	no data	no data	no data
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	5.5	-1.7	0.7
AIR/Sales %	no data	no data	-0.4	-2.2	-1.0
PAT/Sales	no data	no data	1.0	-4.8	-3.1
NWC/Sales %	no data	no data	21.2	8.1	35.8
Inventory Days	no data	no data	131.7	64.7	89.6
Receivable Days	no data	no data	83.8	46.1	61.4
Payable Days	no data	no data	86.7	50.3	47.6
Asset Turnover	no data	no data	0.6	1.7	1.2
Investment Analysis					
PAT/Shareholders Equity %	15.4	14.4	1.3	-38.0	-17.7
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.37	0.41	0.50	0.59	0.55
Liquidity (Current Ratio)	2.0	1.6	1.5	1.4	3.8
Actual Yn State					
Actual Yn State	no data	no data	no data	D	D
Naïve Model (SVA)	0	0	-1	-2	-2
CHAID Model (PAT/SHE)	0	0	-2	-2	-2
De La Rey	1.03	0.68	-0.49	-1.47	-0.87

8.3.8 Spectro

Table 124: FRAM for Spectro

SPECTRO					
Failed	Hold				
Year	1971	1972	1973	1974	1975
Growth					
Sales Growth %	no data	no data	no data	no data	no data
Real Earnings Growth %	no data	no data	no data	no data	-160.4
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	no data	no data
AIR/Sales %	no data	no data	no data	no data	no data
PAT/Sales	no data	no data	no data	no data	no data
NWC/Sales %	no data	no data	no data	no data	no data
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	no data	no data	no data	no data	no data
Payable Days	no data	no data	no data	no data	no data
Asset Turnover	no data	no data	no data	no data	no data
Investment Analysis					
PAT/Shareholders Equity %	13.1	11.0	21.9	18.0	-11.7
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.26	0.24	0.45	0.54	0.58
Liquidity (Current Ratio)	3.5	3.4	5.0	2.4	4.5
Actual Yn State					
Actual Yn State	no data	no data	no data	no data	D
Naïve Model (SVA)	0	0	0	0	-2
CHAID Model (PAT/SHE)	0	-1	0	0	-2
De La Rey	1.03	0.82	1.30	0.23	-1.10

Spectro is a failed company with its last set of available financial statements being 1975, during which it was in the Distressed State. During 1973 and 1974, this company performed well in terms of Shareholder Returns (Table 124). The Current ratio provides a clue that right from the beginning, the

company had managed both its Inventory and Receivables very poorly. In addition, the company's gearing more than doubled between 1971 and 1975. In the absence of information, it is difficult to ascertain what really happened in 1975 from the FRAM except to note the 160% drop in REG. Was this as a result of a serious loss of market share or increased expenditure? It can be concluded that the company's loss in 1975, coupled with cash flow problems as ascertained by observing the current ratio, led to its failure. The predictive accuracy of the models (for 1975) was in line with expectations.

8.3.9 Tapsa

Tapsa is a failed company with its last set of available financial statements being 1975, during which it was Severely Distressed. The gearing also increased steadily and the erosion of the Shareholder's Equity eventually led to its insolvency (Table 125). Here too, in the absence of vital information, it is unknown whether this was caused by a serious loss of market share or a phenomenal increase in expenditure? Good predictive accuracy of the models is noted with trouble spotted from 1972 onwards.

Table 125: FRAM for Tapsa

TAPSA					
Failed	Hold				
Year	1971	1972	1973	1974	1975
Growth					
Sales Growth %	no data	no data	no data	no data	no data
Real Earnings Growth %	no data	no data	no data	no data	-826.1
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	no data	no data
AIR/Sales %	no data	no data	no data	no data	no data
PAT/Sales	no data	no data	no data	no data	no data
NWC/Sales %	no data	no data	no data	no data	no data
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	no data	no data	no data	no data	no data
Payable Days	no data	no data	no data	no data	no data
Asset Turnover	no data	no data	no data	no data	no data
Investment Analysis					
PAT/Shareholders Equity %	20.1	10.8	12.5	-35.1	-ve SHE
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.64	0.65	0.71	0.77	1.11
Liquidity (Current Ratio)	1.8	1.8	1.6	1.4	0.8
Actual Yn State					
Actual Yn State	no data	no data	no data	D	SD
Naïve Model (SVA)	0	-1	-1	-2	-2
CHAID Model (PAT/SHE)	0	-1	0	-2	-2
De La Rey	0.32	-0.17	-0.35	-1.56	-5.10

8.3.10 Tiger Industrial Holdings

Table 126: FRAM for Tiger Industrial Holdings

TIGERIND					
Failed	Hold				
Year	1969	1970	1971	1972	1973
Growth					
Sales Growth %	no data	no data	no data	no data	no data
Real Earnings Growth %	no data	no data	no data	no data	no data
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	no data	no data
AIR/Sales %	no data	no data	no data	no data	no data
PAT/Sales	no data	no data	no data	no data	no data
NWC/Sales %	no data	no data	no data	no data	no data
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	no data	no data	no data	no data	no data
Payable Days	no data	no data	no data	no data	no data
Asset Turnover	no data	no data	no data	no data	no data
Investment Analysis					
PAT/Shareholders Equity %	no data	4.2	-26.5	-61.6	0.9
Financial Status					
Solvency (Total Liabilities/Total Assets)	no data	0.71	0.68	0.41	0.69
Liquidity (Current Ratio)	no data	1.2	1.2	0.4	0.6
Actual Yn State					
Actual Yn State	no data	no data	D	D	no data
Naïve Model (SVA)	no data	-1	-2	-2	-1
CHAID Model (PAT/SHE)	no data	-1	-2	-2	-2
De La Rey	no data	-0.87	-1.69	-2.42	-0.98

Tiger Industrial Holdings is a failed company with its last set of available financial statements being 1973. This company is an interesting study (Table

126). During 1971 and 1972, the company had negative profitability thereby resulting in negative Shareholder's Returns. Here too, in the absence of vital information, it is unknown whether this was caused by a serious loss of market share or a phenomenal increase in expenditure? In summary, it appears that the company could not recover from the misfortunes of the prior two years and the breakeven situation in the final year was too little, too late! Good predictive accuracy of the models is noted with the models indicating problems from 1970 onwards.

8.3.11 Triomf Fertilizers

Triomf Fertilizers is a failed company with its last set of meaningful financial statements being 1987. It was Severely Distressed in both 1986 and 1987 and Distressed in 1983 and 1985. From a growth perspective, the company performed very poorly in Real Sales in 1986 and 1987 indicating major losses in market share (Table 127). As a result of the missing information in 1984, REG could not be calculated for the subsequent years. However, the REG of -101.6% in 1983 painted a bleak picture for the company. The company had straight losses over the five year period (1984 unknown) which eventually eroded all of the Shareholder's funds. The Net Working Capital data, together with the Solvency and Liquidity data for 1987 appear to be suspect. Dismal trading results in 1985 and 1986, coupled with high Interest payments (as noted by the gap between EBIT/Sales and PAT/Sales) exacerbated the situation. In addition, Inventory could have been better managed and the sudden decline in Payable days is indicative of very jittery creditors. The

models produced excellent results with the De La Rey model perhaps being influenced by the “suspect” data.

Table 127: FRAM for Triomf

TRIOMF					
Failed	Hold				
Year	1983	1984	1985	1986	1987
Growth					
Sales Growth %	no data	no data	no data	-72.0	-50.4
Real Earnings Growth %	-101.6	no data	no data	no data	no data
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	1.0	-4.7	6.6
AIR/Sales %	no data	no data	-0.1	-0.7	6.2
PAT/Sales	no data	no data	-5.5	-19.2	-0.1
NWC/Sales %	no data	no data	0.9	12.9	48.1
Inventory Days	no data	no data	71.1	67.0	no data
Receivable Days	no data	no data	48.3	64.5	20.7
Payable Days	no data	no data	48.4	23.7	3.2
Asset Turnover	no data	no data	0.8	1.5	2.0
Investment Analysis					
PAT/Shareholders Equity %	-0.8	no data	-40.4	-ve SHE	-ve SHE
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.08	no data	0.82	0.96	0.04
Liquidity (Current Ratio)	1.3	no data	1.0	1.5	25.6
Actual Yn State					
Actual Yn State	D	no data	D	SD	SD
Naïve Model (SVA)	-2	no data	-2	-2	-2
CHAID Model (PAT/SHE)	-2	no data	-2	-2	-2
De La Rey	-0.14	no data	-1.92	-2.79	1.43

8.3.12 Bidvest

Table 128: FRAM for Bidvest

BIDVEST					
Non-failed	Hold				
Year	1994	1995	1996	1997	1998
Growth					
Sales Growth %	221.5	25.3	14.0	13.1	39.7
Real Earnings Growth %	175.2	158.3	134.0	105.6	176.9
Performance Analysis					
Gross Margin %	no data	no data	17.3	17.7	23.4
EBIT/Sales %	5.7	5.8	6.2	6.9	7.9
AIR/Sales %	0.0	0.0	0.2	0.2	0.1
PAT/Sales	3.5	3.6	4.2	4.5	5.9
NWC/Sales %	12.4	11.4	12.9	22.4	25.9
Inventory Days	23.0	22.3	24.6	46.3	35.4
Receivable Days	45.6	44.7	43.0	68.2	47.3
Payable Days	52.9	48.7	51.3	74.6	48.6
Asset Turnover	2.8	3.0	2.7	1.6	1.9
Investment Analysis					
PAT/Shareholders Equity %	25.6	28.2	27.6	14.7	16.3
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.62	0.61	0.55	0.46	0.30
Liquidity (Current Ratio)	1.7	1.7	1.8	1.9	2.7
Actual Yn State					
Naïve Model (SVA)	0	0	0	-1	0
CHAID Model (PAT/SHE)	0	0	0	0	0
De La Rey	0.54	0.68	0.88	0.66	1.24

Bidvest is a non-failed company that is analysed over the 1994 to 1998 period (Table 128). The company produced excellent RSG and REG figures during the five year period. It is, therefore, somewhat of a surprise that during 1996 and 1997, its Gross Margins were below expectations but reaching an acceptable level in 1998. Although an improvement is noted in the EBIT/Sales, it still required work – the Gross Margin figures point towards high material and labour costs. Further, it is interesting to note that whereas the Gross Margin had increased by 5.7% between 1997 and 1998, it only

translated to a 1% increase in the EBIT/Sales. What caused the expenditure to increase by 4.7%? Inventory and Receivables slipped away during this period as well, resulting in poor NWC ratios. Shareholders received good returns with 1997 being slightly below expectations. The drop in the Asset Turnover to 1.6 in 1997 whilst at the same time achieving a positive RSG, is indicative of a substantial growth in the asset base. This would help to explain the incorrect Naïve model classification. The predictive ability of the models are in line with expectations.

8.3.13 Brick Clay

Brick Clay is another interesting study that is analysed over the 1984 to 1988 period (Table 129). Even though that it is a non-failed company, it had negative SHE from 1984 up to and including 1987. Its RSG painted a bleak picture between 1984 and 1987, with marginal improvement in 1988. However, it did improve remarkably on REG to nurse the company back to the Healthy State. The improvement on EBIT/Sales points to either the company getting rid of loss making products or a drastic cut in expenditure or, perhaps, a mixture of the two. Net Working Capital needed attention and despite the company's amazing improvement in gearing, the 1988 figure was still too high for comfort. The models displayed good predictive ability.

Table 129: FRAM for Brick Clay

BRICK CLAY					
Non-failed	Hold				
Year	1984	1985	1986	1987	1988
Growth					
Sales Growth %	-9.8	-48.1	-29.2	-6.5	1.8
Real Earnings Growth %	no data	no data	190.9	309.0	313.0
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	5.2	-9.7	10.0	15.1	16.7
AIR/Sales %	-0.9	-8.2	-0.8	0.0	0.0
PAT/Sales	0.5	-18.2	6.0	14.6	16.5
NWC/Sales %	8.5	-22.7	14.2	25.5	26.3
Inventory Days	55.4	52.1	48.4	48.2	58.0
Receivable Days	58.6	55.2	52.9	55.2	55.3
Payable Days	45.2	51.4	56.6	64.1	60.4
Asset Turnover	1.9	1.7	1.8	1.6	1.4
Investment Analysis					
PAT/Shareholders Equity %	-ve SHE	-ve SHE	-ve SHE	-ve SHE	445.8
Financial Status					
Solvency (Total Liabilities/Total Assets)	1.05	1.37	1.39	1.21	0.94
Liquidity (Current Ratio)	1.4	0.6	1.8	2.4	2.6
Actual Yn State	no data	SD	H	H	H
Naïve Model (SVA)	-1	-2	0	0	0
CHAID Model (PAT/SHE)	0	-2	0	0	0
De La Rey	-1.18	-4.88	-0.79	1.18	1.59

8.3.14 Bristol

Bristol is a non-failed company that is analysed over the 1990 to 1994 period (Table 130). The very poor Asset Turnover points to a fairly capital intensive business but one with excellent profitability as evidenced in the EBIT/Sales ratio. The negative Sales growth in 1993 and 1994 coupled with the improved EBIT/Sales points to the company shedding off unprofitable product lines. Despite this, the negative REG over the period is of concern and hence

places the company in the Intermittent state. In addition, the NWC/Sales and Current ratios are indicative of shocking Inventory and Receivables management. Whereas the De La Rey model shows the company as Healthy, the Naïve and CHAID models indicate that the company was in the Intermittent state which makes this company another interesting case. The low Solvency ratio explains the poor Shareholder's Returns and subsequent CHAID prediction; with poor NWC management explaining the Naïve model predictions.

Table 130: FRAM for Bristol

BRISTOL					
Non-failed	Hold				
Year	1990	1991	1992	1993	1994
Growth					
Sales Growth %	22.3	24.1	4.0	-48.9	-4.9
Real Earnings Growth %	-39.1	-24.8	-11.4	-33.1	-37.7
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	42.8	40.8	34.0	49.3	43.5
AIR/Sales %	0.9	0.3	1.7	11.6	0.1
PAT/Sales	22.1	20.0	22.1	30.4	28.9
NWC/Sales %	123.7	109.7	87.2	163.4	139.8
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	152.9	107.5	128.9	62.2	33.3
Payable Days	38.4	31.3	36.2	38.0	48.3
Asset Turnover	0.3	0.3	0.3	0.2	0.2
Investment Analysis					
PAT/Shareholders Equity %	6.4	7.4	7.8	6.5	5.6
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.11	0.12	0.08	0.04	0.07
Liquidity (Current Ratio)	5.0	5.1	6.1	9.8	4.6
Actual Yn State					
Actual Yn State	I	I	I	I	I
Naïve Model (SVA)	-1	-1	-1	-1	-1
CHAID Model (PAT/SHE)	-1	-1	-1	-1	-1
De La Rey	0.75	0.88	1.12	1.30	0.82

8.3.15 Burlington Hosiery

Table 131: FRAM for Burlington Hosiery

BURHOSE					
Non-failed	Hold				
Year	1975	1976	1977	1978	1979
Growth					
Sales Growth %	no data	no data	no data	no data	1.0
Real Earnings Growth %	79.2	-19.4	no data	no data	no data
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	3.4	8.0
AIR/Sales %	no data	no data	no data	-0.1	0.3
PAT/Sales	no data	no data	no data	1.4	6.0
NWC/Sales %	no data	no data	no data	19.1	16.1
Inventory Days	no data	no data	no data	65.4	63.6
Receivable Days	no data	no data	no data	74.8	75.7
Payable Days	no data	no data	no data	39.1	55.9
Asset Turnover	no data	no data	no data	1.8	1.7
Investment Analysis					
PAT/Shareholders Equity %	26.3	12.7	no data	5.5	27.4
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.42	0.36	no data	0.56	0.64
Liquidity (Current Ratio)	1.8	2.2	no data	2.0	1.5
Actual Yn State					
Actual Yn State	H	I	no data	no data	no data
Naïve Model (SVA)	0	0	no data	-1	0
CHAID Model (PAT/SHE)	0	0	no data	-1	0
De La Rey	1.61	0.85	no data	-0.20	0.49

Burlington Hosiery is a non-failed company analysed over the 1975 to 1979 period (Table 131). Lack of data makes it somewhat difficult to provide a

proper analysis of the company. With reference to the prediction models, the company moved from Healthy to the Intermittent State and back to Healthy. The increase in EBIT/Sales in 1979 relative to 1978 is indicative of a serious cut in expenditure which improved the company's profitability and hence, it moving to the Healthy State. The increasing borrowings are of concern and NWC required some attention. The predictive accuracy of the models was excellent for 1975 but poor for 1976.

8.3.16 KTL

Owing to missing information during 1998 and 1999, the non-failed company was analysed from 1992 to 1997 (Table 132). The chosen years make an interesting analysis for this non-failed company as it went from the Intermittent State to Healthy and back to the Intermittent State. This runs parallel with the observations of the RSG and REG numbers. Of major concern, is the loss of half of the company's market share in 1997? What happened? The increase in the Gross Margin by 3.6% in 1997 could point to the company shedding off unprofitable product lines but the drop in the EBIT/Sales by 3.3% means that Administration costs were not reduced accordingly. The company showed excellent NWC/Sales management between 1993 and 1996 but let the Receivables collection in 1997 slip, resulting in the almost doubling of the NWC/Sales figure. Notwithstanding, Shareholder's Returns were excellent! The predictive ability of the models is satisfactory.

Table 132: FRAM for KTL

KTL					
Non-failed	Hold				
Year	1993	1994	1995	1996	1997
Growth					
Sales Growth %	-4.3	13.3	26.4	2.8	-52.3
Real Earnings Growth %	-18.6	74.6	81.8	288.2	-42.8
Performance Analysis					
Gross Margin %	no data	no data	no data	15.2	18.8
EBIT/Sales %	3.9	5.8	5.0	8.6	5.3
AIR/Sales %	-0.1	1.1	0.4	4.3	0.0
PAT/Sales	2.4	4.1	3.4	7.4	3.4
NWC/Sales %	5.6	8.5	7.1	8.6	15.8
Inventory Days	45.9	41.0	41.1	37.5	42.7
Receivable Days	53.2	60.1	50.0	48.7	72.8
Payable Days	80.8	75.1	67.6	76.7	66.0
Asset Turnover	2.5	2.5	2.6	2.3	2.0
Investment Analysis					
PAT/Shareholders Equity %	28.7	47.6	39.1	69.1	41.2
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.64	0.61	0.60	0.54	0.45
Liquidity (Current Ratio)	1.2	1.4	1.3	1.4	1.7
Actual Yn State					
Actual Yn State	I	H	H	H	I
Naïve Model (SVA)	-1	0	0	0	-1
CHAID Model (PAT/SHE)	0	0	0	0	0
De La Rey	-0.01	0.56	0.47	1.43	0.16

8.3.17 Omnia

The non-failed company is analysed from the 1994 to the 1998 period (Table 133). During the 1994 and 1995 period, the company was in the Intermittent State and moved thereafter to the Healthy State where it stayed (in spite of a slight drop in RSG in 1997). This was achieved by improving REG and EBIT/Sales. Further, the Gross Margins were fairly healthy although Administration expenditure was very high. The company had excellent NWC/Sales ratios primarily due to its extended Payables Days. However,

attention needed to be paid to firstly, the Receivables Days and then the Inventory Days. The prediction models are in line with expectations although the Naïve model classifies the company in the Intermittent State in 1998. In noting the RSG and Asset Turnover for 1998, the Naïve model classification is largely due to the increase in the asset base. The other model predictions are satisfactory.

Table 133: FRAM for Omnia

OMNIA					
Non-failed	Hold				
Year	1994	1995	1996	1997	1998
Growth					
Sales Growth %	1.9	13.4	20.0	-8.3	1.5
Real Earnings Growth %	-6.2	-0.1	59.6	61.7	7.6
Performance Analysis					
Gross Margin %	no data	no data	29.6	34.9	34.0
EBIT/Sales %	9.1	8.7	10.7	12.5	11.2
AIR/Sales %	0.0	0.1	0.4	1.7	0.0
PAT/Sales	5.2	4.4	5.7	6.9	5.5
NWC/Sales %	4.7	6.2	6.9	7.7	6.8
Inventory Days	64.9	55.8	60.2	67.3	64.7
Receivable Days	74.2	98.3	91.5	70.4	86.6
Payable Days	81.3	93.9	86.8	92.3	101.3
Asset Turnover	1.6	1.6	1.6	1.7	1.4
Investment Analysis					
PAT/Shareholders Equity %	23.8	22.3	29.1	28.5	21.2
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.64	0.68	0.68	0.59	0.64
Liquidity (Current Ratio)	1.1	1.2	1.2	1.2	1.2
Actual Yn State					
Actual Yn State	I	I	H	H	H
Naïve Model (SVA)	0	-1	-1	0	-1
CHAID Model (PAT/SHE)	0	0	0	0	0
De La Rey	0.32	0.07	0.38	0.73	0.24

8.3.18 Pioneer Holdings

Table 134: FRAM for Pioneer Holdings

PIONEER H					
Non-failed	Hold				
Year	1975	1976	1977	1978	1979
Growth					
Sales Growth %	no data	no data	no data	no data	0.7
Real Earnings Growth %	no data	no data	no data	-19.8	-1.0
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	85.1	94.5
AIR/Sales %	no data	no data	no data	-0.2	9.4
PAT/Sales	no data	no data	no data	42.6	52.4
NWC/Sales %	no data	no data	no data	-52.9	-49.1
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	no data	no data	no data	13.1	14.9
Payable Days	no data	no data	no data	27.7	13.8
Asset Turnover	no data	no data	no data	0.1	0.1
Investment Analysis					
PAT/Shareholders Equity %	9.9	6.5	6.6	7.1	9.5
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.31	0.30	0.26	0.26	0.26
Liquidity (Current Ratio)	0.4	0.3	0.3	0.3	0.4
Actual Yn State					
Actual Yn State	no data	no data	no data	I	I
Naïve Model (SVA)	0	-1	-1	-1	0
CHAID Model (PAT/SHE)	-1	-1	-1	-1	-1
De La Rey	0.31	0.04	0.13	0.21	0.42

The non-failed company was analysed from the 1975 to the 1979 period (Table 134). Only two years of Sales information were provided for this company and given the phenomenally high EBIT/Sales ratios, the Sales data is assumed to be suspect. The Current ratio points towards good working

capital management. The negative REG caused the company to be classified into the Intermittent State. This also ties in with the unsatisfactory Shareholder's Returns. The predictive accuracy of the models is satisfactory with both the Naïve and De La Rey models classifying the company as Healthy in 1979.

8.3.19 Romatex

Table 135: FRAM for Romatex

ROMATEX					
Non-failed	Hold				
Year	1994	1995	1996	1997	1998
Growth					
Sales Growth %	-3.0	-40.3	-11.1	-33.8	23.7
Real Earnings Growth %	-2.7	-32.9	-97.0	-204.1	-78.7
Performance Analysis					
Gross Margin %	no data	22.6	19.3	12.8	14.9
EBIT/Sales %	9.3	6.6	0.5	-8.6	1.3
AIR/Sales %	-0.4	-0.2	0.2	-3.4	0.1
PAT/Sales	5.7	4.8	0.2	-8.9	1.0
NWC/Sales %	18.2	23.3	25.4	30.2	25.7
Inventory Days	51.9	69.2	67.5	94.4	75.4
Receivable Days	80.5	82.3	76.7	99.5	74.7
Payable Days	68.0	63.4	66.7	91.4	64.1
Asset Turnover	1.4	1.5	1.5	1.2	1.6
Investment Analysis					
PAT/Shareholders Equity %	11.6	9.7	0.4	-14.7	2.1
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.32	0.29	0.27	0.30	0.28
Liquidity (Current Ratio)	1.8	2.2	2.4	2.2	2.4
Actual Yn State					
Actual Yn State	I	I	I	D	I
Naïve Model (SVA)	0	-1	-1	-2	-1
CHAID Model (PAT/SHE)	-1	-1	-2	-2	-1
De La Rey	0.69	0.52	-0.02	-1.18	0.17

Romatex is a non-failed company that was analysed from the 1994 to 1998 period (Table 135). From 1994 to 1997, the company experienced negative RSG and deteriorating REG, moving it from the Intermittent State to the Distressed State in 1997. This is of serious concern when noting the decline in both the Gross Margin and EBIT/Sales. This is also evidenced in the poor Shareholder's Returns. Further, the company's Inventory and Receivables were also in need of attention. The positive profitability in 1998, coupled with a relatively poor REG, pulled the company back into the Intermittent State. The models displayed good predictive accuracy with the De La Rey model providing an unknown classification for both 1996 and 1998.

8.3.20 Schachat Holdings

The non-failed company was analysed from the 1973 to the 1977 period (Table 136). Lack of information makes it difficult to provide a proper analysis of the company. The negative REG placed the company in the Intermittent State from 1975 to 1977. Shareholder's Returns were good in 1973 and 1976 only, with 1974 and 1975 showing a steady decline of 33.6% and 36.3% respectively, when compared to 1973. Perhaps, the drop between 1976 and 1977 of 46.2% in Shareholder's Returns is more shocking. The predictive ability of the models was not as good as expected.

Table 136: FRAM for Schachat Holdings

SCHACHAT					
Non-failed	Hold				
Year	1973	1974	1975	1976	1977
Growth					
Sales Growth %	no data	no data	no data	no data	no data
Real Earnings Growth %	no data	no data	-10.0	-8.6	-54.8
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	no data	no data
AIR/Sales %	no data	no data	no data	no data	no data
PAT/Sales	no data	no data	no data	no data	no data
NWC/Sales %	no data	no data	no data	no data	no data
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	no data	no data	no data	no data	no data
Payable Days	no data	no data	no data	no data	no data
Asset Turnover	no data	no data	no data	no data	no data
Investment Analysis					
PAT/Shareholders Equity %	22.3	14.8	14.2	18.2	9.8
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.71	0.67	0.63	0.62	0.58
Liquidity (Current Ratio)	1.2	1.3	1.7	1.5	1.4
Actual Yn State					
Naïve Model (SVA)	0	-1	-1	0	-1
CHAID Model (PAT/SHE)	0	0	0	0	-1
De La Rey	-0.16	-0.37	-0.27	-0.02	-0.36

8.3.21 Stuttafords

Table 137: FRAM for Stuttafords

STUTTAFORDS					
Non-failed	Hold				
Year	1974	1975	1976	1977	1978
Growth					
Sales Growth %	2.5	2.2	-6.5	-2.3	-3.1
Real Earnings Growth %	no data	-45.8	-56.5	-40.5	-54.5
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	9.1	9.8	8.4	8.7	6.6
AIR/Sales %	1.5	0.0	0.1	0.1	0.1
PAT/Sales	5.4	5.1	4.2	4.2	3.3
NWC/Sales %	14.6	11.3	9.9	9.0	8.0
Inventory Days	51.1	53.8	48.7	51.5	54.9
Receivable Days	72.0	66.2	61.7	59.7	61.7
Payable Days	43.7	43.9	48.6	49.8	50.9
Asset Turnover	0.8	0.9	0.9	0.9	0.9
Investment Analysis					
PAT/Shareholders Equity %	5.7	5.9	5.1	5.4	4.5
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.21	0.24	0.24	0.25	0.28
Liquidity (Current Ratio)	1.7	1.5	1.5	1.4	1.3
Actual Yn State					
Actual Yn State	no data	I	I	I	I
Naïve Model (SVA)	0	-1	-1	-1	-1
CHAID Model (PAT/SHE)	-1	-1	-1	-1	-1
De La Rey	0.35	0.33	0.23	0.23	0.09

The non-failed company was analysed over the period 1974 to 1978 (Table 137). Over the last four years it remained steadily in the Intermittent State. RSG was positive for the first two years and then negative thereafter. Of greater concern is the magnitude of the negative REG. This is evidenced in the decline of EBIT/Sales from 9.1% and 9.8% in 1974 and 1975, respectively to an unsatisfactory 6.6% in 1978. Net Working Capital was well managed but care needed to be taken to ensure that the Receivables did not slip away.

The Asset Turnover is indicative of a company that has a high asset base and required more Sales. Shareholder's Returns were poor throughout the five year period. The predictive ability of the models is in line with expectations. The De La Rey model regarded the company as being generally Healthy but being in the "Unknown" state in 1978.

8.3.22 Tuckers

Tuckers is a non-failed company that was analysed from 1978 to 1982 (Table 138). The company moved from the Distressed State in 1978 to the Intermittent State for the next three years and finally reached the Healthy State in 1982. The lack of information makes it difficult to give a proper analysis of this company. It is fairly evident though that the company experienced a loss in 1978; positive profitability but declining in real terms between 1979 and 1981 and finally got its act together to improve its State of Health in 1982. This is also evidenced by the improving Shareholder's Returns. The company's increase in gearing by a factor of over 2 between 1979 and 1982 is of concern possibly indicating that the company required external borrowings to fund its operations. The trend in the Current ratio is indicative of very poorly managed Net Working Capital that was gradually brought under control. The predictive ability of the models is good and adequately reflects the company's State of Health.

Table 138: FRAM for Tuckers

TUCKERS					
Non-failed	Hold				
Year	1978	1979	1980	1981	1982
Growth					
Sales Growth %	no data	no data	no data	no data	no data
Real Earnings Growth %	-129.0	-60.9	-38.6	-32.9	59.3
Performance Analysis					
Gross Margin %	no data	no data	no data	no data	no data
EBIT/Sales %	no data	no data	no data	no data	no data
AIR/Sales %	no data	no data	no data	no data	no data
PAT/Sales	no data	no data	no data	no data	no data
NWC/Sales %	no data	no data	no data	no data	no data
Inventory Days	no data	no data	no data	no data	no data
Receivable Days	no data	no data	no data	no data	no data
Payable Days	no data	no data	no data	no data	no data
Asset Turnover	no data	no data	no data	no data	no data
Investment Analysis					
PAT/Shareholders Equity %	-5.3	4.5	4.4	7.9	18.5
Financial Status					
Solvency (Total Liabilities/Total Assets)	0.22	0.16	0.16	0.29	0.50
Liquidity (Current Ratio)	5.0	7.7	8.0	4.1	1.3
Actual Yn State					
Actual Yn State	D	I	I	I	H
Naïve Model (SVA)	-2	-1	-1	-1	-1
CHAID Model (PAT/SHE)	-2	-1	-1	-1	0
De La Rey	-0.60	0.52	0.52	0.18	0.42

8.4 GENERAL OBSERVATIONS

In analysing the Holdout sample companies together with the FRAM cut-off points in the previous chapter, some general observations were noted. These observations are summarised in tabular form (Table 139) to enable an easier visual analysis.

Table 139: Summary of FRAM Findings

	Healthy	Intermittent	Distressed	Severely Distressed
Growth	RSG $\geq 2\%$	$0\% \leq \text{RSG} < 2\%$	RSG $< 0\%$	RSG $< 0\%$
	REG $\geq 0\%$	$-100\% < \text{REG} < 0\%$	REG $\leq -100\%$	REG $\leq -100\%$
Performance Analysis	Positive PAT	Positive PAT	Negative PAT	Negative PAT
	EBIT/Sales $\geq 10\%$	$2\% \leq \text{EBIT/Sales} < 10\%$	EBIT/Sales $< 2\%$	EBIT/Sales $< 2\%$
	Good to average managed NWC	Poorly managed NWC	Very poorly managed NWC	Very poorly managed NWC
Investment Analysis	PAT/SHE $\geq 15\%$	$0\% \leq \text{PAT/SHE} < 15\%$	PAT/SHE $< 0\%$	PAT/SHE $< 0\%$
Financial Status	Positive SHE TL/TA ≤ 0.65	Positive SHE $0.65 < \text{TL/TA} < 1$	Positive SHE -	Zero or Negative SHE TL/TA ≥ 1
State	State 0	State -1	State -2	State -2

Given the dynamics and ever changing environment under which companies operate, these observations are not intended to be “hard and fast rules” for the various states from Healthy to Severely Distressed. The Financial Status

(TL/TA ratio) for the “Distressed State” is omitted as by definition, the company would either be in the “Intermittent” or “Severely Distressed” State. Further, it needs to be pointed out that the list of ratios and/or categories are not exhaustive and should be adapted to suit different companies’ needs.

Interesting observations were also noted whereby a company was classified in one State by the first stage model but displayed other State characteristics in the second stage model variables. It was also observed that even the non-failed companies battled with negative RSG and REG and, poor working capital management, as well. As intended, the second stage, Financial Risk Analysis Model provides additional and key information to enable stakeholders to make informed decisions and to take the appropriate action.

Tables 140 to 142 provide the classification statistics for the first stage models namely, Naïve, CHAID and De La Rey, respectively that are used in FRAM. Detailed computations on a per company basis can be found in Appendix M.

Table 140: Naïve Model – Classification Statistics

	A0	A-1	A-2	Total data years
P0	14	5	0	19
P-1	5	24	0	29
P-2	0	0	29	29
Total data Years	19	29	29	77
Missing data years = 33; % Accuracy = 87%				

A = Actual State and P = Predicted State

Table 141: CHAID Model – Classification Statistics

	A0	A-1	A-2	Total data years
P0	19	8	0	27
P-1	0	20	0	20
P-2	0	1	29	30
Total data Years	19	29	29	77
Missing data years = 33; % Accuracy = 88.3%				

A = Actual State and P = Predicted State

Table 142: De La Rey Model – Classification Statistics

	A0	A-1	A-2	Total data years
P0	18	16	2	36
P-1	0	0	0	0
P-2	1	5	26	32
Total data Years	19	21	28	68
Missing data years = 33; “Unknown” predictions = 9; % Accuracy = 57.1% (out of 68+9=77 total data years)				

A = Actual State and P = Predicted State

In using FRAM to analyse the companies, it was pointed out that in some years, the data appeared to be suspect. In developing the classification statistics, these suspect years were not filtered out. Further, the De La Rey model cannot predict State -1 and will therefore be penalized in this classification matrix.

CHAPTER 9 – SUMMARY AND CONCLUSIONS

The prediction of a company's financial health is of critical importance to a variety of stakeholders ranging from auditors, creditors, customers, employees, financial institutions and investors through to management. Each of these stakeholders, given their various roles, would have somewhat different agendas but with the common objective being that the company has the best possible State of Health and continues as a going concern into the foreseeable future.

There has been considerable research in this field; with numerous overseas dichotomous studies such as Beaver (1966), Altman (1968), Deakin (1972), Altman *et al* (1977), Taffler (1977), Ohlson (1980) and Zavgren (1985). On the South African front, Strebel and Andrews (1977), Daya (1977), De La Rey (1981), Clarke *et al* (1991) and Court *et al* (1999) also produced dichotomous studies. All these studies have provided either a "Healthy" or a "Failed/Likely to Fail" state for a company. These models have all produced good results and some of these models are well known globally. However, Fitzpatrick (1934) made the distinction between failing and failed companies and noted that companies generally passed through several transitional stages of financial distress prior to business failure. This argument is also supported by Poston *et al* (1994) who stated that this classification does not recognise that a failing company may be able to recover prior to it reaching failure. In their study, Hill *et al* (1996) observed that the financial ratio means for financially distressed companies differed from those of "Healthy" and "Failed"

companies. Companies cannot therefore simply be classified as “Healthy” or “Failed”.

Both Lau’s (1987) and Ward’s (1994) multi-state models were an improvement to the dichotomous studies and both have produced excellent results. A model that can provide additional information to all stakeholders is of immense value. However, these models also have some drawbacks. For one, the models had several “States of Distress” but only one “State of Health”. The limitation of this approach is that non-failed companies would also have different “States of Health” and an incorrect grouping of the different “States of Health” into one state whilst at the same time specifying different “States of Distress” could result in an inefficient or skewed model being developed. Whereas “Dividend reduction” has been identified as important when analysing and attempting to identify distressed companies, its general use to classify a company as Distressed can be misleading especially if the said company omitted Dividend payments to fund growth/investments. Thus, in using these models, the precise reason for “omitting or reducing Dividend payments” needs to be clearly understood to avoid a misclassification which could have serious repercussions for the company and hence its stakeholders in the market place. Further, the last “State” was classified as “Bankruptcy and Liquidation” and; “Chapter XI protection”, respectively. This is merely a legal formality and financial ratios cannot theoretically be used to predict this legal event. Thus, this state should not be used in developing a multi-state model.

Lukhwareni (2005) developed the only South African multi-stage study which is a fresh approach to analysing companies, providing good theoretical insight and guidance into issues possibly faced by companies in each of the eight identified stages. In addition, the study would appeal to sector specific investors with the primary aim of investing in companies that show wealth creation and sustainable growth. One of the drawbacks of the study was that by using absolute values for Turnover and Operating income, the three-variable matrix would be biased towards the larger Turnover and Operating Income companies and thereby, penalise the medium to small companies. This would result in so-called misclassifications for these latter companies and hence, result in an inefficient or skewed model/matrix. It would, perhaps, have made more sense to use Turnover and Operating Income as ratios so as to ensure a fair approach to a company's stage classification. Perhaps, as a consequence thereof, a single model to classify any of the eight stages could not be developed and as a result, four separate, dichotomous models were developed to group a company loosely into either a "Winning Cluster" or a "Losing Cluster".

Notwithstanding all of the above arguments, all the above-mentioned models would be classified as first stage, initial screening models and the onus would be on the stakeholder to analyse the individual model parameters to get a broader insight into the company. This study has not adopted the rigid "Healthy" or "Failed" dichotomous methodology and has focused on following a two stage approach to identifying (first stage) and analysing (second stage) the States of Health in a company. The second stage model enables

stakeholders, particularly management, to conduct a more in-depth analysis to ascertain if there are any underlying problems in the company and if need be, revise their action plan.

As such, the objectives of this study were to:

- Identify the States of Health in each company
- Derive Statistical models to predict the States of Health in each company (First Stage)
- Test the Predictive ability of the models
- Test the best two current year model/s (Y_n) against a notable South African model
- Provide a more in-depth analysis of the company (Second Stage)

Companies to be researched were restricted to South African companies only with the time frame for the research being restricted to companies from the 1970 to the 1999 period. Great difficulty was experienced in the gathering of a sample of companies to conduct this study. The cross referrals between the Johannesburg Stock Exchange, Liquidators and the Office of the Registrar of Companies were very frustrating. This is unlike the USA where information on financial distress for companies can be obtained from the Wall Street Journal Index and company financial data can be extracted from the annual industrial and research COMPUSTAT tapes. It would therefore be useful if a database of all “Failed/Distressed” companies, and even “Healthy” ones, could be compiled which would include detailed financial information as well as company risk profiles so as to facilitate further research. Given these

limitations, the companies selected for this study were taken from the studies of Daya (1977), De La Rey (1981) and Court *et al* (1999) and, comprised a total of forty-two companies. The study also relied solely on financial information from the Bureau for Financial Analysis, University of Pretoria; with Turnover and Gross Margin information lacking in most of the companies. In addition, in calculating the Cost of Capital, owing to lack of information, the Prime Rate had to be used as a substitute for the company risk profile.

Limitations aside, for the first stage models, three States of Health were derived by analysing the trends in Profit after Tax (PAT) and Real Earnings Growth (REG):

- Healthy (H) PAT \geq 0 & REG \geq 0 (State 0)
- Intermittent (I) PAT \geq 0 & REG<0 (State -1)
- Distressed (D) PAT<0 (State -2)

Both three year and five year PAT averages for REG calculations were used to determine the superior definition for the Intermittent State. The choice of three years was, to ensure that the stakeholders could pick up a possible problem with a company as quickly as possible. However, taking into consideration that a single year of poor Earnings has a 33% impact on the average and could result in a company fluctuating between the States unnecessarily and thereby indicating instability; it was also decided to test the five year average thereby reducing the said impact to 20%. This implies that in addition to the different statistic techniques employed in this study, two different sets of models were developed. Models were developed for the

current year (Y_n), one (Y_{n-1}), two (Y_{n-2}) and three years (Y_{n-3}) forward using a Test sample of twenty companies and their predictive accuracy determined by using a Holdout sample of twenty-two companies and all their data points or years of information. Traditionally, those researchers that tested the predictive accuracy of their models against a Holdout sample, either used the Test sample companies but in a different year or an independent sample of companies. In both cases, only a single data point or year of information was used for each company. In this study, owing to the small sample size, a somewhat radical approach was adopted whereby all the available years of information for each company were used in the Holdout sample, thereby comprising two hundred and thirty-one (231) years and one hundred and ninety-eight (198) years of information for the three and five year average models, respectively. The statistical methods employed were a Naïve model using the simple Shareholder Value Added ratio, Chi-square Automatic Interaction detection (CHAID) and Multiple Discriminant Analysis (MDA).

All three of the statistical techniques employed in the development of the three year average models yielded excellent results for the Y_n Test sample: Naïve (100%), MDA (85%) and CHAID (95%). Y_n Holdout sample testing also yielded good results for the Naïve (81.8%) and CHAID (79.7%) models. The MDA result (54.5%) was very disappointing. For the Y_{n-1} to Y_{n-3} years, the Test sample results were very good but the Holdout sample results yielded satisfactory to poor results.

The best two Y_n models namely, the Naïve and the CHAID models, were compared to the notable De La Rey (1981) model. As the latter model is a dichotomous one, modifications had to be made to both the Naïve and CHAID models to facilitate a comparison. Three different approaches were adopted and in all cases both the modified Naïve (100%, 81.8%, 100%) and the modified CHAID (99.6%, 81.8%, 97.4%) produced superior results to the De La Rey model (82.3%, 64.5%, 72.7%). Notwithstanding the modified models; the unmodified Naïve (81.8%) and the unmodified CHAID (79.7%) models also displayed favourable results in comparison. The added advantage, though, of the unmodified Naïve and CHAID models is that they provide an extra state (Intermediate State) of information.

Similar to the three year average models, all three of the statistical techniques employed in the development of the five year average models for the Y_n year, yielded excellent results for the Test sample: Naïve (100%), MDA (95%) and CHAID (95%). Holdout sample testing also yielded good results for the Naïve (81.3%) and CHAID (83.8%) models; the latter being superior results to that achieved in the three year average model. Here too, the MDA result (52.5%) was very disappointing. For the Y_{n-1} to Y_{n-3} years, the Test sample results were very good but the Holdout sample results yielded satisfactory to poor results.

Similar to the three year average models, the best two Y_n models namely, the Naïve and the CHAID models were compared to the notable De La Rey (1981) model. Once again, three different approaches were adopted and in

all cases, both the modified Naïve (100%, 81.3%, 100%) and the modified CHAID (100%, 85.9%, 98%) produced superior results to the De La Rey model (84.8%, 62.6%, 75.3%). Despite the modified models; the unmodified Naïve (81.3%) and CHAID (83.8%) models also displayed favourable results in comparison. The added advantage, though, of the unmodified Naïve and CHAID models is, once again, the benefit of an extra state (Intermediate State) of information.

For both the three and five year average models, more Holdout sample data was available for the 1970s as opposed to the 1980s and 1990s. As such, separate Holdout results were tabled for each of the three periods. In both instances, the 1970s and 1980s yielded favourable and comparable results to the Holdout sample as a whole for each of the years Y_n to Y_{n-3} . Notwithstanding the relatively small sample size in the 1990s, the results were fairly good.

Whereas it is understood that different statistical methods make different assumptions, it is interesting to note that both the Naïve and CHAID models produced overall superior results to the more complicated MDA statistical method. However, it needs to be pointed out that all three statistical methods prefer large samples for model derivation; with the MDA method also necessitating the sample to conform to a multivariate normal distribution. It is perhaps for these reasons that the MDA models produced mediocre results.

From a statistical perspective, in order to ascertain which was the superior set of models between the three and five year average models, the combined average of all three types of statistical models was computed for each of the years Y_n to Y_{n-3} . Overall, the five year set of models came out to be marginally superior with an average of 51.4%, compared to the three year average of 50.9%. Notwithstanding the statistical analysis and more importantly, the five year average models do provide some degree of smoothing of the Real Earnings Growth (REG) thus possibly minimising incidents of misclassifications and unnecessary “hopping” between the States.

It cannot be overly stressed that both the three and five year average models are first stage models and should be used for initial screening only. The reason for this is that prediction models, in general, are not 100% accurate all of the time and their results should not be looked at in isolation. Misclassifications can place a company in a precarious position when analysing its State of Health. Another drawback of first stage models is that the onus is on the stakeholder to scrutinize the first stage model parameters to analyse its predicted State of Health.

Thus, the development of the second stage, Financial Risk Analysis Model (FRAM), is a departure from the traditional analysis of financial health\distress and adopts a contemporary approach to provide additional and key information, independent of the first stage models, to enable stakeholders to make informed decisions. In addition, FRAM presents five years of financial analysis using key variables of interest thus enabling a trend analysis as well.

In determining the key variables of interest for FRAM, the researcher drew on his broad managerial experience, as well as on the work of Thompson (1993:158-181) to categorise the variables into the following groups namely, Growth, Performance Analysis, Investment Analysis and Financial Status. In analysing the Growth of a company, both Real Earnings Growth (REG) and Real Sales Growth (RSG) were included in the model. Performance Analysis looked at selected Profitability, Net Working Capital and the Asset Turnover ratios. Investment Analysis compared the profitability of a company to that of the funds provided by shareholders. For the Financial Status, the health of a company was observed from a Solvency and Liquidity perspective. In addition, considering that the five year average models were the marginally superior set of models, both the Y_n Naïve, CHAID models; as well as the De La Rey model (1981) formed part of FRAM.

Further, in analysing the States of Health that were derived in the development of the first stage models, it was felt that for FRAM, State -2 should be separated into two categories: Distressed and Severely Distressed. This distinction is of vital importance as the identifying variable is whether Shareholder's Equity (SHE) is positive or negative, respectively. Hence, a company would be categorised as:

- Healthy (H) (State 0)
- Intermittent (I) (State -1)
- Distressed (D) (State -2 & SHE>0)
- Severely Distressed (SD) (State -2 & SHE≤0)

The Test sample was used to determine the cut-off points for the above mentioned categories of variables. Given the dynamics and ever changing environment under which companies operate, these cut-off points are not intended to be “hard and fast rules” for the various States from Healthy to Severely Distressed. One of the limitations of this study was that given the small sample size, industry effects on the models were ignored. Notwithstanding, the flexibility of FRAM allows for the stakeholders to choose or add their own categories of ratios and cut-off points to suit their particular industry and risk profiles and, management styles.

FRAM was used to analyse the Holdout sample companies. Interesting observations were noted whereby a company was classified in one State by the first stage model but displayed other State characteristics in the second stage model variables. It was also observed that even the non-failed companies battled with negative RSG and REG and, poor working capital management, as well. Further, it was also observed that a company could move between the Healthy, Intermediate and Distressed (and Severely Distressed) States in either direction, including skipping one of the latter states, given that it operates in a dynamic, ever changing and sometimes unpredictable business environment.

As pointed out earlier, this study has focused on following a two stage approach to identifying (first stage) and analysing (second stage) the States of Health in a company. The first stage, multi-state model would avoid the limitations of the previously developed dichotomous and multi-state models in

predicting a company's State of Health. Notwithstanding that the study produced somewhat disappointing Holdout sample results for the Y_{n-1} to Y_{n-3} models, the three-state Y_n first stage model is a move away from the dichotomous approach for South African businesses and is especially useful for new companies that do not have at least five years of financial information to determine their Earnings trend or vulnerability. Further, an additional state (Intermittent State) is of immense value to stakeholders and provides them with the much needed information to, perhaps, avoid the dreaded final state; the latter having consequential market place repercussions. However, any first stage model taken in isolation, could in some cases incorrectly predict a company's health thereby placing it in a vulnerable situation.

Thus, a second stage analytical model (FRAM) is a contemporary approach and it was developed to provide underlying information or clues, independent of the first stage model, so as to enable the stakeholder, especially management to establish a more meaningful picture of the company. This paves the way for the appropriate strategy and course of action to be followed, to take the company to the next level; whether it is taking a company out of a Distressed (or Severely Distressed) situation or further improving on its Healthy status.

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Appendix A: Analysis of Variance – All Data

		Sum of Squares	df	Mean Square	F	Sig.
CA/CL	Between Groups	267.331	2	133.666	3.725	.025
	Within Groups	17116.459	477	35.884		
	Total	17383.790	479			
CA/TA	Between Groups	1.158	2	.579	13.755	.000
	Within Groups	20.078	477	.042		
	Total	21.235	479			
CA2/CL	Between Groups	291.654	2	145.827	3.994	.019
	Within Groups	17414.108	477	36.508		
	Total	17705.762	479			
CA2/TA	Between Groups	.178	2	.089	3.839	.022
	Within Groups	11.043	477	.023		
	Total	11.220	479			
CL/TA	Between Groups	22143.037	2	11071.519	34.497	.000
	Within Groups	153088.240	477	320.940		
	Total	175231.277	479			
CL/TL	Between Groups	4015.246	2	2007.623	4.881	.008
	Within Groups	196208.263	477	411.338		
	Total	200223.509	479			
EBIT/SALES	Between Groups	13953.485	2	6976.743	9.945	.000
	Within Groups	262363.685	374	701.507		
	Total	276317.170	376			
EBIT/TA	Between Groups	26507.699	2	13253.850	157.532	.000
	Within Groups	40131.976	477	84.134		
	Total	66639.675	479			
INV Days	Between Groups	21912.886	2	10956.443	9.570	.000
	Within Groups	397271.118	347	1144.874		
	Total	419184.005	349			
INV/TA	Between Groups	1957.972	2	978.986	7.170	.001
	Within Groups	57892.299	424	136.538		
	Total	59850.271	426			
LTL/TA	Between Groups	5171.996	2	2585.998	6.671	.001
	Within Groups	184900.491	477	387.632		
	Total	190072.487	479			

NWC/Sales	Between Groups	63200.885	2	31600.443	2.155	.117
	Within Groups	5483793.698	374	14662.550		
	Total	5546994.583	376			
NWC/TA	Between Groups	2335.325	2	1167.662	3.655	.027
	Within Groups	152372.352	477	319.439		
	Total	154707.677	479			
PAT/SALES	Between Groups	11952.199	2	5976.099	16.227	.000
	Within Groups	137734.466	374	368.274		
	Total	149686.665	376			
PAT/SHE	Between Groups	528833.998	2	264416.999	61.917	.000
	Within Groups	2037038.459	477	4270.521		
	Total	2565872.457	479			
PAT/SHE D	Between Groups	1.018	2	.509	20.883	.000
	Within Groups	11.630	477	.024		
	Total	12.648	479			
PAT/TA	Between Groups	25117.446	2	12558.723	165.098	.000
	Within Groups	36284.474	477	76.068		
	Total	61401.920	479			
PAT/TL	Between Groups	105724.059	2	52862.030	38.464	.000
	Within Groups	655557.982	477	1374.335		
	Total	761282.042	479			
PAY Days	Between Groups	3497.002	2	1748.501	1.170	.311
	Within Groups	558829.855	374	1494.197		
	Total	562326.857	376			
REC Days	Between Groups	551852.721	2	275926.361	1.446	.237
	Within Groups	71365436.889	374	190816.676		
	Total	71917289.610	376			
REC/TA	Between Groups	578.144	2	289.072	1.419	.243
	Within Groups	97191.194	477	203.755		
	Total	97769.338	479			
SALES/TA	Between Groups	6.261	2	3.130	5.665	.004
	Within Groups	206.672	374	.553		
	Total	212.933	376			
SHE/TA	Between Groups	54825.870	2	27412.935	45.920	.000
	Within Groups	284755.509	477	596.972		
	Total	339581.379	479			

SVA	Between Groups	171.938	2	85.969	173.897	.000
	Within Groups	235.813	477	.494		
	Total	407.751	479			
TEBIT/TA	Between Groups	13737.451	2	6868.726	172.338	.000
	Within Groups	19011.386	477	39.856		
	Total	32748.838	479			
TL/TA	Between Groups	42640.949	2	21320.475	37.738	.000
	Within Groups	269486.847	477	564.962		
	Total	312127.796	479			
AllShInd	Between Groups	10220.040	2	5110.020	5.754	.003
	Within Groups	400508.191	451	888.045		
	Total	410728.231	453			
AllShIndL	Between Groups	9339.821	2	4669.910	5.979	.003
	Within Groups	322584.968	413	781.077		
	Total	331924.788	415			
CPI%	Between Groups	183.807	2	91.903	12.670	.000
	Within Groups	3460.053	477	7.254		
	Total	3643.860	479			
GDFI	Between Groups	1581750130.961	2	790875065.480	7.606	.001
	Within Groups	49600065916.365	477	103983366.701		
	Total	51181816047.325	479			
GDP	Between Groups	157927758021.879	2	78963879010.940	20.057	.000
	Within Groups	1877924030184.070	477	3936947652.378		
	Total	2035851788205.948	479			
IndustInd	Between Groups	9179.702	2	4589.851	5.315	.005
	Within Groups	389492.391	451	863.619		
	Total	398672.094	453			
IndustIndL	Between Groups	7783.712	2	3891.856	5.077	.007
	Within Groups	316590.725	413	766.563		
	Total	324374.437	415			
Prime	Between Groups	493.980	2	246.990	14.240	.000
	Within Groups	8273.306	477	17.344		
	Total	8767.286	479			

SPREADSHEETS

APPENDIX B1:	3 Year n Models (Test Sample)
APPENDIX B2:	3 Year n Models (Holdout Sample)
APPENDIX C1:	3 Year n-1 Models (Test Sample)
APPENDIX C2:	3 Year n-1 Models (Holdout Sample)
APPENDIX D1:	3 Year n-2 Models (Test Sample)
APPENDIX D2:	3 Year n-2 Models (Holdout Sample)
APPENDIX E1:	3 Year n-3 Models (Test Sample)
APPENDIX E2:	3 Year n-3 Models (Holdout Sample)
APPENDIX F:	3 Year n De La Rey Comparisons
APPENDIX G1:	5 Year n Models (Test Sample)
APPENDIX G2:	5 Year n Models (Holdout Sample)
APPENDIX H1:	5 Year n-1 Models (Test Sample)
APPENDIX H2:	5 Year n-1 Models (Holdout Sample)
APPENDIX I1:	5 Year n-2 Models (Test Sample)
APPENDIX I2:	5 Year n-2 Models (Holdout Sample)
APPENDIX J1:	5 Year n-3 Models (Test Sample)
APPENDIX J2:	5 Year n-3 Models (Holdout Sample)
APPENDIX K:	5 Year n De La Rey Comparisons
APPENDIX L1:	Financial Risk Analysis Model (Test Sample)
APPENDIX L2:	Financial Risk Analysis Model (Holdout Sample)
APPENDIX M:	Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

APPENDIX B1 : 3 Year n Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

	I	Yn Fisher Discriminant Analysis						Y
Company & year	Sample Size	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State
A&P 1978	1	24.06	35.59	26.99	-1	1	1	-1
AVBAK 1973	1	-19.44	11.89	21.59	0	1	1	0
BERZACK 1978	1	-22.99	11.67	24.76	0	1	1	0
BROMAIN 1977	1	6.11	22.89	18.66	-1	1	1	-1
BTR 1979	1	-42.30	-4.54	10.43	0	1	1	0
CHEMSERVE 1974	1	-19.62	7.19	11.94	0	1	1	0
COATES 1976	1	-13.49	15.59	23.29	0	1	1	0
DESIREE 1977	1	-1.16	19.92	19.83	-1	0	1	0
DUBIN 1976	1	-16.49	10.39	15.45	0	1	1	0
FINTECH 1976	1	-41.74	-6.55	5.67	0	1	1	0
FOWLER 1979	1	55.25	51.10	27.76	-2	1	1	-2
FRASERS 1977	1	-18.20	11.23	18.95	0	1	1	0
GLEN ANIL 1976	1	135.48	112.08	73.85	-2	0	1	-2
HANHILL 1976	1	36.63	44.79	33.47	-1	1	1	-1
HEPWORTHS 1979	1	65.23	60.19	36.64	-2	1	1	-2
LAWSON 1976	1	76.67	61.79	40.56	-2	1	1	-2
LTA 1977	1	-33.69	-2.09	6.83	0	1	1	0
LUCYS 1975	1	77.79	58.56	32.68	-2	1	1	-2
MARSHALL 1977	1	9.55	25.22	20.02	-1	1	1	-1
SIMBA 1973	1	33.69	37.79	21.81	-1	0	1	-2

Total	20					17	20	
Predictive Accuracy						85%		

APPENDIX B1 : 3 Year n Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
A&P 1978	1	1
AVBAK 1973	1	1
BERZACK 1978	1	1
BROMAIN 1977	1	1
BTR 1979	1	1
CHEMSERVE 1974	1	1
COATES 1976	1	1
DESIREE 1977	1	1
DUBIN 1976	1	1
FINTECH 1976	1	1
FOWLER 1979	1	1
FRASERS 1977	1	1
GLEN ANIL 1976	0	1
HANHILL 1976	1	1
HEPWORTHS 1979	1	1
LAWSON 1976	1	1
LTA 1977	1	1
LUCYS 1975	1	1
MARSHALL 1977	1	1
SIMBA 1973	1	1
Total	19	20
Predictive Accuracy	95%	

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
BACKCLOTHING 1970	1.40	7.07	0	4.57	0.34	no data	no data	no data
BACKCLOTHING 1971	1.31	-2.89	0	-1.51	-0.11	-2	-2	1
BACKCLOTHING 1972	1.11	-45.83	0	-12.35	-1.11	-2	-2	1
BACKCLOTHING 1973	1.61	-88.85	0	-12.32	-1.35	-2	-2	1
BACKCLOTHING 1974	1.28	-380.70	1	-13.62	-1.39	-2	-2	1
BIDVEST 1970	1.76	19.14	0	12.57	0.91	no data	no data	no data
BIDVEST 1971	1.96	10.89	0	7.80	0.50	no data	no data	no data
BIDVEST 1972	1.84	11.67	0	9.20	0.57	no data	no data	no data
BIDVEST 1973	1.85	9.79	0	12.10	0.67	-1	0	0
BIDVEST 1974	1.71	10.89	0	13.12	0.58	0	0	1
BIDVEST 1975	1.65	12.81	0	14.83	0.58	0	0	1
BIDVEST 1976	1.61	13.09	0	14.78	0.56	0	0	1
BIDVEST 1977	1.69	8.07	0	10.07	0.35	-1	-1	1
BIDVEST 1978	1.88	10.92	0	16.58	0.54	-1	0	0
BIDVEST 1979	1.88	8.17	0	12.20	0.48	-1	-1	1
BRICK CLAY 1970	1.02	8.01	0	13.34	0.57	no data	no data	no data
BRICK CLAY 1971	0.50	-13.06	0	-11.77	-0.67	-2	-2	1
BRICK CLAY 1972	1.54	0.45	0	0.50	0.02	no data	no data	no data
BRICK CLAY 1973	2.17	14.69	0	14.81	0.83	0	0	1
BRICK CLAY 1974	1.50	8.59	0	9.50	0.41	0	-1	0
BRICK CLAY 1975	1.83	18.22	0	16.40	0.69	0	0	1
BRICK CLAY 1976	1.86	17.79	0	15.47	0.65	0	0	1
BRICK CLAY 1977	1.62	11.21	0	9.46	0.40	-1	-1	1
BRICK CLAY 1978	1.38	8.02	0	5.25	0.25	-1	-1	1
BRICK CLAY 1979	1.66	10.93	0	7.35	0.43	-1	-1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
BACKCLOTHING 1970	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971	1	11.48	25.45	18.54	-1	0	1	-2
BACKCLOTHING 1972	1	23.23	30.51	17.21	-1	0	1	-2
BACKCLOTHING 1973	1	55.05	52.56	31.02	-2	1	1	-2
BACKCLOTHING 1974	1	-34.53	2.03	28.49	0	0	1	-2
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	1	15.22	31.89	28.22	-1	1	1	-1
BIDVEST 1974	1	3.61	24.14	23.80	-1	0	1	-1
BIDVEST 1975	1	-3.64	19.59	21.66	0	1	1	0
BIDVEST 1976	1	-6.46	17.63	20.42	0	1	1	0
BIDVEST 1977	1	9.18	27.13	24.40	-1	1	1	-1
BIDVEST 1978	1	7.05	27.50	27.33	-1	1	1	-1
BIDVEST 1979	1	16.59	32.86	28.87	-1	1	1	-1
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	1	-16.71	3.01	0.24	-1	0	1	-2
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	1	29.02	42.21	35.81	-1	0	1	0
BRICK CLAY 1974	1	-1.55	19.53	19.41	-1	0	1	-1
BRICK CLAY 1975	1	3.99	25.32	25.90	0	1	1	0
BRICK CLAY 1976	1	7.82	27.71	27.01	-1	0	1	0
BRICK CLAY 1977	1	6.03	24.78	22.68	-1	1	1	-1
BRICK CLAY 1978	1	0.92	20.04	17.97	-1	1	1	-1
BRICK CLAY 1979	1	13.59	29.42	24.70	-1	1	1	-1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
BACKCLOTHING 1970	no data	no data
BACKCLOTHING 1971	1	1
BACKCLOTHING 1972	1	1
BACKCLOTHING 1973	1	1
BACKCLOTHING 1974	1	1
BIDVEST 1970	no data	no data
BIDVEST 1971	no data	no data
BIDVEST 1972	no data	no data
BIDVEST 1973	1	1
BIDVEST 1974	0	1
BIDVEST 1975	1	1
BIDVEST 1976	1	1
BIDVEST 1977	1	1
BIDVEST 1978	1	1
BIDVEST 1979	1	1
BRICK CLAY 1970	no data	no data
BRICK CLAY 1971	1	1
BRICK CLAY 1972	no data	no data
BRICK CLAY 1973	1	1
BRICK CLAY 1974	0	1
BRICK CLAY 1975	1	1
BRICK CLAY 1976	1	1
BRICK CLAY 1977	1	1
BRICK CLAY 1978	1	1
BRICK CLAY 1979	1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
BRISTOL 1970	0.24	9.27	0	9.97	0.60	no data	no data	no data
BRISTOL 1971	0.11	7.22	0	8.55	0.48	no data	no data	no data
BRISTOL 1972	0.59	-6.85	0	-3.35	-0.25	-2	-2	1
BRISTOL 1973	1.01	5.94	0	3.27	0.24	0	-1	0
BRISTOL 1974	0.38	7.28	0	5.90	0.41	0	-1	0
BRISTOL 1975	0.32	6.09	0	5.69	0.29	0	-1	0
BRISTOL 1976	0.42	5.44	0	6.49	0.25	-1	-1	1
BRISTOL 1977	0.35	4.54	0	5.36	0.20	-1	-1	1
BRISTOL 1978	0.48	6.20	0	7.65	0.27	-1	-1	1
BRISTOL 1979	0.22	4.49	0	5.30	0.20	-1	-1	1
BURHOSE 1970	2.00	22.20	0	32.43	1.61	no data	no data	no data
BURHOSE 1971	2.38	24.73	0	45.15	1.81	no data	no data	no data
BURHOSE 1972	2.33	13.86	0	21.45	0.96	no data	no data	no data
BURHOSE 1973	2.56	0.37	0	0.63	0.03	-1	-1	1
BURHOSE 1974	2.46	8.47	0	14.40	0.52	-1	0	0
BURHOSE 1975	1.82	26.25	0	36.64	1.30	0	0	1
BURHOSE 1976	2.15	12.65	0	22.10	0.66	0	0	1
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	1.98	5.48	0	4.33	0.20	no data	no data	no data
BURHOSE 1979	1.54	27.36	0	15.33	0.98	no data	no data	no data
CONJERS 1970	1.39	19.44	0	11.21	0.87	no data	no data	no data
CONJERS 1971	1.46	19.78	0	14.54	0.95	no data	no data	no data
CONJERS 1972	1.52	17.30	0	14.19	0.89	no data	no data	no data
CONJERS 1973	1.27	-2.30	0	-1.58	-0.12	-2	-2	1
CONJERS 1974	1.71	13.42	0	14.38	0.68	0	0	1
CONJERS 1975	1.48	-24.08	0	-24.24	-1.02	-2	-2	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Pred State	
		F-2	F-1	F0	Pred State	# Correct		Sample Size
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	1	-30.21	-3.95	-0.62	0	0	1	-2
BRISTOL 1973	1	-18.64	5.93	8.32	0	1	1	-1
BRISTOL 1974	1	-64.45	-25.05	-9.98	0	1	1	-1
BRISTOL 1975	1	-67.87	-27.48	-11.59	0	1	1	-1
BRISTOL 1976	1	-63.23	-24.03	-9.10	0	0	1	-1
BRISTOL 1977	1	-65.28	-25.78	-10.66	0	0	1	-1
BRISTOL 1978	1	-62.21	-23.01	-7.97	0	0	1	-1
BRISTOL 1979	1	-73.28	-31.33	-14.16	0	0	1	-1
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	1	86.58	78.07	52.35	-2	0	1	-2
BURHOSE 1974	1	48.54	55.62	44.03	-1	1	1	-1
BURHOSE 1975	1	-42.56	-1.19	17.71	0	1	1	0
BURHOSE 1976	1	11.69	32.27	32.62	0	1	1	0
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	1	9.24	23.87	17.53	-1	0	1	-2
CONJERS 1974	1	0.80	22.54	23.32	0	1	1	0
CONJERS 1975	1	73.69	62.10	32.04	-2	1	1	-2

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
BRISTOL 1970	no data	no data
BRISTOL 1971	no data	no data
BRISTOL 1972	1	1
BRISTOL 1973	0	1
BRISTOL 1974	0	1
BRISTOL 1975	0	1
BRISTOL 1976	1	1
BRISTOL 1977	1	1
BRISTOL 1978	1	1
BRISTOL 1979	1	1
BURHOSE 1970	no data	no data
BURHOSE 1971	no data	no data
BURHOSE 1972	no data	no data
BURHOSE 1973	0	1
BURHOSE 1974	1	1
BURHOSE 1975	1	1
BURHOSE 1976	1	1
BURHOSE 1977	no data	no data
BURHOSE 1978	no data	no data
BURHOSE 1979	no data	no data
CONJERS 1970	no data	no data
CONJERS 1971	no data	no data
CONJERS 1972	no data	no data
CONJERS 1973	1	1
CONJERS 1974	1	1
CONJERS 1975	1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
DRG 1978	3.05	24.22	0	36.56	1.07	no data	no data	no data
DRG 1979	2.27	21.11	0	26.41	1.08	no data	no data	no data
FAIRWEATHER 1970	1.78	24.54	0	14.27	1.11	no data	no data	no data
FAIRWEATHER 1971	1.85	14.73	0	10.07	0.68	no data	no data	no data
FAIRWEATHER 1972	1.27	-19.22	0	-1.93	-0.20	-2	-2	1
FAIRWEATHER 1973	1.60	14.35	0	6.61	0.57	0	0	1
FAIRWEATHER 1974	1.59	-10.82	0	-4.82	-0.33	-2	-2	1
FAIRWEATHER 1975	1.92	12.83	0	8.08	0.42	0	-1	0
FAIRWEATHER 1976	1.64	-31.93	0	-13.89	-0.79	-2	-2	1
H PARKER 1970	0.84	50.08	0	5.09	0.58	no data	no data	no data
H PARKER 1971	0.97	8.27	0	1.03	0.11	no data	no data	no data
H PARKER 1972	0.95	-77.15	0	-8.55	-0.87	-2	-2	1
H PARKER 1973	1.01	-60.06	0	-17.26	-1.52	-2	-2	1
H PARKER 1974	1.33	38.41	0	16.96	1.47	0	0	1
H PARKER 1975	2.25	22.99	0	10.93	0.73	0	0	1
H PARKER 1976	1.21	3.52	0	0.89	0.06	-1	-1	1
H PARKER 1977	1.27	22.12	0	7.75	0.47	-1	-1	1
H PARKER 1978	1.07	7.61	0	2.31	0.14	-1	-1	1
H PARKER 1979	1.01	42.16	0	14.18	0.87	0	0	1
IL BACK 1970	1.68	10.58	0	7.94	0.49	no data	no data	no data
IL BACK 1971	2.40	1.02	0	1.11	0.06	no data	no data	no data
IL BACK 1972	1.78	-22.79	0	-15.94	-0.95	-2	-2	1
IL BACK 1973	1.61	-15.36	0	-8.89	-0.59	-2	-2	1
IL BACK 1974	1.28	-52.17	0	-15.48	-1.44	-2	-2	1
IL BACK 1975	1.44	12.83	0	5.59	0.37	0	-1	0
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	1.35	-56.88	0	-11.74	-0.77	-2	-2	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis						Y Pred State
		F-2	F-1	F0	Pred State	# Correct	Sample Size	
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	1	9.66	24.07	17.50	-1	0	1	-2
FAIRWEATHER 1973	1	11.35	27.65	23.29	-1	0	1	0
FAIRWEATHER 1974	1	37.04	42.21	27.66	-1	0	1	-2
FAIRWEATHER 1975	1	28.64	40.04	31.65	-1	0	1	0
FAIRWEATHER 1976	1	60.35	55.79	32.39	-2	1	1	-2
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	1	4.41	18.55	11.30	-1	0	1	-2
H PARKER 1973	1	28.12	32.51	16.42	-1	0	1	-2
H PARKER 1974	1	-29.38	2.37	11.77	0	1	1	0
H PARKER 1975	1	42.91	50.73	39.53	-1	0	1	0
H PARKER 1976	1	-0.49	17.83	14.77	-1	1	1	-1
H PARKER 1977	1	-11.87	11.89	13.90	0	0	1	0
H PARKER 1978	1	-12.67	9.80	10.33	0	0	1	-1
H PARKER 1979	1	-42.96	-7.82	4.24	0	1	1	0
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972	1	74.49	65.01	37.30	-2	1	1	-2
IL BACK 1973	1	47.27	48.15	29.68	-1	0	1	-2
IL BACK 1974	1	41.30	42.15	23.19	-1	0	1	-2
IL BACK 1975	1	3.46	21.90	19.27	-1	0	1	0
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	1	37.39	40.50	23.71	-1	0	1	-2

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
DRG 1978	no data	no data
DRG 1979	no data	no data
FAIRWEATHER 1970	no data	no data
FAIRWEATHER 1971	no data	no data
FAIRWEATHER 1972	1	1
FAIRWEATHER 1973	1	1
FAIRWEATHER 1974	1	1
FAIRWEATHER 1975	1	1
FAIRWEATHER 1976	1	1
H PARKER 1970	no data	no data
H PARKER 1971	no data	no data
H PARKER 1972	1	1
H PARKER 1973	1	1
H PARKER 1974	1	1
H PARKER 1975	1	1
H PARKER 1976	1	1
H PARKER 1977	0	1
H PARKER 1978	1	1
H PARKER 1979	1	1
IL BACK 1970	no data	no data
IL BACK 1971	no data	no data
IL BACK 1972	1	1
IL BACK 1973	1	1
IL BACK 1974	1	1
IL BACK 1975	1	1
IL BACK 1976	no data	no data
IL BACK 1977	1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
IL BACK 1978	1.32	-139.85	0	-30.81	-1.95	-2	-2	1
IL BACK 1979	1.16	-59.04	0	-11.67	-0.78	-2	-2	1
KTL 1970	1.39	19.28	0	10.68	0.84	no data	no data	no data
KTL 1971	1.25	18.98	0	8.51	0.67	no data	no data	no data
KTL 1972	1.54	24.69	0	17.60	1.17	no data	no data	no data
KTL 1973	1.52	35.92	0	30.89	2.08	0	0	1
KTL 1974	1.18	42.70	0	34.50	1.88	0	0	1
KTL 1975	1.49	36.40	0	29.23	1.37	0	0	1
KTL 1976	1.61	27.56	0	25.02	1.07	0	0	1
KTL 1977	1.77	18.78	0	22.08	0.81	-1	0	0
KTL 1978	1.59	21.10	0	23.85	0.92	-1	0	0
KTL 1979	1.40	24.18	0	19.84	1.03	0	0	1
OMNIA 1970	3.43	19.42	0	26.62	1.34	no data	no data	no data
OMNIA 1971	3.63	17.14	0	24.87	1.12	no data	no data	no data
OMNIA 1972	4.10	16.88	0	28.70	1.17	no data	no data	no data
OMNIA 1973	3.92	15.32	0	25.33	1.16	-1	0	0
OMNIA 1974	2.59	17.08	0	20.74	0.90	0	0	1
OMNIA 1975	1.80	29.16	0	16.13	0.88	0	0	1
OMNIA 1976	1.69	-7.01	0	-3.26	-0.18	-2	-2	1
OMNIA 1977	1.59	-93.18	0	-13.02	-0.91	-2	-2	1
OMNIA 1978	1.31	-73.54	0	-8.28	-0.61	-2	-2	1
OMNIA 1979	125.01	-0.40	0	-49.70	-0.04	-2	-2	1
PAN 1970	2.04	15.43	0	26.09	1.18	no data	no data	no data
PAN 1971	1.64	14.37	0	20.85	0.96	no data	no data	no data
PAN 1972	1.52	1.32	0	1.29	0.07	no data	no data	no data
PAN 1973	1.36	-38.03	0	-13.35	-0.99	-2	-2	1
PAN 1974	3.75	-17.75	0	-6.99	-0.38	-2	-2	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
IL BACK 1978	1	78.95	63.88	30.42	-2	1	1	-2
IL BACK 1979	1	24.80	31.79	18.29	-1	0	1	-2
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	1	-48.87	-7.19	11.58	0	1	1	0
KTL 1974	1	-78.30	-26.55	0.96	0	1	1	0
KTL 1975	1	-47.11	-6.44	11.36	0	1	1	0
KTL 1976	1	-29.63	4.48	16.43	0	1	1	0
KTL 1977	1	-12.67	15.39	22.04	0	0	1	0
KTL 1978	1	-28.29	5.07	16.32	0	0	1	0
KTL 1979	1	-31.37	1.81	12.62	0	1	1	0
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	1	116.81	105.99	80.08	-2	0	1	0
OMNIA 1974	1	42.77	53.41	45.27	-1	0	1	0
OMNIA 1975	1	2.66	24.32	25.16	0	1	1	0
OMNIA 1976	1	39.50	44.36	29.65	-1	0	1	-2
OMNIA 1977	1	55.34	52.57	30.73	-2	1	1	-2
OMNIA 1978	1	26.75	34.11	21.15	-1	0	1	-2
OMNIA 1979	1	8003.70	5547.31	3453.67	-2	1	1	-2
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	1	41.56	42.93	24.56	-1	0	1	-2
PAN 1974	1	179.49	140.26	88.11	-2	1	1	-2

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
IL BACK 1978	1	1
IL BACK 1979	1	1
KTL 1970	no data	no data
KTL 1971	no data	no data
KTL 1972	no data	no data
KTL 1973	1	1
KTL 1974	1	1
KTL 1975	1	1
KTL 1976	1	1
KTL 1977	0	1
KTL 1978	0	1
KTL 1979	1	1
OMNIA 1970	no data	no data
OMNIA 1971	no data	no data
OMNIA 1972	no data	no data
OMNIA 1973	0	1
OMNIA 1974	1	1
OMNIA 1975	1	1
OMNIA 1976	1	1
OMNIA 1977	1	1
OMNIA 1978	1	1
OMNIA 1979	1	1
PAN 1970	no data	no data
PAN 1971	no data	no data
PAN 1972	no data	no data
PAN 1973	1	1
PAN 1974	1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
PIONEER H 1973	0.44	7.13	0	8.14	0.48	no data	no data	no data
PIONEER H 1974	0.19	7.88	0	15.18	0.51	no data	no data	no data
PIONEER H 1975	0.40	9.92	0	22.00	0.58	no data	no data	no data
PIONEER H 1976	0.25	6.50	0	15.00	0.37	-1	-1	1
PIONEER H 1977	0.27	6.59	0	18.28	0.39	-1	-1	1
PIONEER H 1978	0.26	7.12	0	20.74	0.44	-1	-1	1
PIONEER H 1979	0.37	9.52	0	27.41	0.71	0	0	1
ROMATEX 1970	1.60	3.36	0	5.49	0.25	no data	no data	no data
ROMATEX 1971	1.94	4.83	0	6.74	0.33	no data	no data	no data
ROMATEX 1972	1.66	5.04	0	6.55	0.31	no data	no data	no data
ROMATEX 1973	1.55	7.02	0	8.90	0.42	0	-1	0
ROMATEX 1974	1.33	14.95	0	16.12	0.94	0	0	1
ROMATEX 1975	1.34	-20.30	0	-19.69	-0.94	-2	-2	1
ROMATEX 1976	1.66	11.43	0	14.17	0.52	0	0	1
ROMATEX 1977	1.98	12.29	0	20.21	0.60	0	0	1
ROMATEX 1978	2.10	13.66	0	27.92	0.73	0	0	1
ROMATEX 1979	2.20	14.92	0	33.57	0.85	0	0	1
SCHACHAT 1970	1.15	20.48	0	7.03	0.64	no data	no data	no data
SCHACHAT 1971	1.40	22.70	0	9.20	0.74	no data	no data	no data
SCHACHAT 1972	0.99	25.15	0	12.37	0.94	no data	no data	no data
SCHACHAT 1973	1.24	22.27	0	8.78	0.78	0	0	1
SCHACHAT 1974	1.27	14.85	0	7.12	0.47	-1	-1	1
SCHACHAT 1975	1.71	14.22	0	8.29	0.44	-1	-1	1
SCHACHAT 1976	1.47	18.18	0	10.77	0.55	-1	0	0
SCHACHAT 1977	1.35	9.79	0	6.83	0.32	-1	-1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	1	-93.54	-42.62	-17.19	0	0	1	-1
PIONEER H 1977	1	-99.83	-46.05	-17.98	0	0	1	-1
PIONEER H 1978	1	-105.91	-49.57	-19.16	0	0	1	-1
PIONEER H 1979	1	-114.17	-53.40	-18.79	0	1	1	-1
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	1	3.37	22.77	21.19	-1	0	1	-1
ROMATEX 1974	1	-27.14	3.69	12.25	0	1	1	0
ROMATEX 1975	1	54.58	50.15	26.45	-2	1	1	-2
ROMATEX 1976	1	-1.56	20.85	22.17	0	1	1	-1
ROMATEX 1977	1	4.69	26.89	28.46	0	1	1	-1
ROMATEX 1978	1	-4.85	22.46	28.89	0	1	1	0
ROMATEX 1979	1	-11.31	19.59	29.44	0	1	1	0
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	1	-16.56	8.94	12.48	0	1	1	0
SCHACHAT 1974	1	-10.73	12.50	14.03	0	0	1	0
SCHACHAT 1975	1	14.84	30.55	25.80	-1	1	1	0
SCHACHAT 1976	1	-6.29	16.61	18.11	0	0	1	0
SCHACHAT 1977	1	-4.73	16.58	16.45	-1	1	1	-1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
PIONEER H 1973	no data	no data
PIONEER H 1974	no data	no data
PIONEER H 1975	no data	no data
PIONEER H 1976	1	1
PIONEER H 1977	1	1
PIONEER H 1978	1	1
PIONEER H 1979	0	1
ROMATEX 1970	no data	no data
ROMATEX 1971	no data	no data
ROMATEX 1972	no data	no data
ROMATEX 1973	0	1
ROMATEX 1974	1	1
ROMATEX 1975	1	1
ROMATEX 1976	0	1
ROMATEX 1977	0	1
ROMATEX 1978	1	1
ROMATEX 1979	1	1
SCHACHAT 1970	no data	no data
SCHACHAT 1971	no data	no data
SCHACHAT 1972	no data	no data
SCHACHAT 1973	1	1
SCHACHAT 1974	0	1
SCHACHAT 1975	0	1
SCHACHAT 1976	0	1
SCHACHAT 1977	1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
SPECTRO 1970	4.01	5.70	0	14.50	0.50	no data	no data	no data
SPECTRO 1971	3.52	13.09	0	37.31	1.10	no data	no data	no data
SPECTRO 1972	3.38	11.01	0	33.85	0.94	no data	no data	no data
SPECTRO 1973	4.97	21.93	0	25.20	1.43	0	0	1
SPECTRO 1974	2.39	18.04	0	14.62	0.78	0	0	1
SPECTRO 1975	4.50	-11.67	0	-7.73	-0.38	-2	-2	1
STUTTAFORDS 1970	2.17	10.15	0	34.55	0.93	no data	no data	no data
STUTTAFORDS 1971	2.48	14.69	0	96.89	1.51	no data	no data	no data
STUTTAFORDS 1972	1.84	4.24	0	26.71	0.40	no data	no data	no data
STUTTAFORDS 1973	1.92	13.64	0	49.79	1.18	0	0	1
STUTTAFORDS 1974	1.74	5.70	0	21.21	0.54	-1	0	0
STUTTAFORDS 1975	1.50	5.94	0	18.43	0.43	-1	-1	1
STUTTAFORDS 1976	1.48	5.13	0	15.78	0.32	-1	-1	1
STUTTAFORDS 1977	1.41	5.44	0	15.44	0.32	-1	-1	1
STUTTAFORDS 1978	1.33	4.45	0	10.81	0.25	-1	-1	1
TAPSA 1970	1.81	23.95	0	17.10	1.17	no data	no data	no data
TAPSA 1971	1.76	20.06	0	10.41	0.81	no data	no data	no data
TAPSA 1972	1.82	10.78	0	5.63	0.41	no data	no data	no data
TAPSA 1973	1.57	12.47	0	4.95	0.40	-1	-1	1
TAPSA 1974	1.37	-35.05	0	-10.13	-0.98	-2	-2	1
TAPSA 1975	0.79	-344.15	1	-34.86	-3.81	-2	-2	1
TIGERIND 1970	1.17	4.17	0	1.22	0.11	no data	no data	no data
TIGERIND 1971	1.18	-26.54	0	-9.03	-0.69	-2	-2	1
TIGERIND 1972	0.42	-61.58	0	-56.48	-2.64	-2	-2	1
TIGERIND 1973	0.63	0.87	0	0.25	0.02	0	-1	0

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	1	183.79	152.34	109.03	-2	0	1	0
SPECTRO 1974	1	43.73	52.35	42.07	-1	0	1	0
SPECTRO 1975	1	228.92	174.29	109.09	-2	1	1	-2
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	1	-65.90	-13.63	15.39	0	1	1	0
STUTTAFORDS 1974	1	-12.50	15.26	21.60	0	0	1	-1
STUTTAFORDS 1975	1	-21.65	8.14	15.99	0	0	1	-1
STUTTAFORDS 1976	1	-16.62	10.87	16.60	0	0	1	-1
STUTTAFORDS 1977	1	-20.46	8.12	14.74	0	0	1	-1
STUTTAFORDS 1978	1	-15.07	10.54	14.33	0	0	1	-1
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	1	13.39	28.60	23.19	-1	1	1	0
TAPSA 1974	1	34.75	39.12	23.52	-1	0	1	-2
TAPSA 1975	1	-17.79	7.61	23.16	0	0	1	-2
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	1	20.23	29.38	17.88	-1	0	1	-2
TIGERIND 1972	1	79.40	56.93	15.42	-2	1	1	-2
TIGERIND 1973	1	-35.86	-6.85	-0.94	0	1	1	-2

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
SPECTRO 1970	no data	no data
SPECTRO 1971	no data	no data
SPECTRO 1972	no data	no data
SPECTRO 1973	1	1
SPECTRO 1974	1	1
SPECTRO 1975	1	1
STUTTAFORDS 1970	no data	no data
STUTTAFORDS 1971	no data	no data
STUTTAFORDS 1972	no data	no data
STUTTAFORDS 1973	1	1
STUTTAFORDS 1974	1	1
STUTTAFORDS 1975	1	1
STUTTAFORDS 1976	1	1
STUTTAFORDS 1977	1	1
STUTTAFORDS 1978	1	1
TAPSA 1970	no data	no data
TAPSA 1971	no data	no data
TAPSA 1972	no data	no data
TAPSA 1973	0	1
TAPSA 1974	1	1
TAPSA 1975	1	1
TIGERIND 1970	no data	no data
TIGERIND 1971	1	1
TIGERIND 1972	1	1
TIGERIND 1973	0	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
TRIOMF 1970	1.44	11.53	0	8.39	0.59	no data	no data	no data
TRIOMF 1971	1.35	22.50	0	8.04	0.67	no data	no data	no data
TRIOMF 1972	1.39	45.44	0	17.85	1.46	no data	no data	no data
TRIOMF 1973	1.29	44.97	0	17.03	1.54	0	0	1
TRIOMF 1974	1.09	48.34	0	15.20	1.14	0	0	1
TRIOMF 1975	2.04	54.27	0	8.43	0.62	0	0	1
TRIOMF 1976	1.13	36.54	0	3.02	0.23	-1	-1	1
TRIOMF 1977	0.80	-38.33	0	-5.41	-0.39	-2	-2	1
TRIOMF 1978	0.92	12.00	0	1.65	0.12	0	-1	0
TRIOMF 1979	0.99	61.54	0	14.29	1.10	0	0	1
TUCKERS 1970	1.70	24.59	0	37.32	1.80	no data	no data	no data
TUCKERS 1971	2.27	17.61	0	27.94	1.21	no data	no data	no data
TUCKERS 1972	3.27	15.27	0	33.99	1.19	no data	no data	no data
TUCKERS 1973	3.33	18.78	0	60.20	1.77	0	0	1
TUCKERS 1974	3.65	17.72	0	60.14	1.34	0	0	1
TUCKERS 1975	7.75	6.34	0	35.55	0.46	-1	-1	1
TUCKERS 1976	9.22	3.61	0	23.61	0.26	-1	-1	1
TUCKERS 1977	4.68	10.02	0	34.62	0.62	-1	0	0
TUCKERS 1978	5.01	-5.32	0	-19.04	-0.34	-2	-2	1
TUCKERS 1979	7.66	4.46	0	23.41	0.37	-1	-1	1

Sub-Total 1970s

Predictive Accuracy

97

84.3%

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis						Y Pred State
		F-2	F-1	F0	Pred State	# Correct	Sample Size	
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	1	-31.66	0.81	10.82	0	1	1	0
TRIOMF 1974	1	-40.28	-5.68	6.00	0	1	1	0
TRIOMF 1975	1	35.58	44.95	34.87	-1	0	1	0
TRIOMF 1976	1	-10.18	11.72	11.83	0	0	1	0
TRIOMF 1977	1	-11.93	8.13	6.08	-1	0	1	-2
TRIOMF 1978	1	-20.68	4.07	6.47	0	1	1	-1
TRIOMF 1979	1	-44.76	-9.03	3.53	0	1	1	0
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	1	0.26	35.13	50.22	0	1	1	0
TUCKERS 1974	1	20.62	49.22	59.01	0	1	1	0
TUCKERS 1975	1	337.86	261.99	181.94	-2	0	1	-1
TUCKERS 1976	1	458.80	342.37	227.28	-2	0	1	-1
TUCKERS 1977	1	144.26	127.63	97.48	-2	0	1	-1
TUCKERS 1978	1	287.37	211.57	127.72	-2	1	1	-2
TUCKERS 1979	1	359.59	273.60	184.17	-2	0	1	-1
Sub-Total 1970s	115				56	115		
Predictive Accuracy					48.7%			

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
TRIOMF 1970	no data	no data
TRIOMF 1971	no data	no data
TRIOMF 1972	no data	no data
TRIOMF 1973	1	1
TRIOMF 1974	1	1
TRIOMF 1975	1	1
TRIOMF 1976	0	1
TRIOMF 1977	1	1
TRIOMF 1978	0	1
TRIOMF 1979	1	1
TUCKERS 1970	no data	no data
TUCKERS 1971	no data	no data
TUCKERS 1972	no data	no data
TUCKERS 1973	1	1
TUCKERS 1974	1	1
TUCKERS 1975	1	1
TUCKERS 1976	1	1
TUCKERS 1977	1	1
TUCKERS 1978	1	1
TUCKERS 1979	1	1
Sub-Total 1970s	94	115
Predictive Accuracy	81.7%	

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
BIDVEST 1980	2.24	12.29	0	21.66	0.81	0	0	1
BIDVEST 1981	2.19	24.03	0	38.49	1.04	0	0	1
BIDVEST 1982	2.36	17.76	0	28.03	0.55	0	0	1
BIDVEST 1983	2.52	9.02	0	15.21	0.34	-1	-1	1
BIDVEST 1984	2.09	9.58	0	16.33	0.27	-1	-1	1
BIDVEST 1985	2.53	5.27	0	15.02	0.18	-1	-1	1
BIDVEST 1986	2.39	5.99	0	18.23	0.31	-1	-1	1
BIDVEST 1987	2.02	-11.30	0	-28.54	-0.65	-2	-2	1
BIDVEST 1988	1.30	12.45	0	19.68	0.50	0	0	1
BIDVEST 1989	5.90	39.63	0	293.93	1.76	0	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	1.21	17.65	0	11.03	0.48	no data	no data	no data
BRICK CLAY 1982	1.80	69.34	0	9.73	0.44	no data	no data	no data
BRICK CLAY 1983	1.09	-416.08	1	-20.26	-1.27	-2	-2	1
BRICK CLAY 1984	1.37	14.67	1	0.82	0.04	0	-1	0
BRICK CLAY 1985	0.57	-82.01	1	-22.61	-1.44	-2	-2	1
BRICK CLAY 1986	1.85	26.96	1	7.70	0.75	0	0	1
BRICK CLAY 1987	2.42	103.67	1	18.80	1.83	0	0	1
BRICK CLAY 1988	2.56	445.84	0	25.40	1.56	0	0	1
BRISTOL 1980	0.76	11.00	0	22.79	0.74	0	0	1
BRISTOL 1981	1.21	12.82	0	32.24	0.97	0	0	1
BRISTOL 1982	1.60	6.28	0	5.89	0.22	-1	-1	1
BRISTOL 1983	0.36	4.11	0	6.35	0.13	-1	-1	1
BRISTOL 1984	4.23	16.82	0	70.74	0.82	0	0	1
BRISTOL 1985	3.72	9.40	0	42.89	0.35	0	-1	0
BRISTOL 1986	6.63	6.90	0	117.67	0.30	-1	-1	1
BRISTOL 1987	11.00	5.97	0	163.55	0.40	-1	-1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
BIDVEST 1980	1	18.38	36.78	35.25	-1	0	1	-1
BIDVEST 1981	1	-23.33	12.65	27.14	0	1	1	0
BIDVEST 1982	1	11.56	33.86	36.07	0	1	1	0
BIDVEST 1983	1	50.51	57.21	45.36	-1	1	1	-1
BIDVEST 1984	1	20.46	36.71	33.00	-1	1	1	-1
BIDVEST 1985	1	51.65	57.94	45.74	-1	1	1	-1
BIDVEST 1986	1	35.34	47.55	40.57	-1	1	1	-1
BIDVEST 1987	1	118.07	91.63	48.73	-2	1	1	-2
BIDVEST 1988	1	-37.08	-2.19	10.04	0	1	1	0
BIDVEST 1989	1	-367.01	-153.12	29.47	0	1	1	0
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	1	-31.95	1.93	25.67	0	0	1	-2
BRICK CLAY 1984	1	-61.59	-12.63	25.31	0	1	1	0
BRICK CLAY 1985	1	-59.61	-17.88	12.30	0	0	1	-2
BRICK CLAY 1986	1	-46.91	-0.52	35.75	0	1	1	0
BRICK CLAY 1987	1	-35.86	10.28	47.11	0	1	1	0
BRICK CLAY 1988	1	30.24	46.05	42.61	-1	0	1	0
BRISTOL 1980	1	-78.56	-30.04	-6.09	0	1	1	-1
BRISTOL 1981	1	-71.62	-22.56	2.51	0	1	1	0
BRISTOL 1982	1	13.46	28.91	23.78	-1	1	1	-1
BRISTOL 1983	1	-66.83	-26.57	-10.74	0	0	1	-1
BRISTOL 1984	1	33.28	60.98	70.77	0	1	1	0
BRISTOL 1985	1	64.42	74.67	67.78	-1	0	1	-1
BRISTOL 1986	1	79.85	106.51	118.75	0	0	1	-1
BRISTOL 1987	1	254.10	240.18	221.43	-2	0	1	-1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
BIDVEST 1980	0	1
BIDVEST 1981	1	1
BIDVEST 1982	1	1
BIDVEST 1983	1	1
BIDVEST 1984	1	1
BIDVEST 1985	1	1
BIDVEST 1986	1	1
BIDVEST 1987	1	1
BIDVEST 1988	1	1
BIDVEST 1989	1	1
BRICK CLAY 1980	no data	no data
BRICK CLAY 1981	no data	no data
BRICK CLAY 1982	no data	no data
BRICK CLAY 1983	1	1
BRICK CLAY 1984	1	1
BRICK CLAY 1985	1	1
BRICK CLAY 1986	1	1
BRICK CLAY 1987	1	1
BRICK CLAY 1988	1	1
BRISTOL 1980	0	1
BRISTOL 1981	1	1
BRISTOL 1982	1	1
BRISTOL 1983	1	1
BRISTOL 1984	1	1
BRISTOL 1985	0	1
BRISTOL 1986	1	1
BRISTOL 1987	1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
BRISTOL 1988	11.41	7.37	0	256.81	0.57	-1	0	0
BRISTOL 1989	4.32	16.89	0	107.85	0.95	0	0	1
DRG 1980	1.81	21.62	0	24.43	1.12	no data	no data	no data
DRG 1981	1.87	9.52	0	11.17	0.34	-1	-1	1
DRG 1982	2.04	-0.49	0	-0.54	-0.01	-2	-2	1
H PARKER 1980	1.02	14.73	0	5.63	0.41	-1	-1	1
H PARKER 1981	1.24	17.42	0	9.94	0.67	0	0	1
H PARKER 1982	1.08	4.95	0	3.15	0.14	-1	-1	1
IL BACK 1980	1.78	-23.81	0	-19.66	-1.04	-2	-2	1
IL BACK 1981	1.22	-58.76	0	-14.36	-1.18	-2	-2	1
IL BACK 1982	33.00	-11.88	0	-351.38	-0.76	-2	-2	1
KTL 1980	1.71	34.53	0	36.00	1.76	0	0	1
KTL 1981	1.65	30.55	0	28.29	0.94	0	0	1
KTL 1982	1.41	27.79	0	24.36	0.61	0	0	1
KTL 1983	1.34	29.17	0	26.55	0.76	0	0	1
KTL 1984	1.73	20.62	0	29.66	0.52	-1	0	0
KTL 1985	1.16	10.94	0	11.57	0.25	-1	-1	1
KTL 1986	1.13	5.07	0	5.11	0.17	-1	-1	1
KTL 1987	1.27	17.89	0	20.78	0.74	0	0	1
KTL 1988	1.42	28.49	0	19.62	0.66	0	0	1
KTL 1989	1.14	35.98	0	18.97	0.55	0	0	1
OMNIA 1980	1.01	26.23	0	9.72	0.60	0	0	1
OMNIA 1981	1.01	71.07	0	34.44	1.29	0	0	1
OMNIA 1982	1.67	36.47	0	22.06	0.42	0	-1	0
OMNIA 1983	1.14	21.36	0	5.05	0.18	-1	-1	1
OMNIA 1984	0.97	-1.32	0	-0.26	-0.01	-2	-2	1
OMNIA 1985	1.10	5.50	0	1.67	0.05	-1	-1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
BRISTOL 1988	1	68.19	137.81	196.10	0	0	1	-1
BRISTOL 1989	1	-45.10	17.19	58.78	0	1	1	0
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	1	18.66	34.00	29.16	-1	1	1	-1
DRG 1982	1	55.52	56.23	38.20	-1	0	1	-2
H PARKER 1980	1	-23.15	3.48	7.76	0	0	1	0
H PARKER 1981	1	-19.13	7.48	12.06	0	1	1	0
H PARKER 1982	1	-13.65	9.36	10.41	0	0	1	-1
IL BACK 1980	1	82.92	69.79	38.75	-2	1	1	-2
IL BACK 1981	1	34.70	37.89	20.99	-1	0	1	-2
IL BACK 1982	1	2825.82	1875.70	1031.02	-2	1	1	-2
KTL 1980	1	-48.14	-5.24	14.91	0	1	1	0
KTL 1981	1	-34.79	1.83	16.14	0	1	1	0
KTL 1982	1	-41.01	-3.59	11.11	0	1	1	0
KTL 1983	1	-50.16	-9.31	8.44	0	1	1	0
KTL 1984	1	-32.52	3.79	17.93	0	0	1	0
KTL 1985	1	-27.93	1.85	9.21	0	0	1	-1
KTL 1986	1	-14.86	9.07	11.04	0	0	1	-1
KTL 1987	1	-41.92	-5.24	8.59	0	1	1	0
KTL 1988	1	-29.60	2.97	13.25	0	1	1	0
KTL 1989	1	-45.94	-8.53	5.78	0	1	1	0
OMNIA 1980	1	-33.12	-2.27	5.87	0	1	1	0
OMNIA 1981	1	-89.48	-34.31	-3.93	0	1	1	0
OMNIA 1982	1	-19.33	10.78	19.15	0	1	1	0
OMNIA 1983	1	-14.05	9.62	11.36	0	0	1	0
OMNIA 1984	1	-12.72	9.04	8.79	-1	0	1	-2
OMNIA 1985	1	-8.88	12.24	11.60	-1	1	1	-1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
BRISTOL 1988	1	1
BRISTOL 1989	1	1
DRG 1980	no data	no data
DRG 1981	1	1
DRG 1982	1	1
H PARKER 1980	0	1
H PARKER 1981	1	1
H PARKER 1982	1	1
IL BACK 1980	1	1
IL BACK 1981	1	1
IL BACK 1982	1	1
KTL 1980	1	1
KTL 1981	1	1
KTL 1982	1	1
KTL 1983	1	1
KTL 1984	0	1
KTL 1985	1	1
KTL 1986	1	1
KTL 1987	1	1
KTL 1988	1	1
KTL 1989	1	1
OMNIA 1980	1	1
OMNIA 1981	1	1
OMNIA 1982	1	1
OMNIA 1983	0	1
OMNIA 1984	1	1
OMNIA 1985	1	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
OMNIA 1986	1.00	6.63	0	3.02	0.13	0	-1	0
OMNIA 1987	1.02	21.21	0	6.51	0.38	0	-1	0
OMNIA 1988	1.09	25.91	0	13.46	0.55	0	0	1
OMNIA 1989	1.04	33.59	0	18.12	0.59	0	0	1
ROMATEX 1980	1.57	22.63	0	30.30	1.30	0	0	1
ROMATEX 1981	1.69	27.33	0	39.73	1.70	0	0	1
ROMATEX 1982	1.95	20.64	0	41.64	0.99	-1	0	0
ROMATEX 1983	2.00	12.91	0	27.39	0.45	-1	-1	1
ROMATEX 1984	1.91	14.51	0	26.72	0.56	-1	0	0
ROMATEX 1985	2.03	1.71	0	2.95	0.05	-1	-1	1
ROMATEX 1986	2.06	9.99	0	17.35	0.29	-1	-1	1
ROMATEX 1987	1.80	13.97	0	25.71	0.63	0	0	1
ROMATEX 1988	1.63	18.00	0	30.20	0.90	0	0	1
ROMATEX 1989	1.81	17.12	0	28.23	0.70	0	0	1
TRIOMF 1980	1.10	41.44	0	23.30	1.29	0	0	1
TRIOMF 1981	1.44	15.27	0	27.22	0.70	-1	0	0
TRIOMF 1982	1.71	0.23	0	0.68	0.01	-1	-1	1
TRIOMF 1983	1.31	-0.76	0	-6.80	-0.03	-2	-2	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	1.03	-40.43	0	-5.59	-0.21	-2	-2	1
TRIOMF 1986	1.54	-39.92	1	-29.94	-2.01	-2	-2	1
TRIOMF 1987	25.64	-0.36	1	-5.62	-0.02	-2	-2	1
TUCKERS 1980	8.02	4.36	0	23.08	0.39	-1	-1	1
TUCKERS 1981	4.13	7.91	0	19.11	0.40	0	-1	0
TUCKERS 1982	1.32	18.54	0	18.70	0.48	0	-1	0

Sub-Total 1980s
 Predictive Accuracy

62
83.8%

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis						Y Pred State
		F-2	F-1	F0	Pred State	# Correct	Sample Size	
OMNIA 1986	1	-18.29	6.11	8.32	0	1	1	-1
OMNIA 1987	1	-25.47	2.12	7.27	0	1	1	0
OMNIA 1988	1	-36.23	-3.36	6.73	0	1	1	0
OMNIA 1989	1	-50.20	-11.72	3.43	0	1	1	0
ROMATEX 1980	1	-44.39	-4.25	13.17	0	1	1	0
ROMATEX 1981	1	-57.93	-10.96	12.88	0	1	1	0
ROMATEX 1982	1	-45.98	-2.15	19.19	0	0	1	0
ROMATEX 1983	1	-10.17	18.62	26.27	0	0	1	0
ROMATEX 1984	1	-14.58	15.38	23.96	0	0	1	0
ROMATEX 1985	1	47.42	51.60	36.76	-1	1	1	-1
ROMATEX 1986	1	16.38	34.17	31.83	-1	1	1	-1
ROMATEX 1987	1	-19.11	11.96	21.40	0	1	1	0
ROMATEX 1988	1	-40.29	-1.44	14.88	0	1	1	0
ROMATEX 1989	1	-24.39	9.02	20.61	0	1	1	0
TRIOMF 1980	1	-57.98	-15.64	3.13	0	1	1	0
TRIOMF 1981	1	-45.47	-5.87	10.87	0	0	1	0
TRIOMF 1982	1	31.88	40.19	28.68	-1	1	1	-2
TRIOMF 1983	1	23.65	32.38	20.69	-1	0	1	-2
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	1	2.87	18.33	12.39	-1	0	1	-2
TRIOMF 1986	1	19.03	34.50	42.03	0	0	1	-2
TRIOMF 1987	1	1499.63	1066.87	698.10	-2	1	1	-2
TUCKERS 1980	1	383.20	289.86	194.20	-2	0	1	-1
TUCKERS 1981	1	144.68	123.53	88.48	-2	0	1	-1
TUCKERS 1982	1	-33.77	-0.18	10.90	0	1	1	0
Sub-Total 1980s	74					47	74	
Predictive Accuracy						63.5%		

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
OMNIA 1986	0	1
OMNIA 1987	1	1
OMNIA 1988	1	1
OMNIA 1989	1	1
ROMATEX 1980	1	1
ROMATEX 1981	1	1
ROMATEX 1982	0	1
ROMATEX 1983	0	1
ROMATEX 1984	0	1
ROMATEX 1985	1	1
ROMATEX 1986	1	1
ROMATEX 1987	1	1
ROMATEX 1988	1	1
ROMATEX 1989	1	1
TRIOMF 1980	1	1
TRIOMF 1981	0	1
TRIOMF 1982	0	1
TRIOMF 1983	1	1
TRIOMF 1984	no data	no data
TRIOMF 1985	1	1
TRIOMF 1986	1	1
TRIOMF 1987	1	1
TUCKERS 1980	1	1
TUCKERS 1981	0	1
TUCKERS 1982	1	1
Sub-Total 1980s	61	74
Predictive Accuracy	82.4%	

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0.00

Company & year	Data						Yn Naive Mode	
	CA/CL	PAT/SHE	PAT/SHE D	PAT/TL	SVA	3Year n	Pred State	# Correct
BIDVEST 1990	3.56	33.80	0	45.05	0.65	0	0	1
BIDVEST 1991	1.32	36.49	0	8.39	0.32	0	-1	0
BIDVEST 1992	2.04	49.16	0	12.75	0.51	0	0	1
BIDVEST 1993	1.81	15.33	0	10.46	0.38	0	-1	0
BIDVEST 1994	1.75	25.60	0	15.63	0.62	0	0	1
BIDVEST 1995	1.74	28.20	0	17.80	0.61	0	0	1
BIDVEST 1996	1.80	27.57	0	20.70	0.58	0	0	1
BIDVEST 1997	1.92	14.68	0	16.16	0.37	0	-1	0
BIDVEST 1998	2.68	16.30	0	36.12	0.50	0	0	1
BRISTOL 1990	4.97	6.41	0	49.94	0.29	-1	-1	1
BRISTOL 1991	5.15	7.41	0	55.73	0.31	-1	-1	1
BRISTOL 1992	6.13	7.85	0	88.70	0.36	-1	-1	1
BRISTOL 1993	9.78	6.51	0	163.12	0.33	-1	-1	1
BRISTOL 1994	4.56	5.61	0	73.53	0.32	-1	-1	1
KTL 1990	1.35	94.62	0	13.89	0.39	0	-1	0
KTL 1991	1.28	15.79	0	6.78	0.20	-1	-1	1
KTL 1992	1.19	0.70	0	0.22	0.01	-1	-1	1
KTL 1993	1.22	28.72	0	9.05	0.36	0	-1	0
KTL 1994	1.35	47.63	0	16.45	0.65	0	0	1
KTL 1995	1.33	39.09	0	14.69	0.50	0	0	1
KTL 1996	1.37	69.07	0	30.61	0.85	0	0	1
KTL 1997	1.75	41.19	0	14.82	0.34	-1	-1	1
KTL 1998	0.37	36.23	0	316.89	1.49	-1	0	0
KTL 1999	0.11	52.54	0	368.44	2.55	-1	0	0

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
BIDVEST 1990	1	49.30	64.82	62.51	-1	0	1	0
BIDVEST 1991	1	-10.04	13.34	15.08	0	1	1	0
BIDVEST 1992	1	25.75	39.37	33.17	-1	0	1	0
BIDVEST 1993	1	16.19	32.10	27.67	-1	0	1	0
BIDVEST 1994	1	0.44	22.65	23.91	0	1	1	0
BIDVEST 1995	1	-4.77	19.65	22.93	0	1	1	0
BIDVEST 1996	1	-7.71	18.44	23.37	0	1	1	0
BIDVEST 1997	1	10.12	29.50	28.42	-1	0	1	0
BIDVEST 1998	1	13.42	37.43	41.66	0	1	1	0
BRISTOL 1990	1	127.61	120.43	99.34	-2	0	1	-1
BRISTOL 1991	1	126.10	121.02	102.11	-2	0	1	-1
BRISTOL 1992	1	113.63	121.72	116.23	-1	1	1	-1
BRISTOL 1993	1	177.33	186.89	187.91	0	0	1	-1
BRISTOL 1994	1	48.28	72.16	78.93	0	0	1	-1
KTL 1990	1	-21.22	7.15	13.49	0	1	1	0
KTL 1991	1	-9.54	13.23	14.34	0	0	1	0
KTL 1992	1	0.06	18.02	14.61	-1	1	1	-2
KTL 1993	1	-18.07	7.97	11.99	0	1	1	0
KTL 1994	1	-26.55	4.19	12.70	0	1	1	0
KTL 1995	1	-24.13	5.37	12.71	0	1	1	0
KTL 1996	1	-57.91	-13.53	7.49	0	1	1	0
KTL 1997	1	2.20	23.64	24.19	0	0	1	0
KTL 1998	1	-771.42	-426.72	-132.20	0	0	1	0
KTL 1999	1	-904.84	-504.54	-159.49	0	0	1	0

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
BIDVEST 1990	1	1
BIDVEST 1991	1	1
BIDVEST 1992	1	1
BIDVEST 1993	1	1
BIDVEST 1994	1	1
BIDVEST 1995	1	1
BIDVEST 1996	1	1
BIDVEST 1997	1	1
BIDVEST 1998	1	1
BRISTOL 1990	1	1
BRISTOL 1991	1	1
BRISTOL 1992	1	1
BRISTOL 1993	1	1
BRISTOL 1994	1	1
KTL 1990	1	1
KTL 1991	0	1
KTL 1992	0	1
KTL 1993	1	1
KTL 1994	1	1
KTL 1995	1	1
KTL 1996	1	1
KTL 1997	0	1
KTL 1998	0	1
KTL 1999	0	1

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	I Sample Size	Yn Fisher Discriminant Analysis					Y Sample Size	Pred State
		F-2	F-1	F0	Pred State	# Correct		
OMNIA 1990	1	-41.47	-6.49	5.52	0	1	1	0
OMNIA 1991	1	-37.23	-4.32	5.74	0	0	1	0
OMNIA 1992	1	-23.95	3.26	8.11	0	0	1	0
OMNIA 1993	1	-38.88	-4.57	6.91	0	1	1	0
OMNIA 1994	1	-33.37	-1.45	7.83	0	1	1	0
OMNIA 1995	1	-24.80	3.63	9.76	0	1	1	0
OMNIA 1996	1	-30.20	0.78	9.27	0	1	1	0
OMNIA 1997	1	-40.35	-4.56	8.42	0	1	1	0
OMNIA 1998	1	-26.94	2.57	9.71	0	0	1	0
ROMATEX 1990	1	-3.83	20.63	24.03	0	0	1	-1
ROMATEX 1991	1	31.08	39.67	28.40	-1	1	1	-2
ROMATEX 1992	1	13.32	29.17	24.47	-1	1	1	-1
ROMATEX 1993	1	-13.03	15.17	21.94	0	1	1	-1
ROMATEX 1994	1	-17.93	12.55	21.44	0	1	1	-1
ROMATEX 1995	1	8.52	30.54	32.22	0	0	1	-1
ROMATEX 1996	1	74.51	69.81	47.33	-2	0	1	-2
ROMATEX 1997	1	142.93	107.07	55.80	-2	1	1	-2
ROMATEX 1998	1	67.93	66.52	47.14	-2	0	1	-1
Sub-Total 1990s	42					23	42	
Predictive Accuracy						54.8%		
Grand Total	231					126	231	
Predictive Accuracy						54.5%		

APPENDIX B2 : 3 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	n CHAID Model	
	# Correct	Sample Size
OMNIA 1990	1	1
OMNIA 1991	0	1
OMNIA 1992	0	1
OMNIA 1993	1	1
OMNIA 1994	1	1
OMNIA 1995	1	1
OMNIA 1996	1	1
OMNIA 1997	1	1
OMNIA 1998	0	1
ROMATEX 1990	1	1
ROMATEX 1991	0	1
ROMATEX 1992	1	1
ROMATEX 1993	0	1
ROMATEX 1994	0	1
ROMATEX 1995	1	1
ROMATEX 1996	0	1
ROMATEX 1997	1	1
ROMATEX 1998	0	1
Sub-Total 1990s	29	42
Predictive Accuracy	69.0%	
Grand Total	184	231
Predictive Accuracy	79.7%	

APPENDIX C1 : 3 Year n-1 Models (Test Sample)

Upper Cut-off point	4.57	0.59
Lower Cut-off point	0.42	0

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
A&P 1977	0.42	0.03	-1	-1	1	1
AVBAK 1972	8.03	0.91	0	0	1	1
BERZACK 1977	7.75	0.62	0	0	1	1
BROMAIN 1976	3.20	0.27	-1	-1	1	1
BTR 1978	9.32	0.77	0	0	1	1
CHEMSERVE 1973	8.84	1.11	0	0	1	1
COATES 1975	11.04	0.94	0	0	1	1
DESIREE 1976	7.89	0.64	0	0	1	1
DUBIN 1975	13.49	1.14	0	0	1	1
FINTECH 1975	6.99	0.59	0	0	1	1
FOWLER 1978	-47.44	-3.91	-2	-2	1	1
FRASERS 1976	12.36	1.01	0	0	1	1
GLEN ANIL 1975	4.02	0.34	-1	-1	1	1
HANHILL 1975	4.57	0.39	-1	-1	1	1
HEPWORTHS 1978	-6.60	-0.53	-2	-2	1	1
LAWSON 1975	-5.78	-0.49	-2	-2	1	1
LTA 1976	7.06	0.60	0	0	1	1
LUCYS 1974	-7.88	-0.77	-2	-2	1	1
MARSHALL 1976	1.04	0.08	-1	-1	1	1
SIMBA 1972	-3.78	-0.43	-2	-2	1	1

Total					20	20
Predictive Accuracy					100%	

APPENDIX C1 : 3 Year n-1 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
A&P 1977	-6.66	-1.46	-10.85	-1	1	1	-2	0
AVBAK 1972	-17.71	2.27	5.34	0	1	1	0	1
BERZACK 1977	-17.32	2.13	4.76	0	1	1	0	1
BROMAIN 1976	-10.70	-0.10	-4.94	-1	1	1	-1	1
BTR 1978	-19.59	2.90	8.09	0	1	1	0	1
CHEMSERVE 1973	-18.90	2.67	7.08	0	1	1	0	1
COATES 1975	-22.09	3.74	11.74	0	1	1	0	1
DESIREE 1976	-17.51	2.20	5.04	0	1	1	0	1
DUBIN 1975	-25.65	4.95	16.96	0	1	1	0	1
FINTECH 1975	-16.21	1.76	3.14	0	1	1	0	1
FOWLER 1978	62.83	-24.91	-112.64	-2	1	1	-2	1
FRASERS 1976	-24.01	4.39	14.56	0	1	1	0	1
GLEN ANIL 1975	-11.89	0.31	-3.18	-1	1	1	-1	1
HANHILL 1975	-12.69	0.58	-2.01	-1	1	1	-1	1
HEPWORTHS 1978	3.53	-4.90	-25.78	-2	1	1	-2	1
LAWSON 1975	2.34	-4.50	-24.03	-2	1	1	-2	1
LTA 1976	-16.31	1.80	3.29	0	1	1	0	1
LUCYS 1974	5.38	-5.52	-28.49	-2	1	1	-2	1
MARSHALL 1976	-7.57	-1.15	-9.52	-1	1	1	-1	1
SIMBA 1972	-0.57	-3.51	-19.77	-2	1	1	-2	1
Total					20	20		19
Predictive Accuracy					100%			95%

APPENDIX C1 : 3 Year n-1 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
A&P 1977	1
AVBAK 1972	1
BERZACK 1977	1
BROMAIN 1976	1
BTR 1978	1
CHEMSERVE 1973	1
COATES 1975	1
DESIREE 1976	1
DUBIN 1975	1
FINTECH 1975	1
FOWLER 1978	1
FRASERS 1976	1
GLEN ANIL 1975	1
HANHILL 1975	1
HEPWORTHS 1978	1
LAWSON 1975	1
LTA 1976	1
LUCYS 1974	1
MARSHALL 1976	1
SIMBA 1972	1

Total 20

Predictive Accuracy

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	2.77	0.34	-2	-1	0	1
BACKCLOTHING 1971	-0.99	-0.11	-2	-2	1	1
BACKCLOTHING 1972	-9.73	-1.11	-2	-2	1	1
BACKCLOTHING 1973	-10.82	-1.35	-2	-2	1	1
BACKCLOTHING 1974	-14.13	-1.39	no data	no data	no data	no data
BIDVEST 1970	7.43	0.91	no data	no data	no data	no data
BIDVEST 1971	4.46	0.50	no data	no data	no data	no data
BIDVEST 1972	5.05	0.57	-1	-1	1	1
BIDVEST 1973	5.36	0.67	0	0	1	1
BIDVEST 1974	5.89	0.58	0	-1	0	1
BIDVEST 1975	6.80	0.58	0	-1	0	1
BIDVEST 1976	6.87	0.56	-1	-1	1	1
BIDVEST 1977	4.43	0.35	-1	-1	1	1
BIDVEST 1978	6.50	0.54	-1	-1	1	1
BIDVEST 1979	4.83	0.48	0	-1	0	1
BRICK CLAY 1970	4.68	0.57	-2	-1	0	1
BRICK CLAY 1971	-5.90	-0.67	no data	no data	no data	no data
BRICK CLAY 1972	0.21	0.02	0	-1	0	1
BRICK CLAY 1973	6.67	0.83	0	0	1	1
BRICK CLAY 1974	4.21	0.41	0	-1	0	1
BRICK CLAY 1975	8.18	0.69	0	0	1	1
BRICK CLAY 1976	7.97	0.65	-1	0	0	1
BRICK CLAY 1977	4.95	0.40	-1	-1	1	1
BRICK CLAY 1978	3.09	0.25	-1	-1	1	1
BRICK CLAY 1979	4.30	0.43	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	-10.09	-0.30	-5.83	-1	0	1	-1	0
BACKCLOTHING 1971	-4.62	-2.15	-13.84	-1	0	1	-2	1
BACKCLOTHING 1972	8.07	-6.43	-32.43	-2	1	1	-2	1
BACKCLOTHING 1973	9.66	-6.97	-34.75	-2	1	1	-2	1
BACKCLOTHING 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	-13.38	0.81	-1.00	-1	1	1	0	0
BIDVEST 1973	-13.84	0.96	-0.33	-1	0	1	0	1
BIDVEST 1974	-14.61	1.22	0.80	-1	0	1	0	1
BIDVEST 1975	-15.94	1.67	2.74	0	1	1	0	1
BIDVEST 1976	-16.03	1.70	2.87	0	0	1	0	0
BIDVEST 1977	-12.49	0.50	-2.32	-1	1	1	-1	1
BIDVEST 1978	-15.49	1.52	2.09	0	0	1	0	0
BIDVEST 1979	-13.07	0.70	-1.46	-1	0	1	0	1
BRICK CLAY 1970	-12.85	0.63	-1.79	-1	0	1	0	0
BRICK CLAY 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1972	-6.37	-1.56	-11.28	-1	0	1	-2	0
BRICK CLAY 1973	-15.74	1.60	2.44	0	1	1	0	1
BRICK CLAY 1974	-12.17	0.40	-2.78	-1	0	1	-1	0
BRICK CLAY 1975	-17.93	2.34	5.66	0	1	1	0	1
BRICK CLAY 1976	-17.63	2.24	5.22	0	0	1	0	0
BRICK CLAY 1977	-13.25	0.76	-1.19	-1	1	1	0	0
BRICK CLAY 1978	-10.54	-0.15	-5.16	-1	1	1	-1	1
BRICK CLAY 1979	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BACKCLOTHING 1970	1
BACKCLOTHING 1971	1
BACKCLOTHING 1972	1
BACKCLOTHING 1973	1
BACKCLOTHING 1974	no data
BIDVEST 1970	no data
BIDVEST 1971	no data
BIDVEST 1972	1
BIDVEST 1973	1
BIDVEST 1974	1
BIDVEST 1975	1
BIDVEST 1976	1
BIDVEST 1977	1
BIDVEST 1978	1
BIDVEST 1979	1
BRICK CLAY 1970	1
BRICK CLAY 1971	no data
BRICK CLAY 1972	1
BRICK CLAY 1973	1
BRICK CLAY 1974	1
BRICK CLAY 1975	1
BRICK CLAY 1976	1
BRICK CLAY 1977	1
BRICK CLAY 1978	1
BRICK CLAY 1979	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
BRISTOL 1970	4.80	0.60	no data	no data	no data	no data
BRISTOL 1971	3.91	0.48	-2	-1	0	1
BRISTOL 1972	-2.25	-0.25	0	-2	0	1
BRISTOL 1973	2.11	0.24	0	-1	0	1
BRISTOL 1974	3.26	0.41	0	-1	0	1
BRISTOL 1975	2.94	0.29	-1	-1	1	1
BRISTOL 1976	2.96	0.25	-1	-1	1	1
BRISTOL 1977	2.46	0.20	-1	-1	1	1
BRISTOL 1978	3.42	0.27	-1	-1	1	1
BRISTOL 1979	2.43	0.20	0	-1	0	1
BURHOSE 1970	13.18	1.61	no data	no data	no data	no data
BURHOSE 1971	15.98	1.81	no data	no data	no data	no data
BURHOSE 1972	8.42	0.96	-1	0	0	1
BURHOSE 1973	0.23	0.03	-1	-1	1	1
BURHOSE 1974	5.33	0.52	0	-1	0	1
BURHOSE 1975	15.29	1.30	0	0	1	1
BURHOSE 1976	8.05	0.66	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data
BURHOSE 1978	2.42	0.20	no data	no data	no data	no data
BURHOSE 1979	9.83	0.98	no data	no data	no data	no data
CONJERS 1970	7.11	0.87	no data	no data	no data	no data
CONJERS 1971	8.38	0.95	no data	no data	no data	no data
CONJERS 1972	7.79	0.89	-2	0	0	1
CONJERS 1973	-0.94	-0.12	0	-2	0	1
CONJERS 1974	6.94	0.68	-2	0	0	1
CONJERS 1975	-12.08	-1.02	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	-11.74	0.25	-3.41	-1	0	1	-1	0
BRISTOL 1972	-2.79	-2.77	-16.52	-1	0	1	-2	0
BRISTOL 1973	-9.12	-0.63	-7.25	-1	0	1	-1	0
BRISTOL 1974	-10.79	-0.07	-4.80	-1	0	1	-1	0
BRISTOL 1975	-10.33	-0.22	-5.48	-1	1	1	-1	1
BRISTOL 1976	-10.36	-0.21	-5.44	-1	1	1	-1	1
BRISTOL 1977	-9.63	-0.46	-6.51	-1	1	1	-1	1
BRISTOL 1978	-11.03	0.01	-4.45	-1	1	1	-1	1
BRISTOL 1979	-9.59	-0.47	-6.56	-1	0	1	-1	0
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	-18.28	2.46	6.18	0	0	1	0	0
BURHOSE 1973	-6.39	-1.55	-11.24	-1	1	1	-2	0
BURHOSE 1974	-13.80	0.95	-0.39	-1	0	1	0	1
BURHOSE 1975	-28.27	5.83	20.80	0	1	1	0	1
BURHOSE 1976	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	-17.38	2.16	4.85	0	0	1	0	0
CONJERS 1973	-4.70	-2.12	-13.72	-1	0	1	-2	0
CONJERS 1974	-16.14	1.74	3.03	0	0	1	0	0
CONJERS 1975	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

	el
Company & year	Sample Size
BRISTOL 1970	no data
BRISTOL 1971	1
BRISTOL 1972	1
BRISTOL 1973	1
BRISTOL 1974	1
BRISTOL 1975	1
BRISTOL 1976	1
BRISTOL 1977	1
BRISTOL 1978	1
BRISTOL 1979	1
BURHOSE 1970	no data
BURHOSE 1971	no data
BURHOSE 1972	1
BURHOSE 1973	1
BURHOSE 1974	1
BURHOSE 1975	1
BURHOSE 1976	no data
BURHOSE 1977	no data
BURHOSE 1978	no data
BURHOSE 1979	no data
CONJERS 1970	no data
CONJERS 1971	no data
CONJERS 1972	1
CONJERS 1973	1
CONJERS 1974	1
CONJERS 1975	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
DRG 1978	12.98	1.07	no data	no data	no data	no data
DRG 1979	10.82	1.08	no data	no data	no data	no data
FAIRWEATHER 1970	9.02	1.11	no data	no data	no data	no data
FAIRWEATHER 1971	5.98	0.68	-2	0	0	1
FAIRWEATHER 1972	-1.76	-0.20	0	-2	0	1
FAIRWEATHER 1973	4.53	0.57	-2	-1	0	1
FAIRWEATHER 1974	-3.33	-0.33	0	-2	0	1
FAIRWEATHER 1975	4.96	0.42	-2	-1	0	1
FAIRWEATHER 1976	-9.68	-0.79	no data	no data	no data	no data
H PARKER 1970	4.62	0.58	no data	no data	no data	no data
H PARKER 1971	0.92	0.11	-2	-1	0	1
H PARKER 1972	-7.70	-0.87	-2	-2	1	1
H PARKER 1973	-13.41	-1.52	0	-2	0	1
H PARKER 1974	11.75	1.47	0	0	1	1
H PARKER 1975	7.40	0.73	-1	0	0	1
H PARKER 1976	0.71	0.06	-1	-1	1	1
H PARKER 1977	5.74	0.47	-1	-1	1	1
H PARKER 1978	1.77	0.14	0	-1	0	1
H PARKER 1979	10.61	0.87	-1	0	0	1
IL BACK 1970	3.89	0.49	no data	no data	no data	no data
IL BACK 1971	0.45	0.06	-2	-1	0	1
IL BACK 1972	-8.38	-0.95	-2	-2	1	1
IL BACK 1973	-5.20	-0.59	-2	-2	1	1
IL BACK 1974	-11.53	-1.44	0	-2	0	1
IL BACK 1975	3.74	0.37	no data	no data	no data	no data
IL BACK 1976	no data	no data	-2	no data	no data	no data
IL BACK 1977	-9.38	-0.77	-2	-2	1	1

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	-14.74	1.27	0.99	-1	0	1	0	0
FAIRWEATHER 1972	-3.51	-2.52	-15.47	-1	0	1	-2	0
FAIRWEATHER 1973	-12.63	0.55	-2.11	-1	0	1	-1	0
FAIRWEATHER 1974	-1.22	-3.30	-18.83	-2	0	1	-2	0
FAIRWEATHER 1975	-13.26	0.77	-1.19	-1	0	1	0	0
FAIRWEATHER 1976	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	-7.39	-1.21	-9.78	-1	0	1	-1	0
H PARKER 1972	5.12	-5.44	-28.11	-2	1	1	-2	1
H PARKER 1973	13.41	-8.23	-40.25	-2	0	1	-2	0
H PARKER 1974	-23.11	4.09	13.25	0	1	1	0	1
H PARKER 1975	-16.81	1.96	4.01	0	0	1	0	0
H PARKER 1976	-7.09	-1.32	-10.23	-1	1	1	-1	1
H PARKER 1977	-14.39	1.15	0.47	-1	1	1	0	0
H PARKER 1978	-8.63	-0.80	-7.97	-1	0	1	-1	0
H PARKER 1979	-21.46	3.53	10.83	0	0	1	0	0
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	-6.72	-1.44	-10.77	-1	0	1	-1	0
IL BACK 1972	6.11	-5.77	-29.55	-2	1	1	-2	1
IL BACK 1973	1.49	-4.21	-22.78	-2	1	1	-2	1
IL BACK 1974	10.68	-7.31	-36.26	-2	0	1	-2	0
IL BACK 1975	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	7.56	-6.26	-31.68	-2	1	1	-2	1

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
DRG 1978	no data
DRG 1979	no data
FAIRWEATHER 1970	no data
FAIRWEATHER 1971	1
FAIRWEATHER 1972	1
FAIRWEATHER 1973	1
FAIRWEATHER 1974	1
FAIRWEATHER 1975	1
FAIRWEATHER 1976	no data
H PARKER 1970	no data
H PARKER 1971	1
H PARKER 1972	1
H PARKER 1973	1
H PARKER 1974	1
H PARKER 1975	1
H PARKER 1976	1
H PARKER 1977	1
H PARKER 1978	1
H PARKER 1979	1
IL BACK 1970	no data
IL BACK 1971	1
IL BACK 1972	1
IL BACK 1973	1
IL BACK 1974	1
IL BACK 1975	no data
IL BACK 1976	no data
IL BACK 1977	1

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
IL BACK 1978	-24.40	-1.95	-2	-2	1	1
IL BACK 1979	-9.43	-0.78	-2	-2	1	1
KTL 1970	6.87	0.84	no data	no data	no data	no data
KTL 1971	5.88	0.67	no data	no data	no data	no data
KTL 1972	10.28	1.17	0	0	1	1
KTL 1973	16.61	2.08	0	0	1	1
KTL 1974	19.08	1.88	0	0	1	1
KTL 1975	16.21	1.37	0	0	1	1
KTL 1976	13.11	1.07	-1	0	0	1
KTL 1977	10.15	0.81	-1	0	0	1
KTL 1978	11.16	0.92	0	0	1	1
KTL 1979	10.33	1.03	0	0	1	1
OMNIA 1970	10.93	1.34	no data	no data	no data	no data
OMNIA 1971	9.88	1.12	no data	no data	no data	no data
OMNIA 1972	10.31	1.17	-1	0	0	1
OMNIA 1973	9.28	1.16	0	0	1	1
OMNIA 1974	9.14	0.90	0	0	1	1
OMNIA 1975	10.38	0.88	-2	0	0	1
OMNIA 1976	-2.22	-0.18	-2	-2	1	1
OMNIA 1977	-11.43	-0.91	-2	-2	1	1
OMNIA 1978	-7.44	-0.61	-2	-2	1	1
OMNIA 1979	-0.40	-0.04	0	-2	0	1
PAN 1970	9.65	1.18	no data	no data	no data	no data
PAN 1971	8.47	0.96	no data	no data	no data	no data
PAN 1972	0.65	0.07	-2	-1	0	1
PAN 1973	-7.93	-0.99	-2	-2	1	1
PAN 1974	-3.87	-0.38	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	29.37	-13.62	-63.63	-2	1	1	-2	1
IL BACK 1979	7.64	-6.29	-31.80	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	-20.98	3.37	10.12	0	1	1	0	1
KTL 1973	-30.17	6.47	23.59	0	1	1	0	1
KTL 1974	-33.77	7.69	28.86	0	1	1	0	1
KTL 1975	-29.60	6.28	22.75	0	1	1	0	1
KTL 1976	-25.10	4.76	16.16	0	0	1	0	0
KTL 1977	-20.79	3.31	9.85	0	0	1	0	0
KTL 1978	-22.27	3.81	12.01	0	1	1	0	1
KTL 1979	-21.05	3.40	10.23	0	1	1	0	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	-21.03	3.39	10.21	0	0	1	0	0
OMNIA 1973	-19.53	2.88	8.00	0	1	1	0	1
OMNIA 1974	-19.33	2.81	7.71	0	1	1	0	1
OMNIA 1975	-21.14	3.42	10.35	0	0	1	0	0
OMNIA 1976	-2.83	-2.75	-16.46	-1	0	1	-2	1
OMNIA 1977	10.54	-7.26	-36.04	-2	1	1	-2	1
OMNIA 1978	4.74	-5.31	-27.56	-2	1	1	-2	1
OMNIA 1979	-5.48	-1.86	-12.58	-1	0	1	-2	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	-7.00	-1.34	-10.35	-1	0	1	-1	0
PAN 1973	5.46	-5.55	-28.60	-2	1	1	-2	1
PAN 1974	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
IL BACK 1978	1
IL BACK 1979	1
KTL 1970	no data
KTL 1971	no data
KTL 1972	1
KTL 1973	1
KTL 1974	1
KTL 1975	1
KTL 1976	1
KTL 1977	1
KTL 1978	1
KTL 1979	1
OMNIA 1970	no data
OMNIA 1971	no data
OMNIA 1972	1
OMNIA 1973	1
OMNIA 1974	1
OMNIA 1975	1
OMNIA 1976	1
OMNIA 1977	1
OMNIA 1978	1
OMNIA 1979	1
PAN 1970	no data
PAN 1971	no data
PAN 1972	1
PAN 1973	1
PAN 1974	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
PIONEER H 1973	3.80	0.48	no data	no data	no data	no data
PIONEER H 1974	5.19	0.51	no data	no data	no data	no data
PIONEER H 1975	6.84	0.58	-1	-1	1	1
PIONEER H 1976	4.53	0.37	-1	-1	1	1
PIONEER H 1977	4.84	0.39	-1	-1	1	1
PIONEER H 1978	5.30	0.44	0	-1	0	1
PIONEER H 1979	7.07	0.71	no data	no data	no data	no data
ROMATEX 1970	2.00	0.25	no data	no data	no data	no data
ROMATEX 1971	2.68	0.33	no data	no data	no data	no data
ROMATEX 1972	2.77	0.31	0	-1	0	1
ROMATEX 1973	3.71	0.42	0	-1	0	1
ROMATEX 1974	7.50	0.94	-2	0	0	1
ROMATEX 1975	-9.60	-0.94	0	-2	0	1
ROMATEX 1976	6.10	0.52	0	-1	0	1
ROMATEX 1977	7.38	0.60	0	0	1	1
ROMATEX 1978	9.10	0.73	0	0	1	1
ROMATEX 1979	10.29	0.85	0	0	1	1
SCHACHAT 1970	5.23	0.64	no data	no data	no data	no data
SCHACHAT 1971	6.54	0.74	no data	no data	no data	no data
SCHACHAT 1972	8.29	0.94	0	0	1	1
SCHACHAT 1973	6.25	0.78	-1	0	0	1
SCHACHAT 1974	4.78	0.47	-1	-1	1	1
SCHACHAT 1975	5.20	0.44	-1	-1	1	1
SCHACHAT 1976	6.69	0.55	-1	-1	1	1
SCHACHAT 1977	3.96	0.32	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	-15.98	1.69	2.81	0	0	1	0	0
PIONEER H 1976	-12.64	0.56	-2.09	-1	1	1	-1	1
PIONEER H 1977	-13.09	0.71	-1.44	-1	1	1	0	0
PIONEER H 1978	-13.76	0.93	-0.45	-1	0	1	0	1
PIONEER H 1979	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	-10.08	-0.31	-5.85	-1	0	1	-1	0
ROMATEX 1973	-11.44	0.15	-3.85	-1	0	1	-1	0
ROMATEX 1974	-16.94	2.01	4.21	0	0	1	0	0
ROMATEX 1975	7.88	-6.37	-32.16	-2	0	1	-2	0
ROMATEX 1976	-14.92	1.32	1.24	-1	0	1	0	1
ROMATEX 1977	-16.77	1.95	3.96	0	1	1	0	1
ROMATEX 1978	-19.27	2.80	7.62	0	1	1	0	1
ROMATEX 1979	-20.99	3.38	10.14	0	1	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	-18.09	2.40	5.89	0	1	1	0	1
SCHACHAT 1973	-15.14	1.40	1.56	0	0	1	0	0
SCHACHAT 1974	-13.00	0.68	-1.57	-1	1	1	0	0
SCHACHAT 1975	-13.61	0.88	-0.68	-1	1	1	0	0
SCHACHAT 1976	-15.77	1.61	2.50	0	0	1	0	0
SCHACHAT 1977	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

	el
Company & year	Sample Size
PIONEER H 1973	no data
PIONEER H 1974	no data
PIONEER H 1975	1
PIONEER H 1976	1
PIONEER H 1977	1
PIONEER H 1978	1
PIONEER H 1979	no data
ROMATEX 1970	no data
ROMATEX 1971	no data
ROMATEX 1972	1
ROMATEX 1973	1
ROMATEX 1974	1
ROMATEX 1975	1
ROMATEX 1976	1
ROMATEX 1977	1
ROMATEX 1978	1
ROMATEX 1979	1
SCHACHAT 1970	no data
SCHACHAT 1971	no data
SCHACHAT 1972	1
SCHACHAT 1973	1
SCHACHAT 1974	1
SCHACHAT 1975	1
SCHACHAT 1976	1
SCHACHAT 1977	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
SPECTRO 1970	4.09	0.50	no data	no data	no data	no data
SPECTRO 1971	9.68	1.10	no data	no data	no data	no data
SPECTRO 1972	8.27	0.94	0	0	1	1
SPECTRO 1973	11.44	1.43	0	0	1	1
SPECTRO 1974	7.95	0.78	-2	0	0	1
SPECTRO 1975	-4.52	-0.38	no data	no data	no data	no data
STUTTAFORDS 1970	7.41	0.93	no data	no data	no data	no data
STUTTAFORDS 1971	12.31	1.51	no data	no data	no data	no data
STUTTAFORDS 1972	3.54	0.40	0	-1	0	1
STUTTAFORDS 1973	10.37	1.18	-1	0	0	1
STUTTAFORDS 1974	4.35	0.54	-1	-1	1	1
STUTTAFORDS 1975	4.36	0.43	-1	-1	1	1
STUTTAFORDS 1976	3.76	0.32	-1	-1	1	1
STUTTAFORDS 1977	3.91	0.32	-1	-1	1	1
STUTTAFORDS 1978	3.07	0.25	no data	no data	no data	no data
TAPSA 1970	9.39	1.17	no data	no data	no data	no data
TAPSA 1971	6.65	0.81	no data	no data	no data	no data
TAPSA 1972	3.66	0.41	-1	-1	1	1
TAPSA 1973	3.53	0.40	-2	-1	0	1
TAPSA 1974	-7.83	-0.98	-2	-2	1	1
TAPSA 1975	-38.69	-3.81	no data	no data	no data	no data
TIGERIND 1970	0.87	0.11	-2	-1	0	1
TIGERIND 1971	-6.10	-0.69	-2	-2	1	1
TIGERIND 1972	-23.19	-2.64	0	-2	0	1
TIGERIND 1973	0.17	0.02	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	-18.06	2.39	5.85	0	1	1	0	1
SPECTRO 1973	-22.66	3.94	12.59	0	1	1	0	1
SPECTRO 1974	-17.60	2.23	5.17	0	0	1	0	0
SPECTRO 1975	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	-11.19	0.07	-4.21	-1	0	1	-1	0
STUTTAFORDS 1973	-21.11	3.42	10.31	0	0	1	0	0
STUTTAFORDS 1974	-12.38	0.47	-2.47	-1	1	1	-1	1
STUTTAFORDS 1975	-12.39	0.47	-2.46	-1	1	1	-1	1
STUTTAFORDS 1976	-11.52	0.18	-3.73	-1	1	1	-1	1
STUTTAFORDS 1977	-11.74	0.25	-3.41	-1	1	1	-1	1
STUTTAFORDS 1978	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	-11.38	0.13	-3.94	-1	1	1	-1	1
TAPSA 1973	-11.18	0.06	-4.23	-1	0	1	-1	0
TAPSA 1974	5.32	-5.50	-28.40	-2	1	1	-2	1
TAPSA 1975	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1970	-7.32	-1.24	-9.88	-1	0	1	-1	0
TIGERIND 1971	2.80	-4.65	-24.71	-2	1	1	-2	1
TIGERIND 1972	27.62	-13.03	-61.06	-2	0	1	-2	0
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
SPECTRO 1970	no data
SPECTRO 1971	no data
SPECTRO 1972	1
SPECTRO 1973	1
SPECTRO 1974	1
SPECTRO 1975	no data
STUTTAFORDS 1970	no data
STUTTAFORDS 1971	no data
STUTTAFORDS 1972	1
STUTTAFORDS 1973	1
STUTTAFORDS 1974	1
STUTTAFORDS 1975	1
STUTTAFORDS 1976	1
STUTTAFORDS 1977	1
STUTTAFORDS 1978	no data
TAPSA 1970	no data
TAPSA 1971	no data
TAPSA 1972	1
TAPSA 1973	1
TAPSA 1974	1
TAPSA 1975	no data
TIGERIND 1970	1
TIGERIND 1971	1
TIGERIND 1972	1
TIGERIND 1973	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
TRIOMF 1970	4.85	0.59	no data	no data	no data	no data
TRIOMF 1971	5.92	0.67	no data	no data	no data	no data
TRIOMF 1972	12.82	1.46	0	0	1	1
TRIOMF 1973	12.35	1.54	0	0	1	1
TRIOMF 1974	11.56	1.14	0	0	1	1
TRIOMF 1975	7.30	0.62	-1	0	0	1
TRIOMF 1976	2.79	0.23	-2	-1	0	1
TRIOMF 1977	-4.85	-0.39	0	-2	0	1
TRIOMF 1978	1.46	0.12	0	-1	0	1
TRIOMF 1979	10.97	1.10	0	0	1	1
TUCKERS 1970	14.67	1.80	no data	no data	no data	no data
TUCKERS 1971	10.71	1.21	no data	no data	no data	no data
TUCKERS 1972	10.44	1.19	0	0	1	1
TUCKERS 1973	14.18	1.77	0	0	1	1
TUCKERS 1974	13.60	1.34	-1	0	0	1
TUCKERS 1975	5.38	0.46	-1	-1	1	1
TUCKERS 1976	3.13	0.26	-1	-1	1	1
TUCKERS 1977	7.77	0.62	-2	0	0	1
TUCKERS 1978	-4.16	-0.34	-1	-2	0	1
TUCKERS 1979	3.74	0.37	-1	-1	1	1

Sub-Total 1970s
 Predictive Accuracy

67 123
 54.5%

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	-24.67	4.62	15.53	0	1	1	0	1
TRIOMF 1973	-23.99	4.39	14.53	0	1	1	0	1
TRIOMF 1974	-22.85	4.00	12.86	0	1	1	0	1
TRIOMF 1975	-16.65	1.91	3.79	0	0	1	0	0
TRIOMF 1976	-10.10	-0.30	-5.81	-1	0	1	-1	0
TRIOMF 1977	0.98	-4.04	-22.05	-2	0	1	-2	0
TRIOMF 1978	-8.18	-0.95	-8.62	-1	0	1	-1	0
TRIOMF 1979	-21.98	3.71	11.59	0	1	1	0	1
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	-21.21	3.45	10.47	0	1	1	0	1
TUCKERS 1973	-26.65	5.29	18.44	0	1	1	0	1
TUCKERS 1974	-25.81	5.00	17.20	0	0	1	0	0
TUCKERS 1975	-13.87	0.97	-0.29	-1	1	1	0	0
TUCKERS 1976	-10.61	-0.13	-5.07	-1	1	1	-1	1
TUCKERS 1977	-17.34	2.14	4.79	0	0	1	0	0
TUCKERS 1978	-0.02	-3.70	-20.57	-2	0	1	-2	0
TUCKERS 1979	-11.49	0.17	-3.77	-1	1	1	-1	1
Sub-Total 1970s					61	123		61
Predictive Accuracy					49.6%			49.6%

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
TRIOMF 1970	no data
TRIOMF 1971	no data
TRIOMF 1972	1
TRIOMF 1973	1
TRIOMF 1974	1
TRIOMF 1975	1
TRIOMF 1976	1
TRIOMF 1977	1
TRIOMF 1978	1
TRIOMF 1979	1
TUCKERS 1970	no data
TUCKERS 1971	no data
TUCKERS 1972	1
TUCKERS 1973	1
TUCKERS 1974	1
TUCKERS 1975	1
TUCKERS 1976	1
TUCKERS 1977	1
TUCKERS 1978	1
TUCKERS 1979	1

Sub-Total 1970s 123

Predictive Accuracy

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
BIDVEST 1980	7.73	0.81	0	0	1	1
BIDVEST 1981	14.58	1.04	0	0	1	1
BIDVEST 1982	10.71	0.55	-1	-1	1	1
BIDVEST 1983	5.65	0.34	-1	-1	1	1
BIDVEST 1984	5.98	0.27	-1	-1	1	1
BIDVEST 1985	3.87	0.18	-1	-1	1	1
BIDVEST 1986	4.50	0.31	-2	-1	0	1
BIDVEST 1987	-8.08	-0.65	0	-2	0	1
BIDVEST 1988	7.61	0.50	0	-1	0	1
BIDVEST 1989	34.85	1.76	0	0	1	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	6.71	0.48	no data	no data	no data	no data
BRICK CLAY 1982	8.50	0.44	-2	-1	0	1
BRICK CLAY 1983	-21.21	-1.27	0	-2	0	1
BRICK CLAY 1984	0.86	0.04	-2	-1	0	1
BRICK CLAY 1985	-31.02	-1.44	0	-2	0	1
BRICK CLAY 1986	10.69	0.75	0	0	1	1
BRICK CLAY 1987	22.83	1.83	0	0	1	1
BRICK CLAY 1988	23.92	1.56	no data	no data	no data	no data
BRISTOL 1980	7.42	0.74	0	0	1	1
BRISTOL 1981	9.17	0.97	-1	0	0	1
BRISTOL 1982	3.04	0.22	-1	-1	1	1
BRISTOL 1983	2.49	0.13	0	-1	0	1
BRISTOL 1984	13.59	0.82	0	0	1	1
BRISTOL 1985	7.71	0.35	-1	-1	1	1
BRISTOL 1986	6.52	0.30	-1	-1	1	1
BRISTOL 1987	5.76	0.40	-1	-1	1	1

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	-17.28	2.12	4.70	0	1	1	0	1
BIDVEST 1981	-27.23	5.48	19.28	0	1	1	0	1
BIDVEST 1982	-21.62	3.59	11.06	0	0	1	0	0
BIDVEST 1983	-14.26	1.10	0.28	-1	1	1	0	0
BIDVEST 1984	-14.75	1.27	1.00	-1	1	1	0	0
BIDVEST 1985	-11.67	0.23	-3.51	-1	1	1	-1	1
BIDVEST 1986	-12.59	0.54	-2.17	-1	0	1	-1	0
BIDVEST 1987	5.68	-5.62	-28.92	-2	0	1	-2	0
BIDVEST 1988	-17.11	2.07	4.46	0	1	1	0	1
BIDVEST 1989	-56.67	15.41	62.40	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	-18.41	2.50	6.35	0	0	1	0	0
BRICK CLAY 1983	24.74	-12.06	-56.85	-2	0	1	-2	0
BRICK CLAY 1984	-7.31	-1.24	-9.89	-1	0	1	-1	0
BRICK CLAY 1985	38.98	-16.86	-77.71	-2	0	1	-2	0
BRICK CLAY 1986	-21.58	3.57	11.00	0	1	1	0	1
BRICK CLAY 1987	-39.21	9.52	36.84	0	1	1	0	1
BRICK CLAY 1988	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1980	-16.83	1.97	4.04	0	1	1	0	1
BRISTOL 1981	-19.37	2.83	7.77	0	0	1	0	0
BRISTOL 1982	-10.47	-0.17	-5.27	-1	1	1	-1	1
BRISTOL 1983	-9.68	-0.44	-6.43	-1	0	1	-1	0
BRISTOL 1984	-25.79	4.99	17.17	0	1	1	0	1
BRISTOL 1985	-17.26	2.11	4.67	0	0	1	0	0
BRISTOL 1986	-15.52	1.53	2.13	0	0	1	0	0
BRISTOL 1987	-14.42	1.16	0.51	-1	1	1	0	0

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1980	1
BIDVEST 1981	1
BIDVEST 1982	1
BIDVEST 1983	1
BIDVEST 1984	1
BIDVEST 1985	1
BIDVEST 1986	1
BIDVEST 1987	1
BIDVEST 1988	1
BIDVEST 1989	1
BRICK CLAY 1980	no data
BRICK CLAY 1981	no data
BRICK CLAY 1982	1
BRICK CLAY 1983	1
BRICK CLAY 1984	1
BRICK CLAY 1985	1
BRICK CLAY 1986	1
BRICK CLAY 1987	1
BRICK CLAY 1988	no data
BRISTOL 1980	1
BRISTOL 1981	1
BRISTOL 1982	1
BRISTOL 1983	1
BRISTOL 1984	1
BRISTOL 1985	1
BRISTOL 1986	1
BRISTOL 1987	1

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
BRISTOL 1988	7.16	0.57	0	-1	0	1
BRISTOL 1989	14.60	0.95	-1	0	0	1
DRG 1980	10.62	1.12	-1	0	0	1
DRG 1981	4.73	0.34	-2	-1	0	1
DRG 1982	-0.23	-0.01	no data	no data	no data	no data
H PARKER 1980	4.07	0.41	0	-1	0	1
H PARKER 1981	6.33	0.67	-1	0	0	1
H PARKER 1982	1.92	0.14	no data	no data	no data	no data
IL BACK 1980	-10.40	-1.04	-2	-2	1	1
IL BACK 1981	-11.26	-1.18	-2	-2	1	1
IL BACK 1982	-10.65	-0.76	no data	no data	no data	no data
KTL 1980	16.77	1.76	0	0	1	1
KTL 1981	13.13	0.94	0	0	1	1
KTL 1982	11.82	0.61	0	0	1	1
KTL 1983	12.73	0.76	-1	0	0	1
KTL 1984	11.57	0.52	-1	-1	1	1
KTL 1985	5.38	0.25	-1	-1	1	1
KTL 1986	2.44	0.17	0	-1	0	1
KTL 1987	9.22	0.74	0	0	1	1
KTL 1988	10.05	0.66	0	0	1	1
KTL 1989	10.98	0.55	0	-1	0	1
OMNIA 1980	5.74	0.60	0	0	1	1
OMNIA 1981	18.04	1.29	0	0	1	1
OMNIA 1982	8.19	0.42	-1	-1	1	1
OMNIA 1983	3.05	0.18	-2	-1	0	1
OMNIA 1984	-0.17	-0.01	-1	-2	0	1
OMNIA 1985	1.11	0.05	0	-1	0	1

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	-16.46	1.85	3.51	0	1	1	0	1
BRISTOL 1989	-27.26	5.49	19.33	0	0	1	0	0
DRG 1980	-21.47	3.54	10.85	0	0	1	0	0
DRG 1981	-12.92	0.65	-1.68	-1	0	1	0	0
DRG 1982	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1980	-11.97	0.33	-3.08	-1	0	1	-1	0
H PARKER 1981	-15.25	1.44	1.73	0	0	1	0	0
H PARKER 1982	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1980	9.05	-6.76	-33.86	-2	1	1	-2	1
IL BACK 1981	10.29	-7.18	-35.68	-2	1	1	-2	1
IL BACK 1982	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1980	-30.40	6.55	23.93	0	1	1	0	1
KTL 1981	-25.13	4.77	16.20	0	1	1	0	1
KTL 1982	-23.22	4.13	13.40	0	1	1	0	1
KTL 1983	-24.54	4.57	15.34	0	0	1	0	0
KTL 1984	-22.86	4.01	12.88	0	0	1	0	0
KTL 1985	-13.87	0.97	-0.29	-1	1	1	0	0
KTL 1986	-9.61	-0.47	-6.54	-1	0	1	-1	0
KTL 1987	-19.45	2.85	7.88	0	1	1	0	1
KTL 1988	-20.65	3.26	9.64	0	1	1	0	1
KTL 1989	-22.01	3.72	11.63	0	1	1	0	1
OMNIA 1980	-14.40	1.15	0.48	-1	0	1	0	1
OMNIA 1981	-32.25	7.18	26.64	0	1	1	0	1
OMNIA 1982	-17.95	2.35	5.69	0	0	1	0	0
OMNIA 1983	-10.48	-0.17	-5.25	-1	0	1	-1	0
OMNIA 1984	-5.81	-1.75	-12.10	-1	1	1	-2	0
OMNIA 1985	-7.67	-1.12	-9.38	-1	0	1	-1	0

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BRISTOL 1988	1
BRISTOL 1989	1
DRG 1980	1
DRG 1981	1
DRG 1982	no data
H PARKER 1980	1
H PARKER 1981	1
H PARKER 1982	no data
IL BACK 1980	1
IL BACK 1981	1
IL BACK 1982	no data
KTL 1980	1
KTL 1981	1
KTL 1982	1
KTL 1983	1
KTL 1984	1
KTL 1985	1
KTL 1986	1
KTL 1987	1
KTL 1988	1
KTL 1989	1
OMNIA 1980	1
OMNIA 1981	1
OMNIA 1982	1
OMNIA 1983	1
OMNIA 1984	1
OMNIA 1985	1

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
OMNIA 1986	1.91	0.13	0	-1	0	1
OMNIA 1987	4.78	0.38	0	-1	0	1
OMNIA 1988	8.42	0.55	0	-1	0	1
OMNIA 1989	11.77	0.59	0	0	1	1
ROMATEX 1980	12.95	1.30	0	0	1	1
ROMATEX 1981	16.18	1.70	-1	0	0	1
ROMATEX 1982	13.79	0.99	-1	0	0	1
ROMATEX 1983	8.76	0.45	-1	-1	1	1
ROMATEX 1984	9.29	0.56	-1	-1	1	1
ROMATEX 1985	1.08	0.05	-1	-1	1	1
ROMATEX 1986	6.33	0.29	0	-1	0	1
ROMATEX 1987	9.05	0.63	0	0	1	1
ROMATEX 1988	11.28	0.90	0	0	1	1
ROMATEX 1989	10.66	0.70	-1	0	0	1
TRIOMF 1980	12.30	1.29	-1	0	0	1
TRIOMF 1981	9.78	0.70	-1	0	0	1
TRIOMF 1982	0.17	0.01	-2	-1	0	1
TRIOMF 1983	-0.51	-0.03	no data	no data	no data	no data
TRIOMF 1984	no data	no data	-2	no data	no data	no data
TRIOMF 1985	-4.57	-0.21	-2	-2	1	1
TRIOMF 1986	-28.83	-2.01	-2	-2	1	1
TRIOMF 1987	-0.22	-0.02	no data	no data	no data	no data
TUCKERS 1980	3.66	0.39	0	-1	0	1
TUCKERS 1981	5.60	0.40	0	-1	0	1
TUCKERS 1982	9.31	0.48	no data	no data	no data	no data
Sub-Total 1980s					36	69
Predictive Accuracy					52.2%	

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1986	-8.84	-0.73	-7.66	-1	0	1	-1	0
OMNIA 1987	-13.00	0.68	-1.57	-1	0	1	0	1
OMNIA 1988	-18.29	2.46	6.18	0	1	1	0	1
OMNIA 1989	-23.15	4.10	13.30	0	1	1	0	1
ROMATEX 1980	-24.87	4.68	15.82	0	1	1	0	1
ROMATEX 1981	-29.55	6.26	22.68	0	0	1	0	0
ROMATEX 1982	-26.09	5.10	17.61	0	0	1	0	0
ROMATEX 1983	-18.77	2.63	6.89	0	0	1	0	0
ROMATEX 1984	-19.54	2.89	8.02	0	0	1	0	0
ROMATEX 1985	-7.62	-1.14	-9.45	-1	1	1	-1	1
ROMATEX 1986	-15.25	1.44	1.72	0	1	1	0	1
ROMATEX 1987	-19.20	2.77	7.52	0	1	1	0	1
ROMATEX 1988	-22.43	3.86	12.26	0	1	1	0	1
ROMATEX 1989	-21.53	3.56	10.93	0	0	1	0	0
TRIOMF 1980	-23.92	4.36	14.43	0	0	1	0	0
TRIOMF 1981	-20.26	3.13	9.07	0	0	1	0	0
TRIOMF 1982	-6.31	-1.58	-11.36	-1	0	1	-2	1
TRIOMF 1983	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	0.58	-3.91	-21.46	-2	1	1	-2	1
TRIOMF 1986	35.81	-15.79	-73.07	-2	1	1	-2	1
TRIOMF 1987	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1980	-11.38	0.13	-3.94	-1	0	1	-1	0
TUCKERS 1981	-14.18	1.08	0.17	-1	0	1	0	1
TUCKERS 1982	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1980s					34	69		33
Predictive Accuracy					49.3%			47.8%

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1986	1
OMNIA 1987	1
OMNIA 1988	1
OMNIA 1989	1
ROMATEX 1980	1
ROMATEX 1981	1
ROMATEX 1982	1
ROMATEX 1983	1
ROMATEX 1984	1
ROMATEX 1985	1
ROMATEX 1986	1
ROMATEX 1987	1
ROMATEX 1988	1
ROMATEX 1989	1
TRIOMF 1980	1
TRIOMF 1981	1
TRIOMF 1982	1
TRIOMF 1983	no data
TRIOMF 1984	no data
TRIOMF 1985	1
TRIOMF 1986	1
TRIOMF 1987	no data
TUCKERS 1980	1
TUCKERS 1981	1
TUCKERS 1982	no data

Sub-Total 1980s 69

Predictive Accuracy

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
BIDVEST 1990	13.67	0.65	0	0	1	1
BIDVEST 1991	6.48	0.32	0	-1	0	1
BIDVEST 1992	9.56	0.51	0	-1	0	1
BIDVEST 1993	6.22	0.38	0	-1	0	1
BIDVEST 1994	9.70	0.62	0	0	1	1
BIDVEST 1995	10.91	0.61	0	0	1	1
BIDVEST 1996	11.37	0.58	0	-1	0	1
BIDVEST 1997	7.42	0.37	0	-1	0	1
BIDVEST 1998	10.93	0.50	no data	no data	no data	no data
BRISTOL 1990	5.68	0.29	-1	-1	1	1
BRISTOL 1991	6.54	0.31	-1	-1	1	1
BRISTOL 1992	7.21	0.36	-1	-1	1	1
BRISTOL 1993	6.26	0.33	-1	-1	1	1
BRISTOL 1994	5.21	0.32	no data	no data	no data	no data
KTL 1990	8.13	0.39	-1	-1	1	1
KTL 1991	4.05	0.20	-1	-1	1	1
KTL 1992	0.14	0.01	0	-1	0	1
KTL 1993	5.83	0.36	0	-1	0	1
KTL 1994	10.07	0.65	0	0	1	1
KTL 1995	8.86	0.50	0	-1	0	1
KTL 1996	16.64	0.85	-1	0	0	1
KTL 1997	6.74	0.34	-1	-1	1	1
KTL 1998	32.51	1.49	-1	0	0	1
KTL 1999	45.98	2.55	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1990	-25.91	5.03	17.34	0	1	1	0	1
BIDVEST 1991	-15.46	1.51	2.04	0	1	1	0	1
BIDVEST 1992	-19.94	3.02	8.61	0	1	1	0	1
BIDVEST 1993	-15.09	1.38	1.49	0	1	1	0	1
BIDVEST 1994	-20.15	3.09	8.91	0	1	1	0	1
BIDVEST 1995	-21.90	3.68	11.47	0	1	1	0	1
BIDVEST 1996	-22.56	3.91	12.44	0	1	1	0	1
BIDVEST 1997	-16.83	1.97	4.05	0	1	1	0	1
BIDVEST 1998	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1990	-14.31	1.12	0.35	-1	1	1	0	0
BRISTOL 1991	-15.55	1.54	2.17	0	0	1	0	0
BRISTOL 1992	-16.53	1.87	3.61	0	0	1	0	0
BRISTOL 1993	-15.15	1.41	1.59	0	0	1	0	0
BRISTOL 1994	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1990	-17.86	2.32	5.55	0	0	1	0	0
KTL 1991	-11.94	0.32	-3.12	-1	1	1	-1	1
KTL 1992	-6.26	-1.60	-11.44	-1	0	1	-2	0
KTL 1993	-14.53	1.19	0.67	-1	0	1	0	1
KTL 1994	-20.68	3.27	9.68	0	1	1	0	1
KTL 1995	-18.93	2.68	7.12	0	1	1	0	1
KTL 1996	-30.23	6.49	23.67	0	0	1	0	0
KTL 1997	-15.84	1.64	2.59	0	0	1	0	0
KTL 1998	-53.27	14.27	57.42	0	0	1	0	0
KTL 1999	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1990	1
BIDVEST 1991	1
BIDVEST 1992	1
BIDVEST 1993	1
BIDVEST 1994	1
BIDVEST 1995	1
BIDVEST 1996	1
BIDVEST 1997	1
BIDVEST 1998	no data
BRISTOL 1990	1
BRISTOL 1991	1
BRISTOL 1992	1
BRISTOL 1993	1
BRISTOL 1994	no data
KTL 1990	1
KTL 1991	1
KTL 1992	1
KTL 1993	1
KTL 1994	1
KTL 1995	1
KTL 1996	1
KTL 1997	1
KTL 1998	1
KTL 1999	no data

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.59
 Lower Cut-off point 0.42 0.00

Company & year	Data			Yn-1 Naive Model		
	PAT/TA	SVA	3Year n-1	Pred State	# Correct	Sample Size
OMNIA 1990	9.46	0.45	-1	-1	1	1
OMNIA 1991	7.94	0.39	-1	-1	1	1
OMNIA 1992	4.53	0.24	0	-1	0	1
OMNIA 1993	9.71	0.60	0	0	1	1
OMNIA 1994	8.46	0.54	0	-1	0	1
OMNIA 1995	6.99	0.39	0	-1	0	1
OMNIA 1996	9.13	0.47	0	-1	0	1
OMNIA 1997	11.49	0.57	-1	-1	1	1
OMNIA 1998	7.53	0.35	no data	no data	no data	no data
ROMATEX 1990	7.46	0.38	-1	-1	1	1
ROMATEX 1991	0.31	0.01	-1	-1	1	1
ROMATEX 1992	2.62	0.13	0	-1	0	1
ROMATEX 1993	7.25	0.38	0	-1	0	1
ROMATEX 1994	7.92	0.49	-1	-1	1	1
ROMATEX 1995	6.89	0.44	-1	-1	1	1
ROMATEX 1996	0.26	0.01	-2	-1	0	1
ROMATEX 1997	-10.35	-0.53	0	-2	0	1
ROMATEX 1998	1.52	0.08	no data	no data	no data	no data
Sub-Total 1990s					19	37
Predictive Accuracy					51.4%	
Grand Total					122	229
Predictive Accuracy					53.3%	

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1990	-19.80	2.97	8.39	0	0	1	0	0
OMNIA 1991	-17.59	2.23	5.15	0	0	1	0	0
OMNIA 1992	-12.63	0.55	-2.11	-1	0	1	-1	0
OMNIA 1993	-20.16	3.10	8.92	0	1	1	0	1
OMNIA 1994	-18.34	2.48	6.26	0	1	1	0	1
OMNIA 1995	-16.20	1.76	3.13	0	1	1	0	1
OMNIA 1996	-19.31	2.81	7.68	0	1	1	0	1
OMNIA 1997	-22.75	3.97	12.71	0	0	1	0	0
OMNIA 1998	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1990	-16.89	1.99	4.13	0	0	1	0	0
ROMATEX 1991	-6.51	-1.51	-11.08	-1	1	1	-2	0
ROMATEX 1992	-9.86	-0.38	-6.17	-1	0	1	-1	0
ROMATEX 1993	-16.58	1.89	3.68	0	1	1	0	1
ROMATEX 1994	-17.56	2.22	5.12	0	0	1	0	0
ROMATEX 1995	-16.07	1.71	2.93	0	0	1	0	0
ROMATEX 1996	-6.44	-1.54	-11.18	-1	0	1	-2	1
ROMATEX 1997	8.97	-6.73	-33.74	-2	0	1	-2	0
ROMATEX 1998	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1990s					18	37		18
Predictive Accuracy					48.6%			48.6%
Grand Total					113	229		112
Predictive Accuracy					49.3%			48.9%

APPENDIX C2 : 3 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1990	1
OMNIA 1991	1
OMNIA 1992	1
OMNIA 1993	1
OMNIA 1994	1
OMNIA 1995	1
OMNIA 1996	1
OMNIA 1997	1
OMNIA 1998	no data
ROMATEX 1990	1
ROMATEX 1991	1
ROMATEX 1992	1
ROMATEX 1993	1
ROMATEX 1994	1
ROMATEX 1995	1
ROMATEX 1996	1
ROMATEX 1997	1
ROMATEX 1998	no data

Sub-Total 1990s 37

Predictive Accuracy

Grand Total 229

Predictive Accuracy

APPENDIX D1 : 3 Year n-2 Models (Test Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
A&P 1976	4.14	0.34	-1	-1	1	1
AVBAK 1971	7.51	0.85	0	0	1	1
BERZACK 1976	10.05	0.82	0	0	1	1
BROMAIN 1975	4.04	0.40	-1	-1	1	1
BTR 1977	8.51	0.68	0	0	1	1
CHEMSERVE 1972	5.43	0.62	0	0	1	1
COATES 1974	8.87	0.87	0	0	1	1
DESIREE 1975	6.14	0.52	0	-1	0	1
DUBIN 1974	9.59	0.94	0	0	1	1
FINTECH 1974	7.56	0.74	0	0	1	1
FOWLER 1977	-3.04	-0.24	-2	-2	1	1
FRASERS 1975	12.38	1.05	0	0	1	1
GLEN ANIL 1974	5.25	0.52	-1	-1	1	1
HANHILL 1974	4.47	0.44	-1	-1	1	1
HEPWORTHS 1977	2.86	0.23	-2	-2	1	1
LAWSON 1974	0.88	0.09	-2	-2	1	1
LTA 1975	7.97	0.78	0	0	1	1
LUCYS 1973	-1.25	-0.16	-2	-2	1	1
MARSHALL 1975	3.11	0.26	-1	-1	1	1
SIMBA 1971	-8.20	-0.93	-2	-2	1	1

Total					19	20
Predictive Accuracy					95%	

APPENDIX D1 : 3 Year n-2 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
A&P 1976	-1.58	1.10	-2.69	-1	1	1	-1	1
AVBAK 1971	-2.28	8.23	12.80	0	1	1	0	1
BERZACK 1976	-2.24	7.81	11.89	0	1	1	0	1
BROMAIN 1975	-1.66	1.93	-0.90	-1	1	1	-1	1
BTR 1977	-2.05	5.87	7.67	0	1	1	0	1
CHEMSERVE 1972	-1.96	4.99	5.76	0	1	1	0	1
COATES 1974	-2.31	8.53	13.46	0	1	1	0	1
DESIREE 1975	-1.83	3.65	2.84	-1	0	1	0	1
DUBIN 1974	-2.41	9.52	15.60	0	1	1	0	1
FINTECH 1974	-2.14	6.75	9.58	0	1	1	0	1
FOWLER 1977	-0.79	-6.98	-20.24	-2	1	1	-2	1
FRASERS 1975	-2.55	11.01	18.83	0	1	1	0	1
GLEN ANIL 1974	-1.83	3.59	2.71	-1	1	1	-1	1
HANHILL 1974	-1.72	2.52	0.40	-1	1	1	-1	1
HEPWORTHS 1977	-1.44	-0.36	-5.86	-1	0	1	-2	1
LAWSON 1974	-1.24	-2.40	-10.29	-2	1	1	-2	1
LTA 1975	-2.19	7.31	10.79	0	1	1	0	1
LUCYS 1973	-0.91	-5.78	-17.64	-2	1	1	-2	1
MARSHALL 1975	-1.48	0.06	-4.94	-1	1	1	-2	0
SIMBA 1971	0.14	-16.52	-40.97	-2	1	1	-2	1
Total					18	20		19
Predictive Accuracy					90%			95%

APPENDIX D1 : 3 Year n-2 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
A&P 1976	1
AVBAK 1971	1
BERZACK 1976	1
BROMAIN 1975	1
BTR 1977	1
CHEMSERVE 1972	1
COATES 1974	1
DESIREE 1975	1
DUBIN 1974	1
FINTECH 1974	1
FOWLER 1977	1
FRASERS 1975	1
GLEN ANIL 1974	1
HANHILL 1974	1
HEPWORTHS 1977	1
LAWSON 1974	1
LTA 1975	1
LUCYS 1973	1
MARSHALL 1975	1
SIMBA 1971	1

Total 20

Predictive Accuracy

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	2.77	0.34	-2	-1	0	1
BACKCLOTHING 1971	-0.99	-0.11	-2	-2	1	1
BACKCLOTHING 1972	-9.73	-1.11	-2	-2	1	1
BACKCLOTHING 1973	-10.82	-1.35	no data	no data	no data	no data
BACKCLOTHING 1974	-14.13	-1.39	no data	no data	no data	no data
BIDVEST 1970	7.43	0.91	no data	no data	no data	no data
BIDVEST 1971	4.46	0.50	-1	-1	1	1
BIDVEST 1972	5.05	0.57	0	-1	0	1
BIDVEST 1973	5.36	0.67	0	0	1	1
BIDVEST 1974	5.89	0.58	0	-1	0	1
BIDVEST 1975	6.80	0.58	-1	-1	1	1
BIDVEST 1976	6.87	0.56	-1	-1	1	1
BIDVEST 1977	4.43	0.35	-1	-1	1	1
BIDVEST 1978	6.50	0.54	0	-1	0	1
BIDVEST 1979	4.83	0.48	0	-1	0	1
BRICK CLAY 1970	4.68	0.57	no data	no data	no data	no data
BRICK CLAY 1971	-5.90	-0.67	0	-2	0	1
BRICK CLAY 1972	0.21	0.02	0	-2	0	1
BRICK CLAY 1973	6.67	0.83	0	0	1	1
BRICK CLAY 1974	4.21	0.41	0	-1	0	1
BRICK CLAY 1975	8.18	0.69	-1	0	0	1
BRICK CLAY 1976	7.97	0.65	-1	0	0	1
BRICK CLAY 1977	4.95	0.40	-1	-1	1	1
BRICK CLAY 1978	3.09	0.25	no data	no data	no data	no data
BRICK CLAY 1979	4.30	0.43	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	-1.59	1.13	-2.64	-1	0	1	-2	1
BACKCLOTHING 1971	-0.97	-5.16	-16.29	-2	1	1	-2	1
BACKCLOTHING 1972	0.38	-19.00	-46.35	-2	1	1	-2	1
BACKCLOTHING 1973	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	-1.81	3.42	2.34	-1	1	1	-1	1
BIDVEST 1972	-1.90	4.38	4.44	0	1	1	-1	0
BIDVEST 1973	-2.04	5.72	7.34	0	1	1	0	1
BIDVEST 1974	-1.91	4.46	4.61	0	1	1	0	1
BIDVEST 1975	-1.91	4.43	4.53	0	0	1	0	0
BIDVEST 1976	-1.89	4.20	4.04	-1	1	1	0	0
BIDVEST 1977	-1.61	1.33	-2.20	-1	1	1	-1	1
BIDVEST 1978	-1.85	3.86	3.29	-1	0	1	0	1
BIDVEST 1979	-1.78	3.12	1.70	-1	0	1	-1	0
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	-0.21	-12.89	-33.09	-2	0	1	-2	0
BRICK CLAY 1972	-1.16	-3.26	-12.17	-2	0	1	-2	0
BRICK CLAY 1973	-2.26	7.99	12.28	0	1	1	0	1
BRICK CLAY 1974	-1.69	2.16	-0.38	-1	0	1	-1	0
BRICK CLAY 1975	-2.07	6.05	8.06	0	0	1	0	0
BRICK CLAY 1976	-2.01	5.45	6.76	0	0	1	0	0
BRICK CLAY 1977	-1.66	1.91	-0.92	-1	1	1	-1	1
BRICK CLAY 1978	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1979	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BACKCLOTHING 1970	1
BACKCLOTHING 1971	1
BACKCLOTHING 1972	1
BACKCLOTHING 1973	no data
BACKCLOTHING 1974	no data
BIDVEST 1970	no data
BIDVEST 1971	1
BIDVEST 1972	1
BIDVEST 1973	1
BIDVEST 1974	1
BIDVEST 1975	1
BIDVEST 1976	1
BIDVEST 1977	1
BIDVEST 1978	1
BIDVEST 1979	1
BRICK CLAY 1970	no data
BRICK CLAY 1971	1
BRICK CLAY 1972	1
BRICK CLAY 1973	1
BRICK CLAY 1974	1
BRICK CLAY 1975	1
BRICK CLAY 1976	1
BRICK CLAY 1977	1
BRICK CLAY 1978	no data
BRICK CLAY 1979	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
BRISTOL 1970	4.80	0.60	-2	0	0	1
BRISTOL 1971	3.91	0.48	0	-1	0	1
BRISTOL 1972	-2.25	-0.25	0	-2	0	1
BRISTOL 1973	2.11	0.24	0	-2	0	1
BRISTOL 1974	3.26	0.41	-1	-1	1	1
BRISTOL 1975	2.94	0.29	-1	-1	1	1
BRISTOL 1976	2.96	0.25	-1	-1	1	1
BRISTOL 1977	2.46	0.20	-1	-2	0	1
BRISTOL 1978	3.42	0.27	0	-1	0	1
BRISTOL 1979	2.43	0.20	0	-2	0	1
BURHOSE 1970	13.18	1.61	no data	no data	no data	no data
BURHOSE 1971	15.98	1.81	-1	0	0	1
BURHOSE 1972	8.42	0.96	-1	0	0	1
BURHOSE 1973	0.23	0.03	0	-2	0	1
BURHOSE 1974	5.33	0.52	0	-1	0	1
BURHOSE 1975	15.29	1.30	no data	no data	no data	no data
BURHOSE 1976	8.05	0.66	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data
BURHOSE 1978	2.42	0.20	no data	no data	no data	no data
BURHOSE 1979	9.83	0.98	no data	no data	no data	no data
CONJERS 1970	7.11	0.87	no data	no data	no data	no data
CONJERS 1971	8.38	0.95	-2	0	0	1
CONJERS 1972	7.79	0.89	0	0	1	1
CONJERS 1973	-0.94	-0.12	-2	-2	1	1
CONJERS 1974	6.94	0.68	no data	no data	no data	no data
CONJERS 1975	-12.08	-1.02	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	-1.94	4.76	5.25	0	0	1	-1	0
BRISTOL 1971	-1.78	3.07	1.58	-1	0	1	-1	0
BRISTOL 1972	-0.78	-7.15	-20.60	-2	0	1	-2	0
BRISTOL 1973	-1.45	-0.26	-5.65	-1	0	1	-2	0
BRISTOL 1974	-1.68	2.07	-0.59	-1	1	1	-1	1
BRISTOL 1975	-1.52	0.43	-4.16	-1	1	1	-2	0
BRISTOL 1976	-1.46	-0.11	-5.32	-1	1	1	-2	0
BRISTOL 1977	-1.40	-0.81	-6.84	-1	1	1	-2	0
BRISTOL 1978	-1.50	0.21	-4.63	-1	0	1	-1	0
BRISTOL 1979	-1.40	-0.81	-6.84	-1	0	1	-2	0
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	-3.59	21.57	41.77	0	0	1	0	0
BURHOSE 1972	-2.43	9.73	16.04	0	0	1	0	0
BURHOSE 1973	-1.16	-3.20	-12.03	-2	0	1	-2	0
BURHOSE 1974	-1.84	3.70	2.95	-1	0	1	0	1
BURHOSE 1975	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1976	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	-2.42	9.60	15.77	0	0	1	0	0
CONJERS 1972	-2.33	8.74	13.89	0	1	1	0	1
CONJERS 1973	-0.96	-5.23	-16.44	-2	1	1	-2	1
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BRISTOL 1970	1
BRISTOL 1971	1
BRISTOL 1972	1
BRISTOL 1973	1
BRISTOL 1974	1
BRISTOL 1975	1
BRISTOL 1976	1
BRISTOL 1977	1
BRISTOL 1978	1
BRISTOL 1979	1
BURHOSE 1970	no data
BURHOSE 1971	1
BURHOSE 1972	1
BURHOSE 1973	1
BURHOSE 1974	1
BURHOSE 1975	no data
BURHOSE 1976	no data
BURHOSE 1977	no data
BURHOSE 1978	no data
BURHOSE 1979	no data
CONJERS 1970	no data
CONJERS 1971	1
CONJERS 1972	1
CONJERS 1973	1
CONJERS 1974	no data
CONJERS 1975	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
DRG 1978	12.98	1.07	no data	no data	no data	no data
DRG 1979	10.82	1.08	-1	0	0	1
FAIRWEATHER 1970	9.02	1.11	-2	0	0	1
FAIRWEATHER 1971	5.98	0.68	0	0	1	1
FAIRWEATHER 1972	-1.76	-0.20	-2	-2	1	1
FAIRWEATHER 1973	4.53	0.57	0	-1	0	1
FAIRWEATHER 1974	-3.33	-0.33	-2	-2	1	1
FAIRWEATHER 1975	4.96	0.42	no data	no data	no data	no data
FAIRWEATHER 1976	-9.68	-0.79	no data	no data	no data	no data
H PARKER 1970	4.62	0.58	-2	-1	0	1
H PARKER 1971	0.92	0.11	-2	-2	1	1
H PARKER 1972	-7.70	-0.87	0	-2	0	1
H PARKER 1973	-13.41	-1.52	0	-2	0	1
H PARKER 1974	11.75	1.47	-1	0	0	1
H PARKER 1975	7.40	0.73	-1	0	0	1
H PARKER 1976	0.71	0.06	-1	-2	0	1
H PARKER 1977	5.74	0.47	0	-1	0	1
H PARKER 1978	1.77	0.14	-1	-2	0	1
H PARKER 1979	10.61	0.87	0	0	1	1
IL BACK 1970	3.89	0.49	-2	-1	0	1
IL BACK 1971	0.45	0.06	-2	-2	1	1
IL BACK 1972	-8.38	-0.95	-2	-2	1	1
IL BACK 1973	-5.20	-0.59	0	-2	0	1
IL BACK 1974	-11.53	-1.44	no data	no data	no data	no data
IL BACK 1975	3.74	0.37	-2	-1	0	1
IL BACK 1976	no data	no data	-2	no data	no data	no data
IL BACK 1977	-9.38	-0.77	-2	-2	1	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	-2.60	11.45	19.78	0	0	1	0	0
FAIRWEATHER 1970	-2.63	11.77	20.49	0	0	1	0	0
FAIRWEATHER 1971	-2.05	5.82	7.56	0	1	1	0	1
FAIRWEATHER 1972	-0.85	-6.38	-18.94	-2	1	1	-2	1
FAIRWEATHER 1973	-1.89	4.27	4.19	-1	0	1	-1	0
FAIRWEATHER 1974	-0.68	-8.17	-22.82	-2	1	1	-2	1
FAIRWEATHER 1975	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1976	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1970	-1.91	4.44	4.56	0	0	1	-1	0
H PARKER 1971	-1.28	-2.04	-9.51	-2	1	1	-2	1
H PARKER 1972	0.06	-15.73	-39.25	-2	0	1	-2	0
H PARKER 1973	0.95	-24.82	-58.99	-2	0	1	-2	0
H PARKER 1974	-3.12	16.83	31.47	0	0	1	0	0
H PARKER 1975	-2.11	6.53	9.10	0	0	1	0	0
H PARKER 1976	-1.20	-2.76	-11.09	-2	0	1	-2	0
H PARKER 1977	-1.76	2.91	1.25	-1	0	1	0	1
H PARKER 1978	-1.32	-1.63	-8.63	-2	0	1	-2	0
H PARKER 1979	-2.31	8.57	13.54	0	1	1	0	1
IL BACK 1970	-1.79	3.17	1.80	-1	0	1	-1	0
IL BACK 1971	-1.20	-2.83	-11.22	-2	1	1	-2	1
IL BACK 1972	0.17	-16.80	-41.57	-2	1	1	-2	1
IL BACK 1973	-0.32	-11.82	-30.76	-2	0	1	-2	0
IL BACK 1974	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1975	-1.62	1.52	-1.79	-1	0	1	-1	0
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	-0.08	-14.25	-36.05	-2	1	1	-2	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

	el
Company & year	Sample Size
DRG 1978	no data
DRG 1979	1
FAIRWEATHER 1970	1
FAIRWEATHER 1971	1
FAIRWEATHER 1972	1
FAIRWEATHER 1973	1
FAIRWEATHER 1974	1
FAIRWEATHER 1975	no data
FAIRWEATHER 1976	no data
H PARKER 1970	1
H PARKER 1971	1
H PARKER 1972	1
H PARKER 1973	1
H PARKER 1974	1
H PARKER 1975	1
H PARKER 1976	1
H PARKER 1977	1
H PARKER 1978	1
H PARKER 1979	1
IL BACK 1970	1
IL BACK 1971	1
IL BACK 1972	1
IL BACK 1973	1
IL BACK 1974	no data
IL BACK 1975	1
IL BACK 1976	no data
IL BACK 1977	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
IL BACK 1978	-24.40	-1.95	-2	-2	1	1
IL BACK 1979	-9.43	-0.78	-2	-2	1	1
KTL 1970	6.87	0.84	no data	no data	no data	no data
KTL 1971	5.88	0.67	0	0	1	1
KTL 1972	10.28	1.17	0	0	1	1
KTL 1973	16.61	2.08	0	0	1	1
KTL 1974	19.08	1.88	0	0	1	1
KTL 1975	16.21	1.37	-1	0	0	1
KTL 1976	13.11	1.07	-1	0	0	1
KTL 1977	10.15	0.81	0	0	1	1
KTL 1978	11.16	0.92	0	0	1	1
KTL 1979	10.33	1.03	0	0	1	1
OMNIA 1970	10.93	1.34	no data	no data	no data	no data
OMNIA 1971	9.88	1.12	-1	0	0	1
OMNIA 1972	10.31	1.17	0	0	1	1
OMNIA 1973	9.28	1.16	0	0	1	1
OMNIA 1974	9.14	0.90	-2	0	0	1
OMNIA 1975	10.38	0.88	-2	0	0	1
OMNIA 1976	-2.22	-0.18	-2	-2	1	1
OMNIA 1977	-11.43	-0.91	-2	-2	1	1
OMNIA 1978	-7.44	-0.61	0	-2	0	1
OMNIA 1979	-0.40	-0.04	0	-2	0	1
PAN 1970	9.65	1.18	no data	no data	no data	no data
PAN 1971	8.47	0.96	-2	0	0	1
PAN 1972	0.65	0.07	-2	-2	1	1
PAN 1973	-7.93	-0.99	no data	no data	no data	no data
PAN 1974	-3.87	-0.38	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	1.54	-30.76	-71.90	-2	1	1	-2	1
IL BACK 1979	-0.06	-14.43	-36.42	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	-2.03	5.66	7.20	0	1	1	0	1
KTL 1972	-2.72	12.66	22.42	0	1	1	0	1
KTL 1973	-3.95	25.28	49.84	0	1	1	0	1
KTL 1974	-3.68	22.52	43.83	0	1	1	0	1
KTL 1975	-3.00	15.53	28.65	0	0	1	0	0
KTL 1976	-2.58	11.29	19.45	0	0	1	0	0
KTL 1977	-2.23	7.69	11.63	0	1	1	0	1
KTL 1978	-2.38	9.21	14.92	0	1	1	0	1
KTL 1979	-2.53	10.77	18.31	0	1	1	0	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	-2.65	11.96	20.91	0	0	1	0	0
OMNIA 1972	-2.72	12.72	22.55	0	1	1	0	1
OMNIA 1973	-2.70	12.54	22.15	0	1	1	0	1
OMNIA 1974	-2.35	8.91	14.27	0	0	1	0	0
OMNIA 1975	-2.32	8.65	13.71	0	0	1	0	0
OMNIA 1976	-0.88	-6.13	-18.39	-2	1	1	-2	1
OMNIA 1977	0.12	-16.32	-40.53	-2	1	1	-2	1
OMNIA 1978	-0.29	-12.14	-31.45	-2	0	1	-2	0
OMNIA 1979	-1.07	-4.15	-14.11	-2	0	1	-2	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	-2.43	9.74	16.08	0	0	1	0	0
PAN 1972	-1.22	-2.57	-10.66	-2	1	1	-2	1
PAN 1973	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1974	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
IL BACK 1978	1
IL BACK 1979	1
KTL 1970	no data
KTL 1971	1
KTL 1972	1
KTL 1973	1
KTL 1974	1
KTL 1975	1
KTL 1976	1
KTL 1977	1
KTL 1978	1
KTL 1979	1
OMNIA 1970	no data
OMNIA 1971	1
OMNIA 1972	1
OMNIA 1973	1
OMNIA 1974	1
OMNIA 1975	1
OMNIA 1976	1
OMNIA 1977	1
OMNIA 1978	1
OMNIA 1979	1
PAN 1970	no data
PAN 1971	1
PAN 1972	1
PAN 1973	no data
PAN 1974	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
PIONEER H 1973	3.80	0.48	no data	no data	no data	no data
PIONEER H 1974	5.19	0.51	-1	-1	1	1
PIONEER H 1975	6.84	0.58	-1	-1	1	1
PIONEER H 1976	4.53	0.37	-1	-1	1	1
PIONEER H 1977	4.84	0.39	0	-1	0	1
PIONEER H 1978	5.30	0.44	no data	no data	no data	no data
PIONEER H 1979	7.07	0.71	no data	no data	no data	no data
ROMATEX 1970	2.00	0.25	no data	no data	no data	no data
ROMATEX 1971	2.68	0.33	0	-1	0	1
ROMATEX 1972	2.77	0.31	0	-1	0	1
ROMATEX 1973	3.71	0.42	-2	-1	0	1
ROMATEX 1974	7.50	0.94	0	0	1	1
ROMATEX 1975	-9.60	-0.94	0	-2	0	1
ROMATEX 1976	6.10	0.52	0	-1	0	1
ROMATEX 1977	7.38	0.60	0	0	1	1
ROMATEX 1978	9.10	0.73	0	0	1	1
ROMATEX 1979	10.29	0.85	0	0	1	1
SCHACHAT 1970	5.23	0.64	no data	no data	no data	no data
SCHACHAT 1971	6.54	0.74	0	0	1	1
SCHACHAT 1972	8.29	0.94	-1	0	0	1
SCHACHAT 1973	6.25	0.78	-1	0	0	1
SCHACHAT 1974	4.78	0.47	-1	-1	1	1
SCHACHAT 1975	5.20	0.44	-1	-1	1	1
SCHACHAT 1976	6.69	0.55	no data	no data	no data	no data
SCHACHAT 1977	3.96	0.32	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	-1.82	3.50	2.52	-1	1	1	-1	1
PIONEER H 1975	-1.91	4.46	4.62	0	0	1	0	0
PIONEER H 1976	-1.63	1.55	-1.72	-1	1	1	-1	1
PIONEER H 1977	-1.65	1.79	-1.20	-1	0	1	-1	0
PIONEER H 1978	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1979	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	-1.57	0.97	-2.99	-1	0	1	-2	0
ROMATEX 1972	-1.55	0.76	-3.44	-1	0	1	-2	0
ROMATEX 1973	-1.70	2.27	-0.15	-1	0	1	-1	0
ROMATEX 1974	-2.40	9.44	15.42	0	1	1	0	1
ROMATEX 1975	0.16	-16.74	-41.45	-2	0	1	-2	0
ROMATEX 1976	-1.83	3.60	2.73	-1	0	1	0	1
ROMATEX 1977	-1.94	4.78	5.30	0	1	1	0	1
ROMATEX 1978	-2.11	6.53	9.10	0	1	1	0	1
ROMATEX 1979	-2.28	8.20	12.73	0	1	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	-2.13	6.70	9.46	0	1	1	0	1
SCHACHAT 1972	-2.41	9.51	15.58	0	0	1	0	0
SCHACHAT 1973	-2.19	7.27	10.72	0	0	1	0	0
SCHACHAT 1974	-1.76	2.94	1.31	-1	1	1	-1	1
SCHACHAT 1975	-1.72	2.53	0.42	-1	1	1	-1	1
SCHACHAT 1976	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1977	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

	el
Company & year	Sample Size
PIONEER H 1973	no data
PIONEER H 1974	1
PIONEER H 1975	1
PIONEER H 1976	1
PIONEER H 1977	1
PIONEER H 1978	no data
PIONEER H 1979	no data
ROMATEX 1970	no data
ROMATEX 1971	1
ROMATEX 1972	1
ROMATEX 1973	1
ROMATEX 1974	1
ROMATEX 1975	1
ROMATEX 1976	1
ROMATEX 1977	1
ROMATEX 1978	1
ROMATEX 1979	1
SCHACHAT 1970	no data
SCHACHAT 1971	1
SCHACHAT 1972	1
SCHACHAT 1973	1
SCHACHAT 1974	1
SCHACHAT 1975	1
SCHACHAT 1976	no data
SCHACHAT 1977	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
SPECTRO 1970	4.09	0.50	no data	no data	no data	no data
SPECTRO 1971	9.68	1.10	0	0	1	1
SPECTRO 1972	8.27	0.94	0	0	1	1
SPECTRO 1973	11.44	1.43	-2	0	0	1
SPECTRO 1974	7.95	0.78	no data	no data	no data	no data
SPECTRO 1975	-4.52	-0.38	no data	no data	no data	no data
STUTTAFORDS 1970	7.41	0.93	no data	no data	no data	no data
STUTTAFORDS 1971	12.31	1.51	0	0	1	1
STUTTAFORDS 1972	3.54	0.40	-1	-1	1	1
STUTTAFORDS 1973	10.37	1.18	-1	0	0	1
STUTTAFORDS 1974	4.35	0.54	-1	-1	1	1
STUTTAFORDS 1975	4.36	0.43	-1	-1	1	1
STUTTAFORDS 1976	3.76	0.32	-1	-1	1	1
STUTTAFORDS 1977	3.91	0.32	no data	no data	no data	no data
STUTTAFORDS 1978	3.07	0.25	no data	no data	no data	no data
TAPSA 1970	9.39	1.17	no data	no data	no data	no data
TAPSA 1971	6.65	0.81	-1	0	0	1
TAPSA 1972	3.66	0.41	-2	-1	0	1
TAPSA 1973	3.53	0.40	-2	-1	0	1
TAPSA 1974	-7.83	-0.98	no data	no data	no data	no data
TAPSA 1975	-38.69	-3.81	no data	no data	no data	no data
TIGERIND 1970	0.87	0.11	-2	-2	1	1
TIGERIND 1971	-6.10	-0.69	0	-2	0	1
TIGERIND 1972	-23.19	-2.64	no data	no data	no data	no data
TIGERIND 1973	0.17	0.02	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	-2.62	11.64	20.21	0	1	1	0	1
SPECTRO 1972	-2.40	9.48	15.51	0	1	1	0	1
SPECTRO 1973	-3.07	16.29	30.30	0	0	1	0	0
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1975	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	-3.18	17.38	32.67	0	1	1	0	1
STUTTAFORDS 1972	-1.67	1.97	-0.81	-1	1	1	-1	1
STUTTAFORDS 1973	-2.73	12.80	22.73	0	0	1	0	0
STUTTAFORDS 1974	-1.86	3.97	3.54	-1	1	1	-1	1
STUTTAFORDS 1975	-1.71	2.37	0.06	-1	1	1	-1	1
STUTTAFORDS 1976	-1.56	0.84	-3.26	-1	1	1	-1	1
STUTTAFORDS 1977	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1978	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	-2.23	7.74	11.72	0	0	1	0	0
TAPSA 1972	-1.69	2.17	-0.37	-1	0	1	-1	0
TAPSA 1973	-1.67	1.98	-0.78	-1	0	1	-1	0
TAPSA 1974	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1975	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1970	-1.27	-2.12	-9.68	-2	1	1	-2	1
TIGERIND 1971	-0.18	-13.21	-33.78	-2	0	1	-2	0
TIGERIND 1972	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
SPECTRO 1970	no data
SPECTRO 1971	1
SPECTRO 1972	1
SPECTRO 1973	1
SPECTRO 1974	no data
SPECTRO 1975	no data
STUTTAFORDS 1970	no data
STUTTAFORDS 1971	1
STUTTAFORDS 1972	1
STUTTAFORDS 1973	1
STUTTAFORDS 1974	1
STUTTAFORDS 1975	1
STUTTAFORDS 1976	1
STUTTAFORDS 1977	no data
STUTTAFORDS 1978	no data
TAPSA 1970	no data
TAPSA 1971	1
TAPSA 1972	1
TAPSA 1973	1
TAPSA 1974	no data
TAPSA 1975	no data
TIGERIND 1970	1
TIGERIND 1971	1
TIGERIND 1972	no data
TIGERIND 1973	no data

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
TRIOMF 1970	4.85	0.59	no data	no data	no data	no data
TRIOMF 1971	5.92	0.67	0	0	1	1
TRIOMF 1972	12.82	1.46	0	0	1	1
TRIOMF 1973	12.35	1.54	0	0	1	1
TRIOMF 1974	11.56	1.14	-1	0	0	1
TRIOMF 1975	7.30	0.62	-2	0	0	1
TRIOMF 1976	2.79	0.23	0	-2	0	1
TRIOMF 1977	-4.85	-0.39	0	-2	0	1
TRIOMF 1978	1.46	0.12	0	-2	0	1
TRIOMF 1979	10.97	1.10	-1	0	0	1
TUCKERS 1970	14.67	1.80	no data	no data	no data	no data
TUCKERS 1971	10.71	1.21	0	0	1	1
TUCKERS 1972	10.44	1.19	0	0	1	1
TUCKERS 1973	14.18	1.77	-1	0	0	1
TUCKERS 1974	13.60	1.34	-1	0	0	1
TUCKERS 1975	5.38	0.46	-1	-1	1	1
TUCKERS 1976	3.13	0.26	-2	-1	0	1
TUCKERS 1977	7.77	0.62	-1	0	0	1
TUCKERS 1978	-4.16	-0.34	-1	-2	0	1
TUCKERS 1979	3.74	0.37	0	-1	0	1

Sub-Total 1970s

Predictive Accuracy

60 130
 46.2%

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	-2.04	5.73	7.37	0	1	1	0	1
TRIOMF 1972	-3.11	16.68	31.16	0	1	1	0	1
TRIOMF 1973	-3.23	17.88	33.75	0	1	1	0	1
TRIOMF 1974	-2.67	12.23	21.47	0	0	1	0	0
TRIOMF 1975	-1.97	5.01	5.80	0	0	1	0	0
TRIOMF 1976	-1.43	-0.44	-6.03	-1	0	1	-2	0
TRIOMF 1977	-0.59	-9.00	-24.63	-2	0	1	-2	0
TRIOMF 1978	-1.29	-1.92	-9.26	-2	0	1	-2	0
TRIOMF 1979	-2.62	11.66	20.24	0	0	1	0	0
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	-2.77	13.27	23.74	0	1	1	0	1
TUCKERS 1972	-2.74	12.92	22.98	0	1	1	0	1
TUCKERS 1973	-3.54	21.07	40.68	0	0	1	0	0
TUCKERS 1974	-2.95	15.02	27.54	0	0	1	0	0
TUCKERS 1975	-1.74	2.75	0.88	-1	1	1	0	0
TUCKERS 1976	-1.47	-0.04	-5.17	-1	0	1	-1	0
TUCKERS 1977	-1.97	5.05	5.88	0	0	1	0	0
TUCKERS 1978	-0.66	-8.37	-23.26	-2	0	1	-2	0
TUCKERS 1979	-1.63	1.61	-1.59	-1	0	1	-1	0
Sub-Total 1970s					61	130		60
Predictive Accuracy					46.9%			46.2%

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
TRIOMF 1970	no data
TRIOMF 1971	1
TRIOMF 1972	1
TRIOMF 1973	1
TRIOMF 1974	1
TRIOMF 1975	1
TRIOMF 1976	1
TRIOMF 1977	1
TRIOMF 1978	1
TRIOMF 1979	1
TUCKERS 1970	no data
TUCKERS 1971	1
TUCKERS 1972	1
TUCKERS 1973	1
TUCKERS 1974	1
TUCKERS 1975	1
TUCKERS 1976	1
TUCKERS 1977	1
TUCKERS 1978	1
TUCKERS 1979	1

Sub-Total 1970s 130

Predictive Accuracy

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
BIDVEST 1980	7.73	0.81	0	0	1	1
BIDVEST 1981	14.58	1.04	-1	0	0	1
BIDVEST 1982	10.71	0.55	-1	-1	1	1
BIDVEST 1983	5.65	0.34	-1	-1	1	1
BIDVEST 1984	5.98	0.27	-1	-1	1	1
BIDVEST 1985	3.87	0.18	-2	-2	1	1
BIDVEST 1986	4.50	0.31	0	-1	0	1
BIDVEST 1987	-8.08	-0.65	0	-2	0	1
BIDVEST 1988	7.61	0.50	0	-1	0	1
BIDVEST 1989	34.85	1.76	0	0	1	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	6.71	0.48	-2	-1	0	1
BRICK CLAY 1982	8.50	0.44	0	-1	0	1
BRICK CLAY 1983	-21.21	-1.27	-2	-2	1	1
BRICK CLAY 1984	0.86	0.04	0	-2	0	1
BRICK CLAY 1985	-31.02	-1.44	0	-2	0	1
BRICK CLAY 1986	10.69	0.75	0	0	1	1
BRICK CLAY 1987	22.83	1.83	no data	no data	no data	no data
BRICK CLAY 1988	23.92	1.56	no data	no data	no data	no data
BRISTOL 1980	7.42	0.74	-1	0	0	1
BRISTOL 1981	9.17	0.97	-1	0	0	1
BRISTOL 1982	3.04	0.22	0	-2	0	1
BRISTOL 1983	2.49	0.13	0	-2	0	1
BRISTOL 1984	13.59	0.82	-1	0	0	1
BRISTOL 1985	7.71	0.35	-1	-1	1	1
BRISTOL 1986	6.52	0.30	-1	-1	1	1
BRISTOL 1987	5.76	0.40	0	-1	0	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	-2.23	7.72	11.68	0	1	1	0	1
BIDVEST 1981	-2.54	10.89	18.57	0	0	1	0	0
BIDVEST 1982	-1.88	4.11	3.85	-1	1	1	0	0
BIDVEST 1983	-1.58	1.12	-2.66	-1	1	1	0	0
BIDVEST 1984	-1.49	0.13	-4.80	-1	1	1	0	0
BIDVEST 1985	-1.37	-1.10	-7.47	-1	0	1	-1	0
BIDVEST 1986	-1.55	0.77	-3.42	-1	0	1	-1	0
BIDVEST 1987	-0.24	-12.60	-32.44	-2	0	1	-2	0
BIDVEST 1988	-1.80	3.31	2.10	-1	0	1	0	1
BIDVEST 1989	-3.52	20.85	40.21	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	-1.78	3.07	1.59	-1	0	1	0	0
BRICK CLAY 1982	-1.72	2.52	0.39	-1	0	1	0	1
BRICK CLAY 1983	0.61	-21.31	-51.37	-2	1	1	-2	1
BRICK CLAY 1984	-1.18	-3.06	-11.73	-2	0	1	-2	0
BRICK CLAY 1985	0.84	-23.68	-56.51	-2	0	1	-2	0
BRICK CLAY 1986	-2.14	6.77	9.63	0	1	1	0	1
BRICK CLAY 1987	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1988	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1980	-2.13	6.72	9.51	0	0	1	0	0
BRISTOL 1981	-2.44	9.83	16.27	0	0	1	0	0
BRISTOL 1982	-1.42	-0.58	-6.34	-1	0	1	-2	0
BRISTOL 1983	-1.30	-1.81	-9.01	-2	0	1	-2	0
BRISTOL 1984	-2.23	7.74	11.74	0	0	1	0	0
BRISTOL 1985	-1.59	1.20	-2.47	-1	1	1	0	0
BRISTOL 1986	-1.54	0.62	-3.74	-1	1	1	0	0
BRISTOL 1987	-1.67	1.99	-0.77	-1	0	1	0	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1980	1
BIDVEST 1981	1
BIDVEST 1982	1
BIDVEST 1983	1
BIDVEST 1984	1
BIDVEST 1985	1
BIDVEST 1986	1
BIDVEST 1987	1
BIDVEST 1988	1
BIDVEST 1989	1
BRICK CLAY 1980	no data
BRICK CLAY 1981	1
BRICK CLAY 1982	1
BRICK CLAY 1983	1
BRICK CLAY 1984	1
BRICK CLAY 1985	1
BRICK CLAY 1986	1
BRICK CLAY 1987	no data
BRICK CLAY 1988	no data
BRISTOL 1980	1
BRISTOL 1981	1
BRISTOL 1982	1
BRISTOL 1983	1
BRISTOL 1984	1
BRISTOL 1985	1
BRISTOL 1986	1
BRISTOL 1987	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
BRISTOL 1988	7.16	0.57	-1	-1	1	1
BRISTOL 1989	14.60	0.95	-1	0	0	1
DRG 1980	10.62	1.12	-2	0	0	1
DRG 1981	4.73	0.34	no data	no data	no data	no data
DRG 1982	-0.23	-0.01	no data	no data	no data	no data
H PARKER 1980	4.07	0.41	-1	-1	1	1
H PARKER 1981	6.33	0.67	no data	no data	no data	no data
H PARKER 1982	1.92	0.14	no data	no data	no data	no data
IL BACK 1980	-10.40	-1.04	-2	-2	1	1
IL BACK 1981	-11.26	-1.18	no data	no data	no data	no data
IL BACK 1982	-10.65	-0.76	no data	no data	no data	no data
KTL 1980	16.77	1.76	0	0	1	1
KTL 1981	13.13	0.94	0	0	1	1
KTL 1982	11.82	0.61	-1	0	0	1
KTL 1983	12.73	0.76	-1	0	0	1
KTL 1984	11.57	0.52	-1	-1	1	1
KTL 1985	5.38	0.25	0	-1	0	1
KTL 1986	2.44	0.17	0	-2	0	1
KTL 1987	9.22	0.74	0	0	1	1
KTL 1988	10.05	0.66	0	0	1	1
KTL 1989	10.98	0.55	-1	-1	1	1
OMNIA 1980	5.74	0.60	0	0	1	1
OMNIA 1981	18.04	1.29	-1	0	0	1
OMNIA 1982	8.19	0.42	-2	-1	0	1
OMNIA 1983	3.05	0.18	-1	-2	0	1
OMNIA 1984	-0.17	-0.01	0	-2	0	1
OMNIA 1985	1.11	0.05	0	-2	0	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	-1.90	4.37	4.42	0	0	1	0	0
BRISTOL 1989	-2.42	9.65	15.88	0	0	1	0	0
DRG 1980	-2.65	11.95	20.87	0	0	1	0	0
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1980	-1.68	2.06	-0.60	-1	1	1	-1	1
H PARKER 1981	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1982	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1980	0.29	-18.08	-44.35	-2	1	1	-2	1
IL BACK 1981	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1982	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1980	-3.53	20.95	40.43	0	1	1	0	1
KTL 1981	-2.40	9.45	15.45	0	1	1	0	1
KTL 1982	-1.96	4.90	5.57	0	0	1	0	0
KTL 1983	-2.16	7.03	10.18	0	0	1	0	0
KTL 1984	-1.83	3.61	2.75	-1	1	1	0	0
KTL 1985	-1.46	-0.12	-5.34	-1	0	1	0	1
KTL 1986	-1.36	-1.23	-7.75	-1	0	1	-2	0
KTL 1987	-2.13	6.66	9.39	0	1	1	0	1
KTL 1988	-2.02	5.52	6.91	0	1	1	0	1
KTL 1989	-1.88	4.10	3.83	-1	1	1	0	0
OMNIA 1980	-1.95	4.81	5.37	0	1	1	0	1
OMNIA 1981	-2.88	14.33	26.04	0	0	1	0	0
OMNIA 1982	-1.70	2.29	-0.10	-1	0	1	0	0
OMNIA 1983	-1.37	-1.06	-7.38	-1	1	1	-2	0
OMNIA 1984	-1.11	-3.71	-13.14	-2	0	1	-2	0
OMNIA 1985	-1.19	-2.88	-11.35	-2	0	1	-2	0

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BRISTOL 1988	1
BRISTOL 1989	1
DRG 1980	1
DRG 1981	no data
DRG 1982	no data
H PARKER 1980	1
H PARKER 1981	no data
H PARKER 1982	no data
IL BACK 1980	1
IL BACK 1981	no data
IL BACK 1982	no data
KTL 1980	1
KTL 1981	1
KTL 1982	1
KTL 1983	1
KTL 1984	1
KTL 1985	1
KTL 1986	1
KTL 1987	1
KTL 1988	1
KTL 1989	1
OMNIA 1980	1
OMNIA 1981	1
OMNIA 1982	1
OMNIA 1983	1
OMNIA 1984	1
OMNIA 1985	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
OMNIA 1986	1.91	0.13	0	-2	0	1
OMNIA 1987	4.78	0.38	0	-1	0	1
OMNIA 1988	8.42	0.55	0	-1	0	1
OMNIA 1989	11.77	0.59	-1	0	0	1
ROMATEX 1980	12.95	1.30	-1	0	0	1
ROMATEX 1981	16.18	1.70	-1	0	0	1
ROMATEX 1982	13.79	0.99	-1	0	0	1
ROMATEX 1983	8.76	0.45	-1	-1	1	1
ROMATEX 1984	9.29	0.56	-1	-1	1	1
ROMATEX 1985	1.08	0.05	0	-2	0	1
ROMATEX 1986	6.33	0.29	0	-1	0	1
ROMATEX 1987	9.05	0.63	0	0	1	1
ROMATEX 1988	11.28	0.90	-1	0	0	1
ROMATEX 1989	10.66	0.70	-1	0	0	1
TRIOMF 1980	12.30	1.29	-1	0	0	1
TRIOMF 1981	9.78	0.70	-2	0	0	1
TRIOMF 1982	0.17	0.01	no data	no data	no data	no data
TRIOMF 1983	-0.51	-0.03	-2	-2	1	1
TRIOMF 1984	no data	no data	-2	no data	no data	no data
TRIOMF 1985	-4.57	-0.21	-2	-2	1	1
TRIOMF 1986	-28.83	-2.01	no data	no data	no data	no data
TRIOMF 1987	-0.22	-0.02	no data	no data	no data	no data
TUCKERS 1980	3.66	0.39	0	-1	0	1
TUCKERS 1981	5.60	0.40	no data	no data	no data	no data
TUCKERS 1982	9.31	0.48	no data	no data	no data	no data
Sub-Total 1980s					25	64
Predictive Accuracy					39.1%	

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1986	-1.30	-1.74	-8.87	-2	0	1	-2	0
OMNIA 1987	-1.64	1.72	-1.35	-1	0	1	-1	0
OMNIA 1988	-1.87	4.04	3.70	-1	0	1	0	1
OMNIA 1989	-1.93	4.66	5.03	0	0	1	0	0
ROMATEX 1980	-2.89	14.42	26.25	0	0	1	0	0
ROMATEX 1981	-3.44	20.09	38.56	0	0	1	0	0
ROMATEX 1982	-2.47	10.11	16.88	0	0	1	0	0
ROMATEX 1983	-1.74	2.70	0.79	-1	1	1	0	0
ROMATEX 1984	-1.88	4.15	3.93	-1	1	1	0	0
ROMATEX 1985	-1.19	-2.93	-11.45	-2	0	1	-2	0
ROMATEX 1986	-1.52	0.49	-4.01	-1	0	1	0	1
ROMATEX 1987	-1.98	5.18	6.18	0	1	1	0	1
ROMATEX 1988	-2.35	8.95	14.37	0	0	1	0	0
ROMATEX 1989	-2.07	6.07	8.10	0	0	1	0	0
TRIOMF 1980	-2.89	14.41	26.22	0	0	1	0	0
TRIOMF 1981	-2.07	6.12	8.21	0	0	1	0	0
TRIOMF 1982	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1983	-1.08	-4.03	-13.83	-2	1	1	-2	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	-0.83	-6.56	-19.33	-2	1	1	-2	1
TRIOMF 1986	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1987	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1980	-1.65	1.77	-1.25	-1	0	1	-1	0
TUCKERS 1981	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1982	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1980s					24	64		20
Predictive Accuracy					37.5%			31.3%

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1986	1
OMNIA 1987	1
OMNIA 1988	1
OMNIA 1989	1
ROMATEX 1980	1
ROMATEX 1981	1
ROMATEX 1982	1
ROMATEX 1983	1
ROMATEX 1984	1
ROMATEX 1985	1
ROMATEX 1986	1
ROMATEX 1987	1
ROMATEX 1988	1
ROMATEX 1989	1
TRIOMF 1980	1
TRIOMF 1981	1
TRIOMF 1982	no data
TRIOMF 1983	1
TRIOMF 1984	no data
TRIOMF 1985	1
TRIOMF 1986	no data
TRIOMF 1987	no data
TUCKERS 1980	1
TUCKERS 1981	no data
TUCKERS 1982	no data
Sub-Total 1980s	64
Predictive Accuracy	

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
BIDVEST 1990	13.67	0.65	0	0	1	1
BIDVEST 1991	6.48	0.32	0	-1	0	1
BIDVEST 1992	9.56	0.51	0	-1	0	1
BIDVEST 1993	6.22	0.38	0	-1	0	1
BIDVEST 1994	9.70	0.62	0	0	1	1
BIDVEST 1995	10.91	0.61	0	0	1	1
BIDVEST 1996	11.37	0.58	0	-1	0	1
BIDVEST 1997	7.42	0.37	no data	no data	no data	no data
BIDVEST 1998	10.93	0.50	no data	no data	no data	no data
BRISTOL 1990	5.68	0.29	-1	-1	1	1
BRISTOL 1991	6.54	0.31	-1	-1	1	1
BRISTOL 1992	7.21	0.36	-1	-1	1	1
BRISTOL 1993	6.26	0.33	no data	no data	no data	no data
BRISTOL 1994	5.21	0.32	no data	no data	no data	no data
KTL 1990	8.13	0.39	-1	-1	1	1
KTL 1991	4.05	0.20	0	-2	0	1
KTL 1992	0.14	0.01	0	-2	0	1
KTL 1993	5.83	0.36	0	-1	0	1
KTL 1994	10.07	0.65	0	0	1	1
KTL 1995	8.86	0.50	-1	-1	1	1
KTL 1996	16.64	0.85	-1	0	0	1
KTL 1997	6.74	0.34	-1	-1	1	1
KTL 1998	32.51	1.49	no data	no data	no data	no data
KTL 1999	45.98	2.55	no data	no data	no data	no data
OMNIA 1990	9.46	0.45	-1	-1	1	1
OMNIA 1991	7.94	0.39	0	-1	0	1
OMNIA 1992	4.53	0.24	0	-2	0	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1990	-2.01	5.46	6.77	0	1	1	0	1
BIDVEST 1991	-1.56	0.84	-3.27	-1	0	1	0	1
BIDVEST 1992	-1.81	3.44	2.38	-1	0	1	0	1
BIDVEST 1993	-1.65	1.75	-1.28	-1	0	1	0	1
BIDVEST 1994	-1.97	5.06	5.92	0	1	1	0	1
BIDVEST 1995	-1.95	4.88	5.52	0	1	1	0	1
BIDVEST 1996	-1.92	4.50	4.69	0	1	1	0	1
BIDVEST 1997	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1998	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1990	-1.51	0.39	-4.24	-1	1	1	0	0
BRISTOL 1991	-1.55	0.73	-3.50	-1	1	1	0	0
BRISTOL 1992	-1.61	1.34	-2.17	-1	1	1	0	0
BRISTOL 1993	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1994	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1990	-1.65	1.78	-1.21	-1	1	1	0	0
KTL 1991	-1.39	-0.83	-6.88	-1	0	1	-1	0
KTL 1992	-1.13	-3.50	-12.68	-2	0	1	-2	0
KTL 1993	-1.61	1.42	-1.99	-1	0	1	0	1
KTL 1994	-2.00	5.39	6.62	0	1	1	0	1
KTL 1995	-1.80	3.29	2.07	-1	1	1	0	0
KTL 1996	-2.28	8.26	12.87	0	0	1	0	0
KTL 1997	-1.58	1.08	-2.73	-1	1	1	0	0
KTL 1998	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1999	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1990	-1.74	2.67	0.71	-1	1	1	0	0
OMNIA 1991	-1.66	1.84	-1.09	-1	0	1	0	1
OMNIA 1992	-1.45	-0.27	-5.67	-1	0	1	-1	0

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1990	1
BIDVEST 1991	1
BIDVEST 1992	1
BIDVEST 1993	1
BIDVEST 1994	1
BIDVEST 1995	1
BIDVEST 1996	1
BIDVEST 1997	no data
BIDVEST 1998	no data
BRISTOL 1990	1
BRISTOL 1991	1
BRISTOL 1992	1
BRISTOL 1993	no data
BRISTOL 1994	no data
KTL 1990	1
KTL 1991	1
KTL 1992	1
KTL 1993	1
KTL 1994	1
KTL 1995	1
KTL 1996	1
KTL 1997	1
KTL 1998	no data
KTL 1999	no data
OMNIA 1990	1
OMNIA 1991	1
OMNIA 1992	1

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point 5.25 0.59
 Lower Cut-off point 3.11 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	3Year n-2	Pred State	# Correct	Sample Size
OMNIA 1993	9.71	0.60	0	0	1	1
OMNIA 1994	8.46	0.54	0	-1	0	1
OMNIA 1995	6.99	0.39	0	-1	0	1
OMNIA 1996	9.13	0.47	-1	-1	1	1
OMNIA 1997	11.49	0.57	no data	no data	no data	no data
OMNIA 1998	7.53	0.35	no data	no data	no data	no data
ROMATEX 1990	7.46	0.38	-1	-1	1	1
ROMATEX 1991	0.31	0.01	0	-2	0	1
ROMATEX 1992	2.62	0.13	0	-2	0	1
ROMATEX 1993	7.25	0.38	-1	-1	1	1
ROMATEX 1994	7.92	0.49	-1	-1	1	1
ROMATEX 1995	6.89	0.44	-2	-1	0	1
ROMATEX 1996	0.26	0.01	0	-2	0	1
ROMATEX 1997	-10.35	-0.53	no data	no data	no data	no data
ROMATEX 1998	1.52	0.08	no data	no data	no data	no data
Sub-Total 1990s					16	32
Predictive Accuracy					50.0%	
Grand Total					101	226
Predictive Accuracy					44.7%	

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1993	-1.94	4.76	5.26	0	1	1	0	1
OMNIA 1994	-1.86	3.95	3.51	-1	0	1	0	1
OMNIA 1995	-1.65	1.83	-1.11	-1	0	1	0	1
OMNIA 1996	-1.76	2.90	1.23	-1	1	1	0	0
OMNIA 1997	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1998	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1990	-1.64	1.63	-1.54	-1	1	1	0	0
ROMATEX 1991	-1.14	-3.40	-12.46	-2	0	1	-2	0
ROMATEX 1992	-1.30	-1.81	-9.01	-2	0	1	-2	0
ROMATEX 1993	-1.64	1.73	-1.32	-1	1	1	0	0
ROMATEX 1994	-1.79	3.22	1.91	-1	1	1	0	0
ROMATEX 1995	-1.73	2.56	0.47	-1	0	1	0	0
ROMATEX 1996	-1.14	-3.40	-12.46	-2	0	1	-2	0
ROMATEX 1997	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1998	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1990s					17	32		13
Predictive Accuracy					53.1%			40.6%
Grand Total					102	226		93
Predictive Accuracy					45.1%			41.2%

APPENDIX D2 : 3 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1993	1
OMNIA 1994	1
OMNIA 1995	1
OMNIA 1996	1
OMNIA 1997	no data
OMNIA 1998	no data
ROMATEX 1990	1
ROMATEX 1991	1
ROMATEX 1992	1
ROMATEX 1993	1
ROMATEX 1994	1
ROMATEX 1995	1
ROMATEX 1996	1
ROMATEX 1997	no data
ROMATEX 1998	no data
Sub-Total 1990s	32
Predictive Accuracy	
Grand Total	226
Predictive Accuracy	

APPENDIX E1 : 3 Year n-3 Models (Test Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
A&P 1975	75.61	17.02	33.72	7.27	0.62	17.02	-1
AVBAK 1970	81.94	10.19	29.98	5.77	0.71	10.27	0
BERZACK 1975	74.86	14.76	34.61	8.51	0.72	14.94	0
BROMAIN 1974	66.50	7.73	34.12	2.74	0.34	8.00	-1
BTR 1976	90.88	19.80	25.91	11.44	0.93	19.47	0
CHEMSERVE 1971	78.03	15.74	32.63	8.57	0.97	15.90	0
COATES 1973	100.00	20.37	31.85	12.16	1.52	20.41	0
DESIREE 1974	72.13	10.58	15.15	4.76	0.47	10.52	0
DUBIN 1973	81.34	11.66	22.79	5.82	0.73	12.28	0
FINTECH 1973	70.29	10.55	1.93	4.22	0.53	11.03	0
FOWLER 1976	83.72	6.65	-8.83	3.51	0.29	5.57	-2
FRASERS 1974	94.77	17.36	30.59	9.91	0.97	17.32	0
GLEN ANIL 1973	30.07	9.05	44.07	6.38	0.80	8.70	-1
HANHILL 1973	78.03	12.97	36.00	5.34	0.67	12.92	-1
HEPWORTHS 1976	76.06	18.36	36.91	8.76	0.74	18.32	-2
LAWSON 1973	80.50	0.32	11.73	-2.63	-0.33	-0.28	-2
LTA 1974	92.54	10.34	1.76	6.31	0.79	9.86	0
LUCYS 1972	85.86	4.12	12.39	-2.25	-0.26	4.12	-2
MARSHALL 1974	74.28	9.77	16.53	4.35	0.43	9.74	-1
SIMBA 1970	89.54	2.93	11.71	0.08	0.01	2.31	-2

Total
Predictive Accuracy

APPENDIX E1 : 3 Year n-3 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
A&P 1975	-1	1	1	168.25	191.34	183.67	-1	1
AVBAK 1970	0	1	1	107.12	140.20	144.43	0	1
BERZACK 1975	0	1	1	31.60	86.49	96.71	0	1
BROMAIN 1974	-1	1	1	135.57	160.61	155.95	-1	1
BTR 1976	0	1	1	75.81	122.63	132.02	0	1
CHEMSERVE 1971	0	1	1	73.20	118.54	124.34	0	1
COATES 1973	0	1	1	111.22	149.81	157.81	0	1
DESIREE 1974	-1	0	1	117.35	148.41	147.59	-1	0
DUBIN 1973	0	1	1	155.93	178.56	175.77	-1	0
FINTECH 1973	-1	0	1	153.28	176.01	169.74	-1	0
FOWLER 1976	-1	0	1	121.05	147.42	151.66	0	0
FRASERS 1974	0	1	1	129.81	161.89	166.28	0	1
GLEN ANIL 1973	0	0	1	-274.37	-148.11	-113.55	0	0
HANHILL 1973	-1	1	1	183.71	200.13	192.36	-1	1
HEPWORTHS 1976	0	0	1	118.12	154.29	152.95	-1	0
LAWSON 1973	-2	1	1	307.54	284.62	264.96	-2	1
LTA 1974	0	1	1	124.42	152.69	158.75	0	1
LUCYS 1972	-2	1	1	438.01	386.27	350.67	-2	1
MARSHALL 1974	-1	1	1	132.33	159.13	157.38	-1	1
SIMBA 1970	-2	1	1	269.83	257.60	245.57	-2	1
Total		15	20					14
Predictive Accuracy		75%						70%

APPENDIX E1 : 3 Year n-3 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
A&P 1975	1	-1	1	1
AVBAK 1970	1	0	1	1
BERZACK 1975	1	-1	0	1
BROMAIN 1974	1	-1	1	1
BTR 1976	1	0	1	1
CHEMSERVE 1971	1	0	1	1
COATES 1973	1	0	1	1
DESIREE 1974	1	0	1	1
DUBIN 1973	1	0	1	1
FINTECH 1973	1	0	1	1
FOWLER 1976	1	-2	1	1
FRASERS 1974	1	0	1	1
GLEN ANIL 1973	1	-1	1	1
HANHILL 1973	1	-1	1	1
HEPWORTHS 1976	1	-1	0	1
LAWSON 1973	1	-2	1	1
LTA 1974	1	0	1	1
LUCYS 1972	1	-2	1	1
MARSHALL 1974	1	0	0	1
SIMBA 1970	1	-2	1	1
Total	20		17	20
Predictive Accuracy			85%	

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 32.63 0.70
 Lower Cut-off point 6.65 32.63 0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
BACKCLOTHING 1970	100.00	8.93	24.16	2.77	0.34	8.93	-2
BACKCLOTHING 1971	100.00	4.33	20.39	-0.99	-0.11	4.80	-2
BACKCLOTHING 1972	100.00	-5.48	8.49	-9.73	-1.11	2.66	no data
BACKCLOTHING 1973	64.32	-6.24	34.36	-10.82	-1.35	-1.82	no data
BACKCLOTHING 1974	69.90	-6.52	20.45	-14.13	-1.39	-4.54	no data
BIDVEST 1970	70.83	15.24	31.71	7.43	0.91	15.23	-1
BIDVEST 1971	64.10	12.43	34.98	4.46	0.50	12.44	0
BIDVEST 1972	69.16	12.65	31.72	5.05	0.57	12.60	0
BIDVEST 1973	67.78	11.10	25.63	5.36	0.67	11.09	0
BIDVEST 1974	76.99	11.46	24.47	5.89	0.58	11.36	-1
BIDVEST 1975	80.49	13.02	24.18	6.80	0.58	13.08	-1
BIDVEST 1976	82.67	13.58	23.40	6.87	0.56	13.60	-1
BIDVEST 1977	81.41	10.08	24.56	4.43	0.35	10.15	0
BIDVEST 1978	82.91	12.59	28.76	6.50	0.54	12.62	0
BIDVEST 1979	85.31	11.52	29.68	4.83	0.48	11.59	0
BRICK CLAY 1970	51.87	7.86	0.29	4.68	0.57	7.43	0
BRICK CLAY 1971	61.02	-4.89	-15.23	-5.90	-0.67	-3.37	0
BRICK CLAY 1972	58.67	2.89	13.54	0.21	0.02	9.88	0
BRICK CLAY 1973	42.07	10.67	22.10	6.67	0.83	10.42	0
BRICK CLAY 1974	47.09	10.26	10.39	4.21	0.41	13.84	-1
BRICK CLAY 1975	46.51	13.07	19.27	8.18	0.69	12.37	-1
BRICK CLAY 1976	48.07	14.76	21.24	7.97	0.65	14.19	-1
BRICK CLAY 1977	47.20	11.90	15.21	4.95	0.40	12.32	no data
BRICK CLAY 1978	56.39	9.36	12.78	3.09	0.25	11.26	no data
BRICK CLAY 1979	50.81	11.35	19.58	4.30	0.43	13.88	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
BACKCLOTHING 1970	-1	0	1	353.55	325.26	304.70	-2	1
BACKCLOTHING 1971	-2	1	1	463.88	405.90	372.08	-2	1
BACKCLOTHING 1972	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1973	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1970	0	0	1	80.98	124.19	126.45	0	0
BIDVEST 1971	-1	0	1	142.24	168.81	161.31	-1	0
BIDVEST 1972	-1	0	1	140.79	167.68	162.22	-1	0
BIDVEST 1973	-1	0	1	72.01	114.61	117.90	0	1
BIDVEST 1974	-1	1	1	101.08	136.53	139.43	0	0
BIDVEST 1975	-1	1	1	114.80	148.01	150.03	0	0
BIDVEST 1976	-1	1	1	138.15	165.98	165.67	-1	1
BIDVEST 1977	-1	0	1	180.76	195.87	190.41	-1	0
BIDVEST 1978	-1	0	1	134.16	162.27	162.80	0	1
BIDVEST 1979	-1	0	1	219.29	225.92	216.58	-1	0
BRICK CLAY 1970	-1	0	1	-81.67	-3.79	14.31	0	1
BRICK CLAY 1971	-2	0	1	303.90	280.29	254.57	-2	0
BRICK CLAY 1972	-2	0	1	293.36	281.59	253.13	-2	0
BRICK CLAY 1973	0	1	1	-174.24	-71.49	-45.80	0	1
BRICK CLAY 1974	-1	1	1	97.25	136.25	127.86	-1	1
BRICK CLAY 1975	-1	1	1	-184.58	-78.09	-49.88	0	0
BRICK CLAY 1976	-1	1	1	-112.38	-22.22	-3.21	0	0
BRICK CLAY 1977	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1978	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1979	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
BACKCLOTHING 1970	1	0	0	1
BACKCLOTHING 1971	1	-2	1	1
BACKCLOTHING 1972	no data	no data	no data	no data
BACKCLOTHING 1973	no data	no data	no data	no data
BACKCLOTHING 1974	no data	no data	no data	no data
BIDVEST 1970	1	0	0	1
BIDVEST 1971	1	-1	0	1
BIDVEST 1972	1	0	1	1
BIDVEST 1973	1	0	1	1
BIDVEST 1974	1	0	0	1
BIDVEST 1975	1	0	0	1
BIDVEST 1976	1	0	0	1
BIDVEST 1977	1	0	1	1
BIDVEST 1978	1	0	1	1
BIDVEST 1979	1	0	1	1
BRICK CLAY 1970	1	0	1	1
BRICK CLAY 1971	1	-2	0	1
BRICK CLAY 1972	1	-2	0	1
BRICK CLAY 1973	1	0	1	1
BRICK CLAY 1974	1	0	0	1
BRICK CLAY 1975	1	0	0	1
BRICK CLAY 1976	1	0	0	1
BRICK CLAY 1977	no data	no data	no data	no data
BRICK CLAY 1978	no data	no data	no data	no data
BRICK CLAY 1979	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
BRISTOL 1970	12.22	9.73	-4.46	4.80	0.60	9.46	0
BRISTOL 1971	18.07	8.65	-7.32	3.91	0.48	9.29	0
BRISTOL 1972	28.28	0.98	-7.79	-2.25	-0.25	5.91	0
BRISTOL 1973	15.21	7.40	0.07	2.11	0.24	7.03	-1
BRISTOL 1974	26.92	8.19	-9.18	3.26	0.41	7.38	-1
BRISTOL 1975	17.79	7.93	-6.24	2.94	0.29	7.84	-1
BRISTOL 1976	18.82	8.05	-4.95	2.96	0.25	7.82	-1
BRISTOL 1977	18.57	7.29	-5.54	2.46	0.20	7.29	0
BRISTOL 1978	17.69	8.40	-4.12	3.42	0.27	7.14	0
BRISTOL 1979	19.59	7.30	-6.99	2.43	0.20	6.91	-1
BURHOSE 1970	76.87	21.20	31.09	13.18	1.61	21.20	-1
BURHOSE 1971	75.30	26.30	36.66	15.98	1.81	26.30	-1
BURHOSE 1972	59.41	15.48	30.92	8.42	0.96	15.67	0
BURHOSE 1973	59.40	2.08	34.16	0.23	0.03	2.08	0
BURHOSE 1974	66.86	11.06	36.10	5.33	0.52	11.01	no data
BURHOSE 1975	80.02	21.16	27.44	15.29	1.30	21.14	no data
BURHOSE 1976	79.23	14.50	33.30	8.05	0.66	14.62	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	62.29	6.13	34.06	2.42	0.20	6.26	no data
BURHOSE 1979	76.11	13.17	26.50	9.83	0.98	12.72	no data
CONJERS 1970	80.83	14.87	20.08	7.11	0.87	14.87	-2
CONJERS 1971	80.18	16.48	21.40	8.38	0.95	16.32	0
CONJERS 1972	82.16	13.77	23.30	7.79	0.89	13.83	-2
CONJERS 1973	85.23	1.90	13.78	-0.94	-0.12	6.83	no data
CONJERS 1974	83.54	12.49	28.58	6.94	0.68	12.94	no data
CONJERS 1975	85.45	-7.79	20.27	-12.08	-1.02	-7.82	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
BRISTOL 1970	-1	0	1	-262.73	-138.24	-112.04	0	1
BRISTOL 1971	-1	0	1	-180.44	-76.25	-58.47	0	1
BRISTOL 1972	-2	0	1	153.86	174.14	153.33	-1	0
BRISTOL 1973	-2	0	1	-151.81	-56.07	-42.51	0	0
BRISTOL 1974	-1	1	1	-142.80	-49.34	-32.66	0	0
BRISTOL 1975	-1	1	1	-164.18	-64.95	-49.01	0	0
BRISTOL 1976	-1	1	1	-159.88	-61.73	-45.97	0	0
BRISTOL 1977	-2	0	1	-145.86	-51.47	-37.49	0	1
BRISTOL 1978	-1	0	1	-212.97	-102.35	-79.98	0	1
BRISTOL 1979	-2	0	1	-149.06	-54.20	-39.32	0	0
BURHOSE 1970	0	0	1	-61.85	20.04	41.58	0	0
BURHOSE 1971	0	0	1	-96.53	-2.62	21.58	0	0
BURHOSE 1972	0	1	1	-32.23	39.14	51.67	0	1
BURHOSE 1973	-2	0	1	79.26	114.08	115.49	0	1
BURHOSE 1974	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1975	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1976	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	0	0	1	147.97	174.35	171.77	-1	0
CONJERS 1971	0	1	1	108.79	145.71	147.61	0	1
CONJERS 1972	0	0	1	85.94	126.63	132.82	0	0
CONJERS 1973	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
BRISTOL 1970	1	0	1	1
BRISTOL 1971	1	0	1	1
BRISTOL 1972	1	-2	0	1
BRISTOL 1973	1	0	0	1
BRISTOL 1974	1	0	0	1
BRISTOL 1975	1	0	0	1
BRISTOL 1976	1	0	0	1
BRISTOL 1977	1	0	1	1
BRISTOL 1978	1	0	1	1
BRISTOL 1979	1	0	0	1
BURHOSE 1970	1	0	0	1
BURHOSE 1971	1	-1	1	1
BURHOSE 1972	1	0	1	1
BURHOSE 1973	1	-2	0	1
BURHOSE 1974	no data	no data	no data	no data
BURHOSE 1975	no data	no data	no data	no data
BURHOSE 1976	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data
CONJERS 1970	1	0	0	1
CONJERS 1971	1	0	1	1
CONJERS 1972	1	0	0	1
CONJERS 1973	no data	no data	no data	no data
CONJERS 1974	no data	no data	no data	no data
CONJERS 1975	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
DRG 1978	62.54	20.13	45.61	12.98	1.07	20.13	-1
DRG 1979	76.80	15.24	39.96	10.82	1.08	15.24	-2
FAIRWEATHER 1970	83.07	18.54	40.92	9.02	1.11	18.56	0
FAIRWEATHER 1971	84.20	12.80	42.60	5.98	0.68	12.83	-2
FAIRWEATHER 1972	71.34	6.81	17.26	-1.76	-0.20	7.13	0
FAIRWEATHER 1973	81.68	12.05	33.40	4.53	0.57	12.07	-2
FAIRWEATHER 1974	81.95	4.23	33.62	-3.33	-0.33	9.40	no data
FAIRWEATHER 1975	78.62	13.71	44.42	4.96	0.42	13.73	no data
FAIRWEATHER 1976	78.17	-2.91	34.62	-9.68	-0.79	6.02	no data
H PARKER 1970	88.12	6.98	-13.17	4.62	0.58	3.84	-2
H PARKER 1971	87.28	3.71	-2.38	0.92	0.11	3.79	0
H PARKER 1972	86.25	-3.95	-4.04	-7.70	-0.87	0.74	0
H PARKER 1973	87.46	-10.08	0.66	-13.41	-1.52	0.75	-1
H PARKER 1974	80.70	14.72	18.27	11.75	1.47	11.99	-1
H PARKER 1975	50.45	11.06	42.57	7.40	0.73	10.32	-1
H PARKER 1976	72.21	4.35	11.96	0.71	0.06	4.07	0
H PARKER 1977	64.43	11.85	13.04	5.74	0.47	10.73	-1
H PARKER 1978	87.76	8.36	4.51	1.77	0.14	11.66	0
H PARKER 1979	78.60	17.88	0.87	10.61	0.87	7.68	-1
IL BACK 1970	86.29	8.78	28.79	3.89	0.49	8.78	-2
IL BACK 1971	84.36	5.31	48.33	0.45	0.06	5.31	-2
IL BACK 1972	91.02	-4.93	37.53	-8.38	-0.95	2.75	0
IL BACK 1973	95.88	-1.85	34.10	-5.20	-0.59	-1.86	no data
IL BACK 1974	97.25	-6.36	20.28	-11.53	-1.44	-4.11	-2
IL BACK 1975	96.52	10.51	28.24	3.74	0.37	10.31	-2
IL BACK 1976	no data	no data	no data	no data	no data	no data	-2
IL BACK 1977	84.18	-1.93	23.66	-9.38	-0.77	-1.18	-2

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
DRG 1978	0	0	1	-162.69	-56.60	-27.12	0	0
DRG 1979	0	0	1	-86.76	-2.95	23.23	0	0
FAIRWEATHER 1970	0	1	1	149.57	178.06	175.22	-1	0
FAIRWEATHER 1971	-1	0	1	178.42	195.87	191.11	-1	0
FAIRWEATHER 1972	-2	0	1	408.20	366.22	328.32	-2	0
FAIRWEATHER 1973	-1	0	1	229.84	234.34	222.18	-1	0
FAIRWEATHER 1974	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1975	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1976	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1970	-1	0	1	32.20	78.84	96.64	0	0
H PARKER 1971	-2	0	1	247.81	242.03	231.64	-2	0
H PARKER 1972	-2	0	1	672.49	561.39	496.43	-2	0
H PARKER 1973	-2	0	1	1021.64	825.64	715.98	-2	0
H PARKER 1974	0	0	1	-210.30	-98.84	-54.43	0	0
H PARKER 1975	0	0	1	-172.39	-70.40	-41.80	0	0
H PARKER 1976	-2	0	1	180.61	191.81	184.41	-1	0
H PARKER 1977	-1	1	1	19.87	74.99	83.86	0	0
H PARKER 1978	-2	0	1	418.88	376.97	342.73	-2	0
H PARKER 1979	0	0	1	-274.37	-150.26	-97.31	0	0
IL BACK 1970	-1	0	1	202.93	211.56	205.39	-1	0
IL BACK 1971	-2	1	1	300.71	283.21	264.52	-2	1
IL BACK 1972	-2	0	1	796.87	656.79	577.05	-2	0
IL BACK 1973	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1974	-2	1	1	830.65	677.40	597.29	-2	1
IL BACK 1975	-1	0	1	314.09	296.46	279.37	-2	1
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	-2	1	1	707.63	586.71	516.90	-2	1

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
DRG 1978	1	-1	1	1
DRG 1979	1	-1	0	1
FAIRWEATHER 1970	1	-1	0	1
FAIRWEATHER 1971	1	-1	0	1
FAIRWEATHER 1972	1	0	1	1
FAIRWEATHER 1973	1	-1	0	1
FAIRWEATHER 1974	no data	no data	no data	no data
FAIRWEATHER 1975	no data	no data	no data	no data
FAIRWEATHER 1976	no data	no data	no data	no data
H PARKER 1970	1	0	0	1
H PARKER 1971	1	-2	0	1
H PARKER 1972	1	-2	0	1
H PARKER 1973	1	-2	0	1
H PARKER 1974	1	0	0	1
H PARKER 1975	1	-1	1	1
H PARKER 1976	1	-2	0	1
H PARKER 1977	1	0	0	1
H PARKER 1978	1	0	1	1
H PARKER 1979	1	0	0	1
IL BACK 1970	1	0	0	1
IL BACK 1971	1	-2	1	1
IL BACK 1972	1	-2	0	1
IL BACK 1973	no data	no data	no data	no data
IL BACK 1974	1	-2	1	1
IL BACK 1975	1	0	0	1
IL BACK 1976	no data	no data	no data	no data
IL BACK 1977	1	-2	1	1

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
IL BACK 1978	86.83	-16.90	22.30	-24.40	-1.95	-16.30	-2
IL BACK 1979	99.78	-3.72	12.63	-9.43	-0.78	-1.94	-2
KTL 1970	80.57	11.39	20.05	6.87	0.84	10.86	0
KTL 1971	86.57	10.61	15.24	5.88	0.67	10.05	0
KTL 1972	83.81	19.57	26.35	10.28	1.17	18.34	0
KTL 1973	88.30	26.15	24.57	16.61	2.08	25.13	0
KTL 1974	86.15	27.04	8.79	19.08	1.88	26.19	-1
KTL 1975	82.51	19.70	22.24	16.21	1.37	18.80	-1
KTL 1976	79.38	15.94	25.39	13.11	1.07	15.01	0
KTL 1977	79.07	17.47	28.04	10.15	0.81	16.42	0
KTL 1978	80.73	19.98	22.27	11.16	0.92	18.93	0
KTL 1979	86.57	19.14	17.95	10.33	1.03	17.93	0
OMNIA 1970	51.77	19.85	51.66	10.93	1.34	19.85	-1
OMNIA 1971	50.35	17.97	52.70	9.88	1.12	17.97	0
OMNIA 1972	48.44	18.78	53.95	10.31	1.17	18.78	0
OMNIA 1973	51.61	16.96	55.20	9.28	1.16	17.02	-2
OMNIA 1974	67.88	16.43	47.68	9.14	0.90	16.50	-2
OMNIA 1975	76.35	18.87	39.32	10.38	0.88	15.09	-2
OMNIA 1976	75.35	4.40	35.36	-2.22	-0.18	4.28	-2
OMNIA 1977	65.31	-7.16	33.68	-11.43	-0.91	-8.09	0
OMNIA 1978	77.51	-1.69	21.49	-7.44	-0.61	6.68	0
OMNIA 1979	100.00	0.00	99.20	-0.40	-0.04	0.00	0
PAN 1970	54.93	12.20	21.04	9.65	1.18	11.35	-2
PAN 1971	66.82	11.95	17.40	8.47	0.96	12.00	-2
PAN 1972	51.97	3.54	13.68	0.65	0.07	3.79	no data
PAN 1973	63.43	-2.84	13.56	-7.93	-0.99	0.79	no data
PAN 1974	29.38	0.85	44.79	-3.87	-0.38	2.13	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
IL BACK 1978	-2	1	1	1200.91	949.50	820.56	-2	1
IL BACK 1979	-2	1	1	780.38	640.79	567.59	-2	1
KTL 1970	0	1	1	49.07	96.71	107.80	0	1
KTL 1971	-1	0	1	121.04	150.44	154.66	0	1
KTL 1972	0	1	1	72.72	119.71	127.14	0	1
KTL 1973	0	1	1	-91.25	0.18	28.84	0	1
KTL 1974	0	0	1	-222.41	-98.30	-53.74	0	0
KTL 1975	0	0	1	-277.43	-144.97	-92.86	0	0
KTL 1976	0	1	1	-215.85	-100.90	-57.00	0	1
KTL 1977	0	1	1	-0.62	63.01	78.61	0	1
KTL 1978	0	1	1	18.03	78.81	92.01	0	1
KTL 1979	0	1	1	74.18	120.45	128.81	0	1
OMNIA 1970	0	0	1	-110.71	-17.14	1.67	0	0
OMNIA 1971	0	1	1	-108.19	-16.48	1.92	0	1
OMNIA 1972	0	1	1	-122.83	-26.95	-7.56	0	1
OMNIA 1973	0	0	1	-91.31	-4.40	12.52	0	0
OMNIA 1974	0	0	1	-2.99	61.60	73.31	0	0
OMNIA 1975	0	0	1	-67.66	11.41	34.99	0	0
OMNIA 1976	-2	1	1	379.99	342.77	310.71	-2	1
OMNIA 1977	-2	0	1	528.07	446.56	394.59	-2	0
OMNIA 1978	-2	0	1	771.86	641.00	558.48	-2	0
OMNIA 1979	-2	0	1	294.69	274.50	263.72	-2	0
PAN 1970	0	0	1	-252.17	-130.21	-89.86	0	0
PAN 1971	0	0	1	-94.41	-10.69	13.54	0	0
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1974	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
IL BACK 1978	1	-2	1	1
IL BACK 1979	1	-2	1	1
KTL 1970	1	0	1	1
KTL 1971	1	0	1	1
KTL 1972	1	0	1	1
KTL 1973	1	0	1	1
KTL 1974	1	0	0	1
KTL 1975	1	0	0	1
KTL 1976	1	0	1	1
KTL 1977	1	0	1	1
KTL 1978	1	0	1	1
KTL 1979	1	0	1	1
OMNIA 1970	1	-1	1	1
OMNIA 1971	1	-1	0	1
OMNIA 1972	1	-1	0	1
OMNIA 1973	1	-1	0	1
OMNIA 1974	1	-1	0	1
OMNIA 1975	1	-1	0	1
OMNIA 1976	1	-2	1	1
OMNIA 1977	1	-2	0	1
OMNIA 1978	1	-2	0	1
OMNIA 1979	1	-2	0	1
PAN 1970	1	0	0	1
PAN 1971	1	0	0	1
PAN 1972	no data	no data	no data	no data
PAN 1973	no data	no data	no data	no data
PAN 1974	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 32.63 0.70
 Lower Cut-off point 6.65 32.63 0.25

Company & year	Data						3Year n-3
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	
PIONEER H 1973	40.54	9.98	-10.60	3.80	0.48	9.73	-1
PIONEER H 1974	42.39	10.67	-11.68	5.19	0.51	8.34	-1
PIONEER H 1975	28.13	11.97	-5.24	6.84	0.58	8.69	-1
PIONEER H 1976	29.86	9.50	-6.76	4.53	0.37	8.91	0
PIONEER H 1977	30.74	10.09	-5.95	4.84	0.39	10.01	no data
PIONEER H 1978	34.81	10.58	-6.58	5.30	0.44	10.61	no data
PIONEER H 1979	40.73	12.75	-6.63	7.07	0.71	11.47	no data
ROMATEX 1970	75.22	4.71	16.41	2.00	0.25	6.90	0
ROMATEX 1971	57.98	5.74	21.56	2.68	0.33	5.74	0
ROMATEX 1972	61.31	6.44	17.05	2.77	0.31	7.21	-2
ROMATEX 1973	65.18	7.84	15.03	3.71	0.42	10.88	0
ROMATEX 1974	76.56	13.10	11.83	7.50	0.94	13.12	0
ROMATEX 1975	73.08	-5.05	12.06	-9.60	-0.94	6.94	0
ROMATEX 1976	75.92	12.49	21.70	6.10	0.52	15.31	0
ROMATEX 1977	76.79	12.36	27.40	7.38	0.60	12.53	0
ROMATEX 1978	81.50	14.28	29.28	9.10	0.73	13.72	0
ROMATEX 1979	84.43	16.20	31.11	10.29	0.85	16.13	-1
SCHACHAT 1970	27.40	11.73	3.11	5.23	0.64	11.73	0
SCHACHAT 1971	25.71	14.29	7.24	6.54	0.74	14.29	-1
SCHACHAT 1972	38.05	17.44	-0.14	8.29	0.94	17.44	-1
SCHACHAT 1973	34.25	12.47	5.77	6.25	0.78	12.54	-1
SCHACHAT 1974	47.30	11.45	8.54	4.78	0.47	11.46	-1
SCHACHAT 1975	38.53	14.95	17.19	5.20	0.44	14.95	no data
SCHACHAT 1976	48.43	16.23	14.10	6.69	0.55	16.27	no data
SCHACHAT 1977	46.21	11.73	9.45	3.96	0.32	11.98	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
PIONEER H 1973	-1	1	1	-30.84	36.62	43.36	0	0
PIONEER H 1974	-1	1	1	-141.88	-48.45	-26.32	0	0
PIONEER H 1975	-1	1	1	-313.52	-177.69	-138.79	0	0
PIONEER H 1976	-1	0	1	-159.59	-61.09	-41.50	0	1
PIONEER H 1977	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1978	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1979	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1970	-2	0	1	199.64	208.08	198.66	-1	0
ROMATEX 1971	-1	0	1	26.34	76.61	83.44	0	1
ROMATEX 1972	-1	0	1	81.34	119.17	119.77	0	0
ROMATEX 1973	-1	0	1	149.74	173.38	165.69	-1	0
ROMATEX 1974	0	1	1	51.65	100.35	109.06	0	1
ROMATEX 1975	-2	0	1	882.86	725.33	626.74	-2	0
ROMATEX 1976	-1	0	1	192.50	208.50	198.22	-1	0
ROMATEX 1977	-1	0	1	43.62	93.86	103.83	0	1
ROMATEX 1978	0	1	1	0.87	62.18	79.16	0	1
ROMATEX 1979	0	0	1	14.23	73.89	89.64	0	0
SCHACHAT 1970	-1	0	1	-136.85	-41.84	-26.80	0	1
SCHACHAT 1971	0	0	1	-153.80	-52.84	-36.86	0	0
SCHACHAT 1972	0	0	1	-99.07	-9.59	3.16	0	0
SCHACHAT 1973	0	0	1	-135.78	-40.67	-23.40	0	0
SCHACHAT 1974	-1	1	1	-1.99	59.46	64.57	0	0
SCHACHAT 1975	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1976	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1977	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
PIONEER H 1973	1	0	0	1
PIONEER H 1974	1	0	0	1
PIONEER H 1975	1	0	0	1
PIONEER H 1976	1	0	1	1
PIONEER H 1977	no data	no data	no data	no data
PIONEER H 1978	no data	no data	no data	no data
PIONEER H 1979	no data	no data	no data	no data
ROMATEX 1970	1	-2	0	1
ROMATEX 1971	1	-2	0	1
ROMATEX 1972	1	-2	1	1
ROMATEX 1973	1	0	1	1
ROMATEX 1974	1	0	1	1
ROMATEX 1975	1	-2	0	1
ROMATEX 1976	1	0	1	1
ROMATEX 1977	1	0	1	1
ROMATEX 1978	1	0	1	1
ROMATEX 1979	1	0	0	1
SCHACHAT 1970	1	0	1	1
SCHACHAT 1971	1	0	0	1
SCHACHAT 1972	1	0	0	1
SCHACHAT 1973	1	0	0	1
SCHACHAT 1974	1	0	0	1
SCHACHAT 1975	no data	no data	no data	no data
SCHACHAT 1976	no data	no data	no data	no data
SCHACHAT 1977	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
SPECTRO 1970	44.52	7.47	37.81	4.09	0.50	7.97	0
SPECTRO 1971	57.75	12.89	37.75	9.68	1.10	13.36	0
SPECTRO 1972	53.89	13.39	31.34	8.27	0.94	13.55	-2
SPECTRO 1973	32.39	12.95	58.29	11.44	1.43	11.53	no data
SPECTRO 1974	46.87	9.79	35.45	7.95	0.78	8.65	no data
SPECTRO 1975	28.61	2.92	58.49	-4.52	-0.38	-0.17	no data
STUTTAFORDS 1970	80.26	12.89	20.04	7.41	0.93	12.82	0
STUTTAFORDS 1971	79.46	15.35	14.96	12.31	1.51	6.96	-1
STUTTAFORDS 1972	80.82	6.10	9.04	3.54	0.40	6.07	-1
STUTTAFORDS 1973	77.23	12.96	14.86	10.37	1.18	6.00	-1
STUTTAFORDS 1974	77.16	7.28	11.77	4.35	0.54	6.08	-1
STUTTAFORDS 1975	81.53	8.34	9.66	4.36	0.43	8.32	-1
STUTTAFORDS 1976	76.81	7.47	8.88	3.76	0.32	7.42	no data
STUTTAFORDS 1977	79.16	8.06	8.28	3.91	0.32	7.96	no data
STUTTAFORDS 1978	80.37	6.28	7.59	3.07	0.25	6.22	no data
TAPSA 1970	95.14	14.83	42.17	9.39	1.17	14.91	-1
TAPSA 1971	82.51	13.22	40.06	6.65	0.81	13.34	-2
TAPSA 1972	77.43	11.50	41.48	3.66	0.41	11.52	-2
TAPSA 1973	83.17	8.48	33.78	3.53	0.40	8.32	no data
TAPSA 1974	88.59	0.92	25.22	-7.83	-0.98	4.39	no data
TAPSA 1975	91.84	-29.03	-21.63	-38.69	-3.81	-11.26	no data
TIGERIND 1970	76.93	7.47	9.21	0.87	0.11	7.51	0
TIGERIND 1971	69.96	0.00	8.47	-6.10	-0.69	6.10	no data
TIGERIND 1972	9.33	-9.26	-2.23	-23.19	-2.64	7.66	no data
TIGERIND 1973	31.19	5.91	-7.96	0.17	0.02	5.91	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
SPECTRO 1970	-1	0	1	-73.97	2.64	16.86	0	1
SPECTRO 1971	0	1	1	-181.71	-75.56	-43.77	0	1
SPECTRO 1972	0	0	1	-114.24	-24.25	-2.66	0	0
SPECTRO 1973	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1975	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1970	0	1	1	70.05	113.96	121.74	0	1
STUTTAFORDS 1971	0	0	1	-391.62	-239.54	-170.93	0	0
STUTTAFORDS 1972	-1	1	1	117.06	144.84	148.39	0	0
STUTTAFORDS 1973	0	0	1	-314.70	-181.92	-123.85	0	0
STUTTAFORDS 1974	-1	1	1	47.08	91.98	103.21	0	0
STUTTAFORDS 1975	-1	1	1	134.42	159.52	160.54	0	0
STUTTAFORDS 1976	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1977	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1978	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1970	0	0	1	96.01	134.62	144.10	0	0
TAPSA 1971	0	0	1	142.55	169.13	168.25	-1	0
TAPSA 1972	-1	0	1	241.59	242.98	227.84	-1	0
TAPSA 1973	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1974	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1975	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1970	-2	0	1	293.88	279.79	258.67	-2	0
TIGERIND 1971	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1972	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
SPECTRO 1970	1	-1	0	1
SPECTRO 1971	1	-1	0	1
SPECTRO 1972	1	0	0	1
SPECTRO 1973	no data	no data	no data	no data
SPECTRO 1974	no data	no data	no data	no data
SPECTRO 1975	no data	no data	no data	no data
STUTTAFORDS 1970	1	0	1	1
STUTTAFORDS 1971	1	0	0	1
STUTTAFORDS 1972	1	-2	0	1
STUTTAFORDS 1973	1	0	0	1
STUTTAFORDS 1974	1	0	0	1
STUTTAFORDS 1975	1	0	0	1
STUTTAFORDS 1976	no data	no data	no data	no data
STUTTAFORDS 1977	no data	no data	no data	no data
STUTTAFORDS 1978	no data	no data	no data	no data
TAPSA 1970	1	-1	1	1
TAPSA 1971	1	-1	0	1
TAPSA 1972	1	-1	0	1
TAPSA 1973	no data	no data	no data	no data
TAPSA 1974	no data	no data	no data	no data
TAPSA 1975	no data	no data	no data	no data
TIGERIND 1970	1	0	1	1
TIGERIND 1971	no data	no data	no data	no data
TIGERIND 1972	no data	no data	no data	no data
TIGERIND 1973	no data	no data	no data	no data

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 32.63 0.70
 Lower Cut-off point 6.65 32.63 0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
TRIOMF 1970	46.13	9.30	11.83	4.85	0.59	9.47	0
TRIOMF 1971	64.67	9.43	16.86	5.92	0.67	9.41	0
TRIOMF 1972	62.56	23.78	17.67	12.82	1.46	23.79	0
TRIOMF 1973	71.83	22.54	15.29	12.35	1.54	22.56	-1
TRIOMF 1974	77.98	19.58	5.53	11.56	1.14	19.59	-2
TRIOMF 1975	25.58	14.21	23.08	7.30	0.62	14.20	0
TRIOMF 1976	38.04	9.07	4.61	2.79	0.23	9.07	0
TRIOMF 1977	49.91	2.60	-8.79	-4.85	-0.39	0.85	0
TRIOMF 1978	53.06	9.13	-3.88	1.46	0.12	9.15	-1
TRIOMF 1979	62.13	17.61	-0.45	10.97	1.10	17.28	-1
TUCKERS 1970	84.28	15.46	23.34	14.67	1.80	15.34	0
TUCKERS 1971	70.91	13.04	34.56	10.71	1.21	15.04	0
TUCKERS 1972	69.33	12.85	48.30	10.44	1.19	12.89	-1
TUCKERS 1973	95.33	15.88	52.40	14.18	1.77	15.88	-1
TUCKERS 1974	95.76	14.94	57.41	13.60	1.34	14.94	-1
TUCKERS 1975	67.02	6.09	68.47	5.38	0.46	6.70	-2
TUCKERS 1976	62.70	4.11	68.43	3.13	0.26	4.11	-1
TUCKERS 1977	71.08	9.37	58.71	7.77	0.62	9.37	-1
TUCKERS 1978	63.61	-2.85	55.72	-4.16	-0.34	-2.85	0
TUCKERS 1979	58.97	4.68	62.81	3.74	0.37	4.90	0

Sub-Total 1970s
 Predictive Accuracy

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
TRIOMF 1970	-1	0	1	-68.55	7.73	21.50	0	1
TRIOMF 1971	-1	0	1	-26.67	38.84	54.13	0	1
TRIOMF 1972	0	1	1	-50.92	30.54	44.69	0	1
TRIOMF 1973	0	0	1	-3.49	65.32	77.09	0	0
TRIOMF 1974	0	0	1	-3.46	63.09	77.88	0	0
TRIOMF 1975	-1	0	1	-202.47	-89.74	-67.49	0	1
TRIOMF 1976	-2	0	1	-2.84	57.44	59.77	0	1
TRIOMF 1977	-2	0	1	293.91	275.98	246.38	-2	0
TRIOMF 1978	-2	0	1	165.81	184.70	170.83	-1	1
TRIOMF 1979	0	0	1	-124.17	-29.41	-4.37	0	0
TUCKERS 1970	0	1	1	-271.46	-142.91	-90.07	0	1
TUCKERS 1971	0	1	1	-120.02	-28.09	0.24	0	1
TUCKERS 1972	0	0	1	-172.92	-69.58	-34.48	0	0
TUCKERS 1973	0	0	1	-162.98	-60.75	-17.94	0	0
TUCKERS 1974	0	0	1	-152.00	-53.11	-11.33	0	0
TUCKERS 1975	-1	0	1	-55.82	14.83	35.43	0	0
TUCKERS 1976	-1	1	1	-18.78	41.19	56.01	0	0
TUCKERS 1977	-1	1	1	-101.05	-17.68	9.64	0	0
TUCKERS 1978	-2	0	1	229.03	223.90	208.71	-2	0
TUCKERS 1979	-1	0	1	-54.91	14.50	32.41	0	1
Sub-Total 1970s		46	134					50
Predictive Accuracy		34.3%						37.3%

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
TRIOMF 1970	1	0	1	1
TRIOMF 1971	1	0	1	1
TRIOMF 1972	1	0	1	1
TRIOMF 1973	1	0	0	1
TRIOMF 1974	1	0	0	1
TRIOMF 1975	1	0	1	1
TRIOMF 1976	1	0	1	1
TRIOMF 1977	1	-2	0	1
TRIOMF 1978	1	0	0	1
TRIOMF 1979	1	0	0	1
TUCKERS 1970	1	0	1	1
TUCKERS 1971	1	-1	0	1
TUCKERS 1972	1	-1	1	1
TUCKERS 1973	1	-1	1	1
TUCKERS 1974	1	-1	1	1
TUCKERS 1975	1	-2	1	1
TUCKERS 1976	1	-2	0	1
TUCKERS 1977	1	-1	1	1
TUCKERS 1978	1	-2	0	1
TUCKERS 1979	1	-2	0	1
Sub-Total 1970s	134		56	134
Predictive Accuracy			41.8%	

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
BIDVEST 1980	87.62	14.47	38.88	7.73	0.81	14.31	-1
BIDVEST 1981	91.68	22.07	41.30	14.58	1.04	19.02	-1
BIDVEST 1982	84.39	17.75	43.99	10.71	0.55	17.65	-1
BIDVEST 1983	83.91	12.26	47.32	5.65	0.34	12.31	-1
BIDVEST 1984	87.14	10.39	34.70	5.98	0.27	10.42	-2
BIDVEST 1985	94.70	9.33	37.27	3.87	0.18	9.39	0
BIDVEST 1986	97.88	8.97	33.52	4.50	0.31	9.00	0
BIDVEST 1987	95.95	-1.28	27.69	-8.08	-0.65	13.30	0
BIDVEST 1988	91.92	16.25	10.78	7.61	0.50	16.62	0
BIDVEST 1989	100.00	48.68	58.09	34.85	1.76	23.98	0
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	-2
BRICK CLAY 1981	58.59	11.45	7.34	6.71	0.48	14.14	0
BRICK CLAY 1982	40.46	13.33	28.20	8.50	0.44	14.59	-2
BRICK CLAY 1983	52.20	-13.11	4.70	-21.21	-1.27	-2.99	0
BRICK CLAY 1984	40.75	9.66	15.99	0.86	0.04	11.27	0
BRICK CLAY 1985	65.40	-16.54	-38.73	-31.02	-1.44	-2.59	0
BRICK CLAY 1986	21.61	17.91	25.44	10.69	0.75	19.43	no data
BRICK CLAY 1987	23.11	23.48	39.75	22.83	1.83	23.45	no data
BRICK CLAY 1988	25.90	24.17	38.13	23.92	1.56	24.15	no data
BRISTOL 1980	26.76	11.19	-2.07	7.42	0.74	6.98	-1
BRISTOL 1981	29.91	12.85	1.77	9.17	0.97	8.38	0
BRISTOL 1982	30.18	7.16	9.42	3.04	0.22	6.72	0
BRISTOL 1983	18.41	8.07	-4.62	2.49	0.13	8.00	-1
BRISTOL 1984	45.24	21.94	28.04	13.59	0.82	17.38	-1
BRISTOL 1985	59.96	13.07	29.35	7.71	0.35	9.85	-1
BRISTOL 1986	92.24	9.59	28.77	6.52	0.30	6.46	0
BRISTOL 1987	100.00	8.50	35.20	5.76	0.40	5.65	-1

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
BIDVEST 1980	0	0	1	135.12	164.03	165.79	0	0
BIDVEST 1981	0	0	1	-120.51	-26.31	8.88	0	0
BIDVEST 1982	-1	1	1	30.51	87.26	100.53	0	0
BIDVEST 1983	-1	1	1	182.16	198.36	193.13	-1	1
BIDVEST 1984	-1	0	1	128.36	156.22	159.62	0	0
BIDVEST 1985	-2	0	1	270.20	262.64	250.77	-2	0
BIDVEST 1986	-1	0	1	239.95	239.38	232.71	-2	0
BIDVEST 1987	-2	0	1	1101.68	894.69	774.81	-2	0
BIDVEST 1988	-1	0	1	231.30	238.31	228.67	-1	0
BIDVEST 1989	0	1	1	-1147.46	-800.44	-630.53	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	-1	0	1	22.45	79.49	85.01	0	1
BRICK CLAY 1982	-1	0	1	-177.35	-70.89	-46.42	0	0
BRICK CLAY 1983	-2	0	1	1180.04	943.99	801.57	-2	0
BRICK CLAY 1984	-2	0	1	189.03	204.11	182.11	-1	0
BRICK CLAY 1985	-2	0	1	1854.83	1454.64	1229.79	-2	0
BRICK CLAY 1986	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1987	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1988	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1980	0	0	1	-403.92	-247.27	-196.77	0	0
BRISTOL 1981	0	1	1	-451.56	-282.45	-224.95	0	1
BRISTOL 1982	-2	0	1	-129.22	-39.62	-23.31	0	1
BRISTOL 1983	-2	0	1	-129.38	-38.51	-26.88	0	0
BRISTOL 1984	0	0	1	-376.19	-219.60	-168.31	0	0
BRISTOL 1985	-1	1	1	-148.79	-53.15	-23.93	0	0
BRISTOL 1986	-1	0	1	15.59	67.96	88.81	0	1
BRISTOL 1987	-1	1	1	83.55	118.61	133.77	0	0

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
BIDVEST 1980	1	-1	1	1
BIDVEST 1981	1	-1	1	1
BIDVEST 1982	1	-1	1	1
BIDVEST 1983	1	-1	1	1
BIDVEST 1984	1	-1	0	1
BIDVEST 1985	1	-1	0	1
BIDVEST 1986	1	-1	0	1
BIDVEST 1987	1	-2	0	1
BIDVEST 1988	1	0	1	1
BIDVEST 1989	1	-1	0	1
BRICK CLAY 1980	no data	no data	no data	no data
BRICK CLAY 1981	1	0	1	1
BRICK CLAY 1982	1	0	0	1
BRICK CLAY 1983	1	-2	0	1
BRICK CLAY 1984	1	0	1	1
BRICK CLAY 1985	1	-2	0	1
BRICK CLAY 1986	no data	no data	no data	no data
BRICK CLAY 1987	no data	no data	no data	no data
BRICK CLAY 1988	no data	no data	no data	no data
BRISTOL 1980	1	0	0	1
BRISTOL 1981	1	0	1	1
BRISTOL 1982	1	0	1	1
BRISTOL 1983	1	0	0	1
BRISTOL 1984	1	0	0	1
BRISTOL 1985	1	0	0	1
BRISTOL 1986	1	0	1	1
BRISTOL 1987	1	-1	1	1

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
BRISTOL 1988	100.00	9.77	29.03	7.16	0.57	5.42	-1
BRISTOL 1989	73.93	18.31	33.22	14.60	0.95	7.61	-1
DRG 1980	90.40	16.92	31.96	10.62	1.12	15.85	no data
DRG 1981	73.15	8.40	27.08	4.73	0.34	8.36	no data
DRG 1982	60.39	6.45	27.28	-0.23	-0.01	5.42	no data
H PARKER 1980	75.47	11.20	1.13	4.07	0.41	10.91	no data
H PARKER 1981	66.14	12.58	10.01	6.33	0.67	12.05	no data
H PARKER 1982	79.28	10.93	3.95	1.92	0.14	10.75	no data
IL BACK 1980	99.64	-6.77	41.36	-10.40	-1.04	-6.76	no data
IL BACK 1981	100.00	-8.59	16.97	-11.26	-1.18	-8.60	no data
IL BACK 1982	100.00	-7.29	96.97	-10.65	-0.76	7.34	no data
KTL 1980	89.71	20.23	29.71	16.77	1.76	18.66	0
KTL 1981	87.53	16.16	26.24	13.13	0.94	16.09	-1
KTL 1982	89.47	19.44	17.71	11.82	0.61	19.93	-1
KTL 1983	90.15	17.73	14.81	12.73	0.76	15.25	-1
KTL 1984	92.49	15.11	26.34	11.57	0.52	12.92	0
KTL 1985	96.60	10.50	7.08	5.38	0.25	10.14	0
KTL 1986	97.26	6.49	6.16	2.44	0.17	6.55	0
KTL 1987	97.97	12.80	11.57	9.22	0.74	7.37	0
KTL 1988	98.77	17.00	21.17	10.05	0.66	16.30	-1
KTL 1989	97.13	16.42	7.80	10.98	0.55	15.53	-1
OMNIA 1980	95.11	8.67	0.59	5.74	0.60	8.80	-1
OMNIA 1981	94.75	21.28	0.33	18.04	1.29	20.73	-2
OMNIA 1982	79.26	9.60	19.61	8.19	0.42	9.38	-1
OMNIA 1983	36.42	4.45	3.14	3.05	0.18	4.42	0
OMNIA 1984	52.14	8.72	-0.86	-0.17	-0.01	8.72	0
OMNIA 1985	52.62	10.60	3.62	1.11	0.05	9.21	0

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
BRISTOL 1988	-1	1	1	-6.96	49.94	76.86	0	0
BRISTOL 1989	0	0	1	-542.67	-353.26	-267.33	0	0
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1980	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1981	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1982	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1980	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1981	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1982	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1980	0	1	1	-272.76	-141.75	-87.51	0	1
KTL 1981	0	0	1	-139.48	-42.58	-5.78	0	0
KTL 1982	-1	1	1	57.46	109.09	120.22	0	0
KTL 1983	0	0	1	-123.33	-31.02	4.88	0	0
KTL 1984	-1	0	1	-105.33	-19.09	15.93	0	1
KTL 1985	-1	0	1	211.46	218.65	214.91	-1	0
KTL 1986	-2	0	1	291.05	276.37	263.46	-2	0
KTL 1987	0	1	1	-87.61	-9.70	26.42	0	1
KTL 1988	-1	1	1	116.07	150.66	158.56	0	0
KTL 1989	-1	1	1	29.55	84.69	103.36	0	0
OMNIA 1980	-1	1	1	143.91	166.63	171.39	0	0
OMNIA 1981	0	0	1	-262.18	-132.46	-78.21	0	0
OMNIA 1982	-1	1	1	-78.56	-0.89	26.57	0	0
OMNIA 1983	-2	0	1	-157.42	-62.75	-39.90	0	1
OMNIA 1984	-2	0	1	246.24	245.31	220.79	-2	0
OMNIA 1985	-2	0	1	186.06	200.08	183.41	-1	0

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
BRISTOL 1988	1	0	0	1
BRISTOL 1989	1	-1	1	1
DRG 1980	no data	no data	no data	no data
DRG 1981	no data	no data	no data	no data
DRG 1982	no data	no data	no data	no data
H PARKER 1980	no data	no data	no data	no data
H PARKER 1981	no data	no data	no data	no data
H PARKER 1982	no data	no data	no data	no data
IL BACK 1980	no data	no data	no data	no data
IL BACK 1981	no data	no data	no data	no data
IL BACK 1982	no data	no data	no data	no data
KTL 1980	1	0	1	1
KTL 1981	1	0	0	1
KTL 1982	1	0	0	1
KTL 1983	1	0	0	1
KTL 1984	1	0	1	1
KTL 1985	1	0	1	1
KTL 1986	1	-2	0	1
KTL 1987	1	0	1	1
KTL 1988	1	0	0	1
KTL 1989	1	0	0	1
OMNIA 1980	1	0	0	1
OMNIA 1981	1	0	0	1
OMNIA 1982	1	0	0	1
OMNIA 1983	1	-2	0	1
OMNIA 1984	1	0	1	1
OMNIA 1985	1	0	1	1

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
OMNIA 1986	58.86	8.89	0.15	1.91	0.13	8.81	0
OMNIA 1987	79.67	8.89	0.93	4.78	0.38	8.51	0
OMNIA 1988	71.27	14.55	4.22	8.42	0.55	14.36	-1
OMNIA 1989	77.15	19.77	2.09	11.77	0.59	20.46	-1
ROMATEX 1980	87.27	19.74	21.15	12.95	1.30	18.80	-1
ROMATEX 1981	88.95	25.80	25.00	16.18	1.70	24.84	-1
ROMATEX 1982	84.24	21.63	26.40	13.79	0.99	20.39	-1
ROMATEX 1983	85.71	15.08	27.41	8.76	0.45	13.94	-1
ROMATEX 1984	88.17	15.14	27.79	9.29	0.56	13.43	0
ROMATEX 1985	71.74	6.87	27.06	1.08	0.05	7.12	0
ROMATEX 1986	76.96	10.44	29.72	6.33	0.29	10.08	0
ROMATEX 1987	93.10	15.84	26.21	9.05	0.63	15.67	-1
ROMATEX 1988	98.88	19.87	23.17	11.28	0.90	20.22	-1
ROMATEX 1989	85.56	17.72	26.06	10.66	0.70	17.22	-1
TRIOMF 1980	71.36	15.53	3.92	12.30	1.29	15.51	-2
TRIOMF 1981	41.40	13.82	6.55	9.78	0.70	12.60	no data
TRIOMF 1982	20.42	6.34	3.70	0.17	0.01	6.34	-2
TRIOMF 1983	100.00	1.66	2.35	-0.51	-0.03	1.66	-2
TRIOMF 1984	no data	no data	no data	no data	no data	no data	-2
TRIOMF 1985	32.14	0.81	0.77	-4.57	-0.21	0.88	no data
TRIOMF 1986	37.03	-7.07	19.29	-28.83	-2.01	-5.98	no data
TRIOMF 1987	100.00	13.22	96.10	-0.22	-0.02	0.86	no data
TUCKERS 1980	56.93	4.35	63.45	3.66	0.39	4.33	no data
TUCKERS 1981	59.26	6.67	54.39	5.60	0.40	5.65	no data
TUCKERS 1982	74.05	11.60	11.80	9.31	0.48	10.88	no data

Sub-Total 1980s
 Predictive Accuracy

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
OMNIA 1986	-2	0	1	162.97	182.15	170.89	-1	0
OMNIA 1987	-1	0	1	103.85	136.56	140.80	0	1
OMNIA 1988	-1	1	1	-0.03	62.25	75.36	0	0
OMNIA 1989	-1	1	1	3.62	69.08	82.44	0	0
ROMATEX 1980	0	0	1	-54.83	23.37	48.48	0	0
ROMATEX 1981	0	0	1	-69.75	16.23	42.43	0	0
ROMATEX 1982	0	0	1	-78.21	6.88	33.49	0	0
ROMATEX 1983	-1	1	1	52.09	100.98	112.85	0	0
ROMATEX 1984	-1	0	1	20.44	76.59	93.60	0	1
ROMATEX 1985	-2	0	1	240.78	239.48	223.38	-2	0
ROMATEX 1986	-1	0	1	39.24	88.83	100.03	0	1
ROMATEX 1987	-1	1	1	125.67	157.66	162.36	0	0
ROMATEX 1988	0	0	1	152.55	180.99	183.27	0	0
ROMATEX 1989	-1	1	1	28.99	85.78	99.79	0	0
TRIOMF 1980	0	0	1	-199.50	-87.94	-49.28	0	0
TRIOMF 1981	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1982	-2	1	1	-25.04	39.26	38.54	-1	0
TRIOMF 1983	-2	1	1	347.64	315.73	297.71	-2	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1986	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1987	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1980	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1981	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1982	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1980s		21	58					14
Predictive Accuracy		36.2%						24.1%

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
OMNIA 1986	1	0	1	1
OMNIA 1987	1	0	1	1
OMNIA 1988	1	0	0	1
OMNIA 1989	1	0	0	1
ROMATEX 1980	1	0	0	1
ROMATEX 1981	1	0	0	1
ROMATEX 1982	1	0	0	1
ROMATEX 1983	1	0	0	1
ROMATEX 1984	1	0	1	1
ROMATEX 1985	1	0	1	1
ROMATEX 1986	1	0	1	1
ROMATEX 1987	1	0	0	1
ROMATEX 1988	1	0	0	1
ROMATEX 1989	1	0	0	1
TRIOMF 1980	1	0	0	1
TRIOMF 1981	no data	no data	no data	no data
TRIOMF 1982	1	-2	1	1
TRIOMF 1983	1	-2	1	1
TRIOMF 1984	no data	no data	no data	no data
TRIOMF 1985	no data	no data	no data	no data
TRIOMF 1986	no data	no data	no data	no data
TRIOMF 1987	no data	no data	no data	no data
TUCKERS 1980	no data	no data	no data	no data
TUCKERS 1981	no data	no data	no data	no data
TUCKERS 1982	no data	no data	no data	no data
Sub-Total 1980s	58		25	58
Predictive Accuracy			43.1%	

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
BIDVEST 1990	83.95	29.26	65.28	13.67	0.65	29.24	0
BIDVEST 1991	60.24	13.72	15.12	6.48	0.32	13.75	0
BIDVEST 1992	42.75	18.50	33.41	9.56	0.51	18.48	0
BIDVEST 1993	70.73	11.13	34.07	6.22	0.38	11.05	0
BIDVEST 1994	74.20	15.91	34.44	9.70	0.62	15.85	0
BIDVEST 1995	75.37	17.36	34.33	10.91	0.61	17.28	0
BIDVEST 1996	79.97	16.77	35.14	11.37	0.58	16.19	no data
BIDVEST 1997	86.78	11.23	36.59	7.42	0.37	10.86	no data
BIDVEST 1998	94.95	14.65	48.29	10.93	0.50	14.40	no data
BRISTOL 1990	70.39	11.01	31.76	5.68	0.29	10.78	-1
BRISTOL 1991	73.57	13.33	35.80	6.54	0.31	13.23	-1
BRISTOL 1992	68.14	11.06	28.41	7.21	0.36	10.52	no data
BRISTOL 1993	100.00	10.18	33.71	6.26	0.33	7.80	no data
BRISTOL 1994	100.00	7.85	25.25	5.21	0.32	7.83	no data
KTL 1990	95.68	19.05	19.34	8.13	0.39	19.06	0
KTL 1991	96.92	11.12	15.95	4.05	0.20	15.37	0
KTL 1992	98.07	6.54	12.22	0.14	0.01	7.01	0
KTL 1993	97.24	9.67	13.95	5.83	0.36	9.92	0
KTL 1994	96.67	14.29	20.90	10.07	0.65	11.55	-1
KTL 1995	93.52	13.01	18.54	8.86	0.50	12.05	-1
KTL 1996	97.41	19.47	19.36	16.64	0.85	9.77	-1
KTL 1997	91.42	10.34	31.01	6.74	0.34	10.36	no data
KTL 1998	100.00	37.46	-6.45	32.51	1.49	37.42	no data
KTL 1999	100.00	48.82	-11.05	45.98	2.55	48.81	no data
OMNIA 1990	83.82	17.63	3.98	9.46	0.45	17.36	0
OMNIA 1991	89.00	17.23	2.59	7.94	0.39	17.27	0
OMNIA 1992	91.13	14.72	3.05	4.53	0.24	13.48	0

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
BIDVEST 1990	-1	0	1	173.83	203.81	195.56	-1	0
BIDVEST 1991	-1	0	1	35.51	89.06	93.59	0	1
BIDVEST 1992	-1	0	1	-119.27	-24.29	-7.42	0	1
BIDVEST 1993	-1	0	1	36.71	87.77	96.74	0	1
BIDVEST 1994	-1	0	1	-18.36	49.33	65.54	0	1
BIDVEST 1995	-1	0	1	-43.78	31.04	50.64	0	1
BIDVEST 1996	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1997	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1998	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1990	-1	1	1	59.06	104.52	110.53	0	0
BRISTOL 1991	-1	1	1	94.68	133.08	135.08	0	0
BRISTOL 1992	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1993	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1994	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1990	-1	0	1	290.39	284.62	268.15	-2	0
KTL 1991	-2	0	1	438.69	394.27	359.99	-2	0
KTL 1992	-2	0	1	446.47	394.31	361.48	-2	0
KTL 1993	-1	0	1	182.02	196.19	196.55	0	1
KTL 1994	-1	1	1	-29.39	37.32	64.40	0	0
KTL 1995	-1	1	1	38.21	88.93	105.97	0	0
KTL 1996	0	0	1	-468.34	-296.19	-211.63	0	0
KTL 1997	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1998	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1999	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1990	-1	0	1	94.14	135.24	140.14	0	1
OMNIA 1991	-1	0	1	212.93	224.94	216.43	-1	0
OMNIA 1992	-2	0	1	324.00	306.31	285.16	-2	0

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
BIDVEST 1990	1	-1	0	1
BIDVEST 1991	1	0	1	1
BIDVEST 1992	1	-1	0	1
BIDVEST 1993	1	-1	0	1
BIDVEST 1994	1	-1	0	1
BIDVEST 1995	1	-1	0	1
BIDVEST 1996	no data	no data	no data	no data
BIDVEST 1997	no data	no data	no data	no data
BIDVEST 1998	no data	no data	no data	no data
BRISTOL 1990	1	0	0	1
BRISTOL 1991	1	-1	1	1
BRISTOL 1992	no data	no data	no data	no data
BRISTOL 1993	no data	no data	no data	no data
BRISTOL 1994	no data	no data	no data	no data
KTL 1990	1	0	1	1
KTL 1991	1	0	1	1
KTL 1992	1	-2	0	1
KTL 1993	1	0	1	1
KTL 1994	1	0	0	1
KTL 1995	1	0	0	1
KTL 1996	1	0	0	1
KTL 1997	no data	no data	no data	no data
KTL 1998	no data	no data	no data	no data
KTL 1999	no data	no data	no data	no data
OMNIA 1990	1	0	1	1
OMNIA 1991	1	0	1	1
OMNIA 1992	1	0	1	1

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point	6.65	32.63	0.70
Lower Cut-off point	6.65	32.63	0.25

Company & year	Data						
	CL/TL	EBIT/TA	NWC/TA	PAT/TA	SVA	TEBIT/TA	3Year n-3
OMNIA 1993	91.11	19.98	7.50	9.71	0.60	19.74	0
OMNIA 1994	92.80	14.94	7.78	8.46	0.54	14.90	0
OMNIA 1995	89.96	13.71	9.74	6.99	0.39	13.57	-1
OMNIA 1996	87.71	17.17	11.10	9.13	0.47	16.49	no data
OMNIA 1997	91.32	21.00	12.99	11.49	0.57	18.12	no data
OMNIA 1998	82.19	15.36	9.40	7.53	0.35	15.38	no data
ROMATEX 1990	71.17	12.44	22.38	7.46	0.38	11.97	0
ROMATEX 1991	75.26	5.68	20.56	0.31	0.01	7.84	0
ROMATEX 1992	84.62	8.59	20.03	2.62	0.13	7.69	-1
ROMATEX 1993	98.10	10.69	24.66	7.25	0.38	11.06	-1
ROMATEX 1994	100.00	12.86	25.12	7.92	0.49	13.41	-2
ROMATEX 1995	100.00	9.64	33.77	6.89	0.44	9.89	0
ROMATEX 1996	100.00	0.75	37.12	0.26	0.01	0.49	no data
ROMATEX 1997	100.00	-10.10	35.31	-10.35	-0.53	-6.17	no data
ROMATEX 1998	100.00	2.06	40.07	1.52	0.08	1.96	no data

Sub-Total 1990s
 Predictive Accuracy

Grand Total
 Predictive Accuracy

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Naive Model			Yn-3 Fisher Discriminant Analysis				
	Pred State	# Correct	Sample Size	F-2	F-1	F0	Pred State	# Correct
OMNIA 1993	-1	0	1	187.91	207.66	202.57	-1	0
OMNIA 1994	-1	0	1	137.71	166.25	169.46	0	1
OMNIA 1995	-1	1	1	172.46	191.70	189.69	-1	1
OMNIA 1996	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1997	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1998	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1990	-1	0	1	-9.66	53.30	68.20	0	1
ROMATEX 1991	-2	0	1	327.28	305.36	279.21	-2	0
ROMATEX 1992	-2	0	1	239.31	238.38	227.15	-2	0
ROMATEX 1993	-1	1	1	134.32	160.86	167.43	0	0
ROMATEX 1994	-1	0	1	170.27	189.64	191.70	0	0
ROMATEX 1995	-1	0	1	133.78	159.58	167.21	0	1
ROMATEX 1996	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1997	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1998	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1990s		6	27					11
Predictive Accuracy		22.2%						40.7%
Grand Total		73	219					75
Predictive Accuracy		33.3%						34.2%

APPENDIX E2 : 3 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size	Yn-3 CHAID Model		
		Pred State	# Correct	Sample Size
OMNIA 1993	1	0	1	1
OMNIA 1994	1	0	1	1
OMNIA 1995	1	0	0	1
OMNIA 1996	no data	no data	no data	no data
OMNIA 1997	no data	no data	no data	no data
OMNIA 1998	no data	no data	no data	no data
ROMATEX 1990	1	0	1	1
ROMATEX 1991	1	-2	0	1
ROMATEX 1992	1	0	0	1
ROMATEX 1993	1	0	0	1
ROMATEX 1994	1	0	0	1
ROMATEX 1995	1	-1	0	1
ROMATEX 1996	no data	no data	no data	no data
ROMATEX 1997	no data	no data	no data	no data
ROMATEX 1998	no data	no data	no data	no data
Sub-Total 1990s	27		11	27
Predictive Accuracy			40.7%	
Grand Total	219		92	219
Predictive Accuracy			42.0%	

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
BACKCLOTHING 1970	Hold	-0.13	7.07	0.34	no data
BACKCLOTHING 1971	Hold	-0.68	-2.89	-0.11	-2
BACKCLOTHING 1972	Hold	-1.89	-45.83	-1.11	-2
BACKCLOTHING 1973	Hold	-2.10	-88.85	-1.35	-2
BACKCLOTHING 1974	Hold	-2.82	-380.70	-1.39	-2
BIDVEST 1970	Hold	0.21	19.14	0.91	no data
BIDVEST 1971	Hold	-0.16	10.89	0.50	no data
BIDVEST 1972	Hold	-0.02	11.67	0.57	no data
BIDVEST 1973	Hold	0.20	9.79	0.67	-1
BIDVEST 1974	Hold	0.23	10.89	0.58	0
BIDVEST 1975	Hold	0.33	12.81	0.58	0
BIDVEST 1976	Hold	0.33	13.09	0.56	0
BIDVEST 1977	Hold	0.04	8.07	0.35	-1
BIDVEST 1978	Hold	0.35	10.92	0.54	-1
BIDVEST 1979	Hold	0.22	8.17	0.48	-1
BRICK CLAY 1970	Hold	0.21	8.01	0.57	no data
BRICK CLAY 1971	Hold	-1.45	-13.06	-0.67	-2
BRICK CLAY 1972	Hold	-0.32	0.45	0.02	no data
BRICK CLAY 1973	Hold	0.47	14.69	0.83	0
BRICK CLAY 1974	Hold	0.00	8.59	0.41	0
BRICK CLAY 1975	Hold	0.55	18.22	0.69	0
BRICK CLAY 1976	Hold	0.42	17.79	0.65	0
BRICK CLAY 1977	Hold	-0.02	11.21	0.40	-1
BRICK CLAY 1978	Hold	-0.26	8.02	0.25	-1
BRICK CLAY 1979	Hold	-0.11	10.93	0.43	-1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971	-2	1	1	-2	1	1	-2	1
BACKCLOTHING 1972	-2	1	1	-2	1	1	-2	1
BACKCLOTHING 1973	-2	1	1	-2	1	1	-2	1
BACKCLOTHING 1974	-2	1	1	-2	1	1	-2	1
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	0	1	1	-1	1	1	unknown	0
BIDVEST 1974	0	1	1	-1	1	1	0	1
BIDVEST 1975	0	1	1	0	1	1	0	1
BIDVEST 1976	0	1	1	0	1	1	0	1
BIDVEST 1977	-1	1	1	-1	1	1	unknown	0
BIDVEST 1978	0	1	1	-1	1	1	0	1
BIDVEST 1979	-1	1	1	-1	1	1	0	1
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	-2	1	1	-2	1	1	-2	1
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	0	1	1	0	1	1	0	1
BRICK CLAY 1974	-1	1	1	-1	1	1	unknown	0
BRICK CLAY 1975	0	1	1	0	1	1	0	1
BRICK CLAY 1976	0	1	1	0	1	1	0	1
BRICK CLAY 1977	-1	1	1	-1	1	1	unknown	0
BRICK CLAY 1978	-1	1	1	-1	1	1	-2	1
BRICK CLAY 1979	-1	1	1	-1	1	1	unknown	0

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BACKCLOTHING 1970	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971	1	-2	1	1	-2	1	1	-2
BACKCLOTHING 1972	1	-2	1	1	-2	1	1	-2
BACKCLOTHING 1973	1	-2	1	1	-2	1	1	-2
BACKCLOTHING 1974	1	-2	1	1	-2	1	1	-2
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	1	0	0	1	-1	1	1	unknown
BIDVEST 1974	1	0	1	1	-1	0	1	0
BIDVEST 1975	1	0	1	1	0	1	1	0
BIDVEST 1976	1	0	1	1	0	1	1	0
BIDVEST 1977	1	-1	1	1	-1	1	1	unknown
BIDVEST 1978	1	0	0	1	-1	1	1	0
BIDVEST 1979	1	-1	1	1	-1	1	1	0
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	1	-2	1	1	-2	1	1	-2
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	1	0	1	1	0	1	1	0
BRICK CLAY 1974	1	-1	0	1	-1	0	1	unknown
BRICK CLAY 1975	1	0	1	1	0	1	1	0
BRICK CLAY 1976	1	0	1	1	0	1	1	0
BRICK CLAY 1977	1	-1	1	1	-1	1	1	unknown
BRICK CLAY 1978	1	-1	1	1	-1	1	1	-2
BRICK CLAY 1979	1	-1	1	1	-1	1	1	unknown

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 3: States 0 & -1 vs State -2							
		De La Rey Model		Yn Naive Model			Yn CHAID Model		
Company & year		# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BACKCLOTHING 1970		no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971		1	1	-2	1	1	-2	1	1
BACKCLOTHING 1972		1	1	-2	1	1	-2	1	1
BACKCLOTHING 1973		1	1	-2	1	1	-2	1	1
BACKCLOTHING 1974		1	1	-2	1	1	-2	1	1
BIDVEST 1970		no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971		no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972		no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973		0	1	0	1	1	-1	1	1
BIDVEST 1974		1	1	0	1	1	-1	1	1
BIDVEST 1975		1	1	0	1	1	0	1	1
BIDVEST 1976		1	1	0	1	1	0	1	1
BIDVEST 1977		0	1	-1	1	1	-1	1	1
BIDVEST 1978		0	1	0	1	1	-1	1	1
BIDVEST 1979		0	1	-1	1	1	-1	1	1
BRICK CLAY 1970		no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971		1	1	-2	1	1	-2	1	1
BRICK CLAY 1972		no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973		1	1	0	1	1	0	1	1
BRICK CLAY 1974		0	1	-1	1	1	-1	1	1
BRICK CLAY 1975		1	1	0	1	1	0	1	1
BRICK CLAY 1976		1	1	0	1	1	0	1	1
BRICK CLAY 1977		0	1	-1	1	1	-1	1	1
BRICK CLAY 1978		1	1	-1	1	1	-1	1	1
BRICK CLAY 1979		0	1	-1	1	1	-1	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	no data	no data	no data
BACKCLOTHING 1971	-2	1	1
BACKCLOTHING 1972	-2	1	1
BACKCLOTHING 1973	-2	1	1
BACKCLOTHING 1974	-2	1	1
BIDVEST 1970	no data	no data	no data
BIDVEST 1971	no data	no data	no data
BIDVEST 1972	no data	no data	no data
BIDVEST 1973	unknown	0	1
BIDVEST 1974	0	1	1
BIDVEST 1975	0	1	1
BIDVEST 1976	0	1	1
BIDVEST 1977	unknown	0	1
BIDVEST 1978	0	1	1
BIDVEST 1979	0	1	1
BRICK CLAY 1970	no data	no data	no data
BRICK CLAY 1971	-2	1	1
BRICK CLAY 1972	no data	no data	no data
BRICK CLAY 1973	0	1	1
BRICK CLAY 1974	unknown	0	1
BRICK CLAY 1975	0	1	1
BRICK CLAY 1976	0	1	1
BRICK CLAY 1977	unknown	0	1
BRICK CLAY 1978	-2	0	1
BRICK CLAY 1979	unknown	0	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
BRISTOL 1970	Hold	-0.21	9.27	0.60	no data
BRISTOL 1971	Hold	-0.30	7.22	0.48	no data
BRISTOL 1972	Hold	-1.32	-6.85	-0.25	-2
BRISTOL 1973	Hold	-0.79	5.94	0.24	0
BRISTOL 1974	Hold	-0.57	7.28	0.41	0
BRISTOL 1975	Hold	-0.53	6.09	0.29	0
BRISTOL 1976	Hold	-0.43	5.44	0.25	-1
BRISTOL 1977	Hold	-0.47	4.54	0.20	-1
BRISTOL 1978	Hold	-0.34	6.20	0.27	-1
BRISTOL 1979	Hold	-0.49	4.49	0.20	-1
BURHOSE 1970	Hold	1.47	22.20	1.61	no data
BURHOSE 1971	Hold	1.86	24.73	1.81	no data
BURHOSE 1972	Hold	0.88	13.86	0.96	no data
BURHOSE 1973	Hold	-0.08	0.37	0.03	-1
BURHOSE 1974	Hold	0.56	8.47	0.52	-1
BURHOSE 1975	Hold	1.61	26.25	1.30	0
BURHOSE 1976	Hold	0.85	12.65	0.66	0
BURHOSE 1977	Hold	no data	no data	no data	no data
BURHOSE 1978	Hold	-0.20	5.48	0.20	no data
BURHOSE 1979	Hold	0.49	27.36	0.98	no data
CONJERS 1970	Hold	0.48	19.44	0.87	no data
CONJERS 1971	Hold	0.58	19.78	0.95	no data
CONJERS 1972	Hold	0.58	17.30	0.89	no data
CONJERS 1973	Hold	-0.58	-2.30	-0.12	-2
CONJERS 1974	Hold	0.48	13.42	0.68	0
CONJERS 1975	Hold	-1.63	-24.08	-1.02	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	-2	1	1	-2	1	1	-2	1
BRISTOL 1973	-1	1	1	-1	1	1	-2	0
BRISTOL 1974	-1	1	1	-1	1	1	-2	0
BRISTOL 1975	-1	1	1	-1	1	1	-2	0
BRISTOL 1976	-1	1	1	-1	1	1	-2	1
BRISTOL 1977	-1	1	1	-1	1	1	-2	1
BRISTOL 1978	-1	1	1	-1	1	1	-2	1
BRISTOL 1979	-1	1	1	-1	1	1	-2	1
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	-1	1	1	-2	1	1	unknown	0
BURHOSE 1974	0	1	1	-1	1	1	0	1
BURHOSE 1975	0	1	1	0	1	1	0	1
BURHOSE 1976	0	1	1	0	1	1	0	1
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	-2	1	1	-2	1	1	-2	1
CONJERS 1974	0	1	1	0	1	1	0	1
CONJERS 1975	-2	1	1	-2	1	1	-2	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	1	-2	1	1	-2	1	1	-2
BRISTOL 1973	1	-1	0	1	-1	0	1	-2
BRISTOL 1974	1	-1	0	1	-1	0	1	-2
BRISTOL 1975	1	-1	0	1	-1	0	1	-2
BRISTOL 1976	1	-1	1	1	-1	1	1	-2
BRISTOL 1977	1	-1	1	1	-1	1	1	-2
BRISTOL 1978	1	-1	1	1	-1	1	1	-2
BRISTOL 1979	1	-1	1	1	-1	1	1	-2
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	1	-1	1	1	-2	1	1	unknown
BURHOSE 1974	1	0	0	1	-1	1	1	0
BURHOSE 1975	1	0	1	1	0	1	1	0
BURHOSE 1976	1	0	1	1	0	1	1	0
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	1	-2	1	1	-2	1	1	-2
CONJERS 1974	1	0	1	1	0	1	1	0
CONJERS 1975	1	-2	1	1	-2	1	1	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	De La Rey Model		Yn Naive Model			Yn CHAID Model		
	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	1	1	-2	1	1	-2	1	1
BRISTOL 1973	0	1	-1	1	1	-1	1	1
BRISTOL 1974	0	1	-1	1	1	-1	1	1
BRISTOL 1975	0	1	-1	1	1	-1	1	1
BRISTOL 1976	1	1	-1	1	1	-1	1	1
BRISTOL 1977	1	1	-1	1	1	-1	1	1
BRISTOL 1978	1	1	-1	1	1	-1	1	1
BRISTOL 1979	1	1	-1	1	1	-1	1	1
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	0	1	-1	1	1	-2	0	1
BURHOSE 1974	0	1	0	1	1	-1	1	1
BURHOSE 1975	1	1	0	1	1	0	1	1
BURHOSE 1976	1	1	0	1	1	0	1	1
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	1	1	-2	1	1	-2	1	1
CONJERS 1974	1	1	0	1	1	0	1	1
CONJERS 1975	1	1	-2	1	1	-2	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BRISTOL 1970	no data	no data	no data
BRISTOL 1971	no data	no data	no data
BRISTOL 1972	-2	1	1
BRISTOL 1973	-2	0	1
BRISTOL 1974	-2	0	1
BRISTOL 1975	-2	0	1
BRISTOL 1976	-2	0	1
BRISTOL 1977	-2	0	1
BRISTOL 1978	-2	0	1
BRISTOL 1979	-2	0	1
BURHOSE 1970	no data	no data	no data
BURHOSE 1971	no data	no data	no data
BURHOSE 1972	no data	no data	no data
BURHOSE 1973	unknown	0	1
BURHOSE 1974	0	1	1
BURHOSE 1975	0	1	1
BURHOSE 1976	0	1	1
BURHOSE 1977	no data	no data	no data
BURHOSE 1978	no data	no data	no data
BURHOSE 1979	no data	no data	no data
CONJERS 1970	no data	no data	no data
CONJERS 1971	no data	no data	no data
CONJERS 1972	no data	no data	no data
CONJERS 1973	-2	1	1
CONJERS 1974	0	1	1
CONJERS 1975	-2	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
DRG 1978	Hold	1.32	24.22	1.07	no data
DRG 1979	Hold	1.18	21.11	1.08	no data
FAIRWEATHER 1970	Hold	0.71	24.54	1.11	no data
FAIRWEATHER 1971	Hold	0.40	14.73	0.68	no data
FAIRWEATHER 1972	Hold	-1.11	-19.22	-0.20	-2
FAIRWEATHER 1973	Hold	-0.04	14.35	0.57	0
FAIRWEATHER 1974	Hold	-0.79	-10.82	-0.33	-2
FAIRWEATHER 1975	Hold	0.21	12.83	0.42	0
FAIRWEATHER 1976	Hold	-1.62	-31.93	-0.79	-2
H PARKER 1970	Hold	-0.22	50.08	0.58	no data
H PARKER 1971	Hold	-0.72	8.27	0.11	no data
H PARKER 1972	Hold	-1.66	-77.15	-0.87	-2
H PARKER 1973	Hold	-1.51	-60.06	-1.52	-2
H PARKER 1974	Hold	0.77	38.41	1.47	0
H PARKER 1975	Hold	0.45	22.99	0.73	0
H PARKER 1976	Hold	-0.79	3.52	0.06	-1
H PARKER 1977	Hold	-0.17	22.12	0.47	-1
H PARKER 1978	Hold	-0.59	7.61	0.14	-1
H PARKER 1979	Hold	0.39	42.16	0.87	0
IL BACK 1970	Hold	0.15	10.58	0.49	no data
IL BACK 1971	Hold	-0.06	1.02	0.06	no data
IL BACK 1972	Hold	-1.34	-22.79	-0.95	-2
IL BACK 1973	Hold	-0.97	-15.36	-0.59	-2
IL BACK 1974	Hold	-2.04	-52.17	-1.44	-2
IL BACK 1975	Hold	-0.14	12.83	0.37	0
IL BACK 1976	Hold	no data	no data	no data	no data
IL BACK 1977	Hold	-1.88	-56.88	-0.77	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	-2	1	1	-2	1	1	-2	1
FAIRWEATHER 1973	0	1	1	0	1	1	unknown	0
FAIRWEATHER 1974	-2	1	1	-2	1	1	-2	1
FAIRWEATHER 1975	-1	1	1	0	1	1	0	1
FAIRWEATHER 1976	-2	1	1	-2	1	1	-2	1
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	-2	1	1	-2	1	1	-2	1
H PARKER 1973	-2	1	1	-2	1	1	-2	1
H PARKER 1974	0	1	1	0	1	1	0	1
H PARKER 1975	0	1	1	0	1	1	0	1
H PARKER 1976	-1	1	1	-1	1	1	-2	1
H PARKER 1977	-1	1	1	0	1	1	unknown	0
H PARKER 1978	-1	1	1	-1	1	1	-2	1
H PARKER 1979	0	1	1	0	1	1	0	1
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972	-2	1	1	-2	1	1	-2	1
IL BACK 1973	-2	1	1	-2	1	1	-2	1
IL BACK 1974	-2	1	1	-2	1	1	-2	1
IL BACK 1975	-1	1	1	0	1	1	unknown	0
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	-2	1	1	-2	1	1	-2	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	1	-2	1	1	-2	1	1	-2
FAIRWEATHER 1973	1	0	1	1	0	1	1	unknown
FAIRWEATHER 1974	1	-2	1	1	-2	1	1	-2
FAIRWEATHER 1975	1	-1	0	1	0	1	1	0
FAIRWEATHER 1976	1	-2	1	1	-2	1	1	-2
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	1	-2	1	1	-2	1	1	-2
H PARKER 1973	1	-2	1	1	-2	1	1	-2
H PARKER 1974	1	0	1	1	0	1	1	0
H PARKER 1975	1	0	1	1	0	1	1	0
H PARKER 1976	1	-1	1	1	-1	1	1	-2
H PARKER 1977	1	-1	1	1	0	0	1	unknown
H PARKER 1978	1	-1	1	1	-1	1	1	-2
H PARKER 1979	1	0	1	1	0	1	1	0
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972	1	-2	1	1	-2	1	1	-2
IL BACK 1973	1	-2	1	1	-2	1	1	-2
IL BACK 1974	1	-2	1	1	-2	1	1	-2
IL BACK 1975	1	-1	0	1	0	1	1	unknown
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	1	-2	1	1	-2	1	1	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 3: States 0 & -1 vs State -2							
		De La Rey Model		Yn Naive Model			Yn CHAID Model		
Company & year		# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
DRG 1978		no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979		no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970		no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971		no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972		1	1	-2	1	1	-2	1	1
FAIRWEATHER 1973		0	1	0	1	1	0	1	1
FAIRWEATHER 1974		1	1	-2	1	1	-2	1	1
FAIRWEATHER 1975		1	1	-1	1	1	0	1	1
FAIRWEATHER 1976		1	1	-2	1	1	-2	1	1
H PARKER 1970		no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971		no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972		1	1	-2	1	1	-2	1	1
H PARKER 1973		1	1	-2	1	1	-2	1	1
H PARKER 1974		1	1	0	1	1	0	1	1
H PARKER 1975		1	1	0	1	1	0	1	1
H PARKER 1976		1	1	-1	1	1	-1	1	1
H PARKER 1977		0	1	-1	1	1	0	1	1
H PARKER 1978		1	1	-1	1	1	-1	1	1
H PARKER 1979		1	1	0	1	1	0	1	1
IL BACK 1970		no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971		no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972		1	1	-2	1	1	-2	1	1
IL BACK 1973		1	1	-2	1	1	-2	1	1
IL BACK 1974		1	1	-2	1	1	-2	1	1
IL BACK 1975		0	1	-1	1	1	0	1	1
IL BACK 1976		no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977		1	1	-2	1	1	-2	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
DRG 1978	no data	no data	no data
DRG 1979	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data
FAIRWEATHER 1972	-2	1	1
FAIRWEATHER 1973	unknown	0	1
FAIRWEATHER 1974	-2	1	1
FAIRWEATHER 1975	0	1	1
FAIRWEATHER 1976	-2	1	1
H PARKER 1970	no data	no data	no data
H PARKER 1971	no data	no data	no data
H PARKER 1972	-2	1	1
H PARKER 1973	-2	1	1
H PARKER 1974	0	1	1
H PARKER 1975	0	1	1
H PARKER 1976	-2	0	1
H PARKER 1977	unknown	0	1
H PARKER 1978	-2	0	1
H PARKER 1979	0	1	1
IL BACK 1970	no data	no data	no data
IL BACK 1971	no data	no data	no data
IL BACK 1972	-2	1	1
IL BACK 1973	-2	1	1
IL BACK 1974	-2	1	1
IL BACK 1975	unknown	0	1
IL BACK 1976	no data	no data	no data
IL BACK 1977	-2	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
IL BACK 1978	Hold	-3.59	-139.85	-1.95	-2
IL BACK 1979	Hold	-1.95	-59.04	-0.78	-2
KTL 1970	Hold	0.56	19.28	0.84	no data
KTL 1971	Hold	0.28	18.98	0.67	no data
KTL 1972	Hold	0.70	24.69	1.17	no data
KTL 1973	Hold	1.57	35.92	2.08	0
KTL 1974	Hold	2.11	42.70	1.88	0
KTL 1975	Hold	1.62	36.40	1.37	0
KTL 1976	Hold	1.22	27.56	1.07	0
KTL 1977	Hold	0.87	18.78	0.81	-1
KTL 1978	Hold	1.03	21.10	0.92	-1
KTL 1979	Hold	0.90	24.18	1.03	0
OMNIA 1970	Hold	1.33	19.42	1.34	no data
OMNIA 1971	Hold	1.20	17.14	1.12	no data
OMNIA 1972	Hold	1.28	16.88	1.17	no data
OMNIA 1973	Hold	1.15	15.32	1.16	-1
OMNIA 1974	Hold	1.01	17.08	0.90	0
OMNIA 1975	Hold	1.03	29.16	0.88	0
OMNIA 1976	Hold	-0.74	-7.01	-0.18	-2
OMNIA 1977	Hold	-2.49	-93.18	-0.91	-2
OMNIA 1978	Hold	-1.58	-73.54	-0.61	-2
OMNIA 1979	Hold	6.56	-0.40	-0.04	-2
PAN 1970	Hold	1.03	15.43	1.18	no data
PAN 1971	Hold	0.68	14.37	0.96	no data
PAN 1972	Hold	-0.49	1.32	0.07	no data
PAN 1973	Hold	-1.47	-38.03	-0.99	-2
PAN 1974	Hold	-0.87	-17.75	-0.38	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	-2	1	1	-2	1	1	-2	1
IL BACK 1979	-2	1	1	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	0	1	1	0	1	1	0	1
KTL 1974	0	1	1	0	1	1	0	1
KTL 1975	0	1	1	0	1	1	0	1
KTL 1976	0	1	1	0	1	1	0	1
KTL 1977	0	1	1	0	1	1	0	1
KTL 1978	0	1	1	0	1	1	0	1
KTL 1979	0	1	1	0	1	1	0	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	0	1	1	0	1	1	0	1
OMNIA 1974	0	1	1	0	1	1	0	1
OMNIA 1975	0	1	1	0	1	1	0	1
OMNIA 1976	-2	1	1	-2	1	1	-2	1
OMNIA 1977	-2	1	1	-2	1	1	-2	1
OMNIA 1978	-2	1	1	-2	1	1	-2	1
OMNIA 1979	-2	1	1	-2	1	1	0	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	-2	1	1	-2	1	1	-2	1
PAN 1974	-2	1	1	-2	1	1	-2	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
IL BACK 1978	1	-2	1	1	-2	1	1	-2
IL BACK 1979	1	-2	1	1	-2	1	1	-2
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	1	0	1	1	0	1	1	0
KTL 1974	1	0	1	1	0	1	1	0
KTL 1975	1	0	1	1	0	1	1	0
KTL 1976	1	0	1	1	0	1	1	0
KTL 1977	1	0	0	1	0	0	1	0
KTL 1978	1	0	0	1	0	0	1	0
KTL 1979	1	0	1	1	0	1	1	0
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	1	0	0	1	0	0	1	0
OMNIA 1974	1	0	1	1	0	1	1	0
OMNIA 1975	1	0	1	1	0	1	1	0
OMNIA 1976	1	-2	1	1	-2	1	1	-2
OMNIA 1977	1	-2	1	1	-2	1	1	-2
OMNIA 1978	1	-2	1	1	-2	1	1	-2
OMNIA 1979	1	-2	1	1	-2	1	1	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	1	-2	1	1	-2	1	1	-2
PAN 1974	1	-2	1	1	-2	1	1	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 3: States 0 & -1 vs State -2							
		De La Rey Model		Yn Naive Model			Yn CHAID Model		
Company & year		# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
IL BACK 1978		1	1	-2	1	1	-2	1	1
IL BACK 1979		1	1	-2	1	1	-2	1	1
KTL 1970		no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971		no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972		no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973		1	1	0	1	1	0	1	1
KTL 1974		1	1	0	1	1	0	1	1
KTL 1975		1	1	0	1	1	0	1	1
KTL 1976		1	1	0	1	1	0	1	1
KTL 1977		0	1	0	1	1	0	1	1
KTL 1978		0	1	0	1	1	0	1	1
KTL 1979		1	1	0	1	1	0	1	1
OMNIA 1970		no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971		no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972		no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973		0	1	0	1	1	0	1	1
OMNIA 1974		1	1	0	1	1	0	1	1
OMNIA 1975		1	1	0	1	1	0	1	1
OMNIA 1976		1	1	-2	1	1	-2	1	1
OMNIA 1977		1	1	-2	1	1	-2	1	1
OMNIA 1978		1	1	-2	1	1	-2	1	1
OMNIA 1979		0	1	-2	1	1	-2	1	1
PAN 1970		no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971		no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972		no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973		1	1	-2	1	1	-2	1	1
PAN 1974		1	1	-2	1	1	-2	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
IL BACK 1978	-2	1	1
IL BACK 1979	-2	1	1
KTL 1970	no data	no data	no data
KTL 1971	no data	no data	no data
KTL 1972	no data	no data	no data
KTL 1973	0	1	1
KTL 1974	0	1	1
KTL 1975	0	1	1
KTL 1976	0	1	1
KTL 1977	0	1	1
KTL 1978	0	1	1
KTL 1979	0	1	1
OMNIA 1970	no data	no data	no data
OMNIA 1971	no data	no data	no data
OMNIA 1972	no data	no data	no data
OMNIA 1973	0	1	1
OMNIA 1974	0	1	1
OMNIA 1975	0	1	1
OMNIA 1976	-2	1	1
OMNIA 1977	-2	1	1
OMNIA 1978	-2	1	1
OMNIA 1979	0	0	1
PAN 1970	no data	no data	no data
PAN 1971	no data	no data	no data
PAN 1972	no data	no data	no data
PAN 1973	-2	1	1
PAN 1974	-2	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
PIONEER H 1973	Hold	-0.29	7.13	0.48	no data
PIONEER H 1974	Hold	0.10	7.88	0.51	no data
PIONEER H 1975	Hold	0.31	9.92	0.58	no data
PIONEER H 1976	Hold	0.04	6.50	0.37	-1
PIONEER H 1977	Hold	0.13	6.59	0.39	-1
PIONEER H 1978	Hold	0.21	7.12	0.44	-1
PIONEER H 1979	Hold	0.42	9.52	0.71	0
ROMATEX 1970	Hold	0.05	3.36	0.25	no data
ROMATEX 1971	Hold	0.05	4.83	0.33	no data
ROMATEX 1972	Hold	0.05	5.04	0.31	no data
ROMATEX 1973	Hold	0.07	7.02	0.42	0
ROMATEX 1974	Hold	0.67	14.95	0.94	0
ROMATEX 1975	Hold	-1.45	-20.30	-0.94	-2
ROMATEX 1976	Hold	0.68	11.43	0.52	0
ROMATEX 1977	Hold	0.58	12.29	0.60	0
ROMATEX 1978	Hold	0.86	13.66	0.73	0
ROMATEX 1979	Hold	1.06	14.92	0.85	0
SCHACHAT 1970	Hold	-0.37	20.48	0.64	no data
SCHACHAT 1971	Hold	-0.23	22.70	0.74	no data
SCHACHAT 1972	Hold	0.00	25.15	0.94	no data
SCHACHAT 1973	Hold	-0.16	22.27	0.78	0
SCHACHAT 1974	Hold	-0.37	14.85	0.47	-1
SCHACHAT 1975	Hold	-0.27	14.22	0.44	-1
SCHACHAT 1976	Hold	-0.02	18.18	0.55	-1
SCHACHAT 1977	Hold	-0.36	9.79	0.32	-1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	-1	1	1	-1	1	1	unknown	0
PIONEER H 1977	-1	1	1	-1	1	1	unknown	0
PIONEER H 1978	-1	1	1	-1	1	1	0	1
PIONEER H 1979	0	1	1	-1	1	1	0	1
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	-1	1	1	-1	1	1	unknown	0
ROMATEX 1974	0	1	1	0	1	1	0	1
ROMATEX 1975	-2	1	1	-2	1	1	-2	1
ROMATEX 1976	0	1	1	-1	1	1	0	1
ROMATEX 1977	0	1	1	-1	1	1	0	1
ROMATEX 1978	0	1	1	0	1	1	0	1
ROMATEX 1979	0	1	1	0	1	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	0	1	1	0	1	1	unknown	0
SCHACHAT 1974	-1	1	1	0	1	1	-2	1
SCHACHAT 1975	-1	1	1	0	1	1	-2	1
SCHACHAT 1976	0	1	1	0	1	1	unknown	0
SCHACHAT 1977	-1	1	1	-1	1	1	-2	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
del	Yn Naive Model			Yn CHAID Model			Yn	
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	1	-1	1	1	-1	1	1	unknown
PIONEER H 1977	1	-1	1	1	-1	1	1	unknown
PIONEER H 1978	1	-1	1	1	-1	1	1	0
PIONEER H 1979	1	0	1	1	-1	0	1	0
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	1	-1	0	1	-1	0	1	unknown
ROMATEX 1974	1	0	1	1	0	1	1	0
ROMATEX 1975	1	-2	1	1	-2	1	1	-2
ROMATEX 1976	1	0	1	1	-1	0	1	0
ROMATEX 1977	1	0	1	1	-1	0	1	0
ROMATEX 1978	1	0	1	1	0	1	1	0
ROMATEX 1979	1	0	1	1	0	1	1	0
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	1	0	1	1	0	1	1	unknown
SCHACHAT 1974	1	-1	1	1	0	0	1	-2
SCHACHAT 1975	1	-1	1	1	0	0	1	-2
SCHACHAT 1976	1	0	0	1	0	0	1	unknown
SCHACHAT 1977	1	-1	1	1	-1	1	1	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	De La Rey Model		Yn Naive Model			Yn CHAID Model		
	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	0	1	-1	1	1	-1	1	1
PIONEER H 1977	0	1	-1	1	1	-1	1	1
PIONEER H 1978	0	1	-1	1	1	-1	1	1
PIONEER H 1979	1	1	0	1	1	-1	1	1
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	0	1	-1	1	1	-1	1	1
ROMATEX 1974	1	1	0	1	1	0	1	1
ROMATEX 1975	1	1	-2	1	1	-2	1	1
ROMATEX 1976	1	1	0	1	1	-1	1	1
ROMATEX 1977	1	1	0	1	1	-1	1	1
ROMATEX 1978	1	1	0	1	1	0	1	1
ROMATEX 1979	1	1	0	1	1	0	1	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	0	1	0	1	1	0	1	1
SCHACHAT 1974	1	1	-1	1	1	0	1	1
SCHACHAT 1975	1	1	-1	1	1	0	1	1
SCHACHAT 1976	0	1	0	1	1	0	1	1
SCHACHAT 1977	1	1	-1	1	1	-1	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
PIONEER H 1973	no data	no data	no data
PIONEER H 1974	no data	no data	no data
PIONEER H 1975	no data	no data	no data
PIONEER H 1976	unknown	0	1
PIONEER H 1977	unknown	0	1
PIONEER H 1978	0	1	1
PIONEER H 1979	0	1	1
ROMATEX 1970	no data	no data	no data
ROMATEX 1971	no data	no data	no data
ROMATEX 1972	no data	no data	no data
ROMATEX 1973	unknown	0	1
ROMATEX 1974	0	1	1
ROMATEX 1975	-2	1	1
ROMATEX 1976	0	1	1
ROMATEX 1977	0	1	1
ROMATEX 1978	0	1	1
ROMATEX 1979	0	1	1
SCHACHAT 1970	no data	no data	no data
SCHACHAT 1971	no data	no data	no data
SCHACHAT 1972	no data	no data	no data
SCHACHAT 1973	unknown	0	1
SCHACHAT 1974	-2	0	1
SCHACHAT 1975	-2	0	1
SCHACHAT 1976	unknown	0	1
SCHACHAT 1977	-2	0	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
SPECTRO 1970	Hold	0.47	5.70	0.50	no data
SPECTRO 1971	Hold	1.03	13.09	1.10	no data
SPECTRO 1972	Hold	0.82	11.01	0.94	no data
SPECTRO 1973	Hold	1.30	21.93	1.43	0
SPECTRO 1974	Hold	0.23	18.04	0.78	0
SPECTRO 1975	Hold	-1.10	-11.67	-0.38	-2
STUTTAFORDS 1970	Hold	0.82	10.15	0.93	no data
STUTTAFORDS 1971	Hold	1.71	14.69	1.51	no data
STUTTAFORDS 1972	Hold	0.36	4.24	0.40	no data
STUTTAFORDS 1973	Hold	1.05	13.64	1.18	0
STUTTAFORDS 1974	Hold	0.35	5.70	0.54	-1
STUTTAFORDS 1975	Hold	0.33	5.94	0.43	-1
STUTTAFORDS 1976	Hold	0.23	5.13	0.32	-1
STUTTAFORDS 1977	Hold	0.23	5.44	0.32	-1
STUTTAFORDS 1978	Hold	0.09	4.45	0.25	-1
TAPSA 1970	Hold	0.82	23.95	1.17	no data
TAPSA 1971	Hold	0.32	20.06	0.81	no data
TAPSA 1972	Hold	-0.17	10.78	0.41	no data
TAPSA 1973	Hold	-0.35	12.47	0.40	-1
TAPSA 1974	Hold	-1.56	-35.05	-0.98	-2
TAPSA 1975	Hold	-5.10	-344.15	-3.81	-2
TIGERIND 1970	Hold	-0.87	4.17	0.11	no data
TIGERIND 1971	Hold	-1.69	-26.54	-0.69	-2
TIGERIND 1972	Hold	-2.42	-61.58	-2.64	-2
TIGERIND 1973	Hold	-0.98	0.87	0.02	0

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	0	1	1	0	1	1	0	1
SPECTRO 1974	0	1	1	0	1	1	0	1
SPECTRO 1975	-2	1	1	-2	1	1	-2	1
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	0	1	1	0	1	1	0	1
STUTTAFORDS 1974	0	1	1	-1	1	1	0	1
STUTTAFORDS 1975	-1	1	1	-1	1	1	0	1
STUTTAFORDS 1976	-1	1	1	-1	1	1	0	1
STUTTAFORDS 1977	-1	1	1	-1	1	1	0	1
STUTTAFORDS 1978	-1	1	1	-1	1	1	unknown	0
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	-1	1	1	0	1	1	-2	1
TAPSA 1974	-2	1	1	-2	1	1	-2	1
TAPSA 1975	-2	1	1	-2	1	1	-2	1
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	-2	1	1	-2	1	1	-2	1
TIGERIND 1972	-2	1	1	-2	1	1	-2	1
TIGERIND 1973	-1	1	1	-2	0	1	-2	0

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	1	0	1	1	0	1	1	0
SPECTRO 1974	1	0	1	1	0	1	1	0
SPECTRO 1975	1	-2	1	1	-2	1	1	-2
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	1	0	1	1	0	1	1	0
STUTTAFORDS 1974	1	0	0	1	-1	1	1	0
STUTTAFORDS 1975	1	-1	1	1	-1	1	1	0
STUTTAFORDS 1976	1	-1	1	1	-1	1	1	0
STUTTAFORDS 1977	1	-1	1	1	-1	1	1	0
STUTTAFORDS 1978	1	-1	1	1	-1	1	1	unknown
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	1	-1	1	1	0	0	1	-2
TAPSA 1974	1	-2	1	1	-2	1	1	-2
TAPSA 1975	1	-2	1	1	-2	1	1	-2
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	1	-2	1	1	-2	1	1	-2
TIGERIND 1972	1	-2	1	1	-2	1	1	-2
TIGERIND 1973	1	-1	0	1	-2	0	1	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	De La Rey Model		Yn Naive Model			Yn CHAID Model		
	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	1	1	0	1	1	0	1	1
SPECTRO 1974	1	1	0	1	1	0	1	1
SPECTRO 1975	1	1	-2	1	1	-2	1	1
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	1	1	0	1	1	0	1	1
STUTTAFORDS 1974	0	1	0	1	1	-1	1	1
STUTTAFORDS 1975	0	1	-1	1	1	-1	1	1
STUTTAFORDS 1976	0	1	-1	1	1	-1	1	1
STUTTAFORDS 1977	0	1	-1	1	1	-1	1	1
STUTTAFORDS 1978	0	1	-1	1	1	-1	1	1
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	1	1	-1	1	1	0	1	1
TAPSA 1974	1	1	-2	1	1	-2	1	1
TAPSA 1975	1	1	-2	1	1	-2	1	1
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	1	1	-2	1	1	-2	1	1
TIGERIND 1972	1	1	-2	1	1	-2	1	1
TIGERIND 1973	0	1	-1	1	1	-2	0	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
SPECTRO 1970	no data	no data	no data
SPECTRO 1971	no data	no data	no data
SPECTRO 1972	no data	no data	no data
SPECTRO 1973	0	1	1
SPECTRO 1974	0	1	1
SPECTRO 1975	-2	1	1
STUTTAFORDS 1970	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data
STUTTAFORDS 1973	0	1	1
STUTTAFORDS 1974	0	1	1
STUTTAFORDS 1975	0	1	1
STUTTAFORDS 1976	0	1	1
STUTTAFORDS 1977	0	1	1
STUTTAFORDS 1978	unknown	0	1
TAPSA 1970	no data	no data	no data
TAPSA 1971	no data	no data	no data
TAPSA 1972	no data	no data	no data
TAPSA 1973	-2	0	1
TAPSA 1974	-2	1	1
TAPSA 1975	-2	1	1
TIGERIND 1970	no data	no data	no data
TIGERIND 1971	-2	1	1
TIGERIND 1972	-2	1	1
TIGERIND 1973	-2	0	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
TRIOMF 1970	Hold	-0.23	11.53	0.59	no data
TRIOMF 1971	Hold	0.02	22.50	0.67	no data
TRIOMF 1972	Hold	0.71	45.44	1.46	no data
TRIOMF 1973	Hold	0.83	44.97	1.54	0
TRIOMF 1974	Hold	0.65	48.34	1.14	0
TRIOMF 1975	Hold	0.04	54.27	0.62	0
TRIOMF 1976	Hold	-0.88	36.54	0.23	-1
TRIOMF 1977	Hold	-1.75	-38.33	-0.39	-2
TRIOMF 1978	Hold	-0.94	12.00	0.12	0
TRIOMF 1979	Hold	0.36	61.54	1.10	0
TUCKERS 1970	Hold	1.31	24.59	1.80	no data
TUCKERS 1971	Hold	0.78	17.61	1.21	no data
TUCKERS 1972	Hold	0.89	15.27	1.19	no data
TUCKERS 1973	Hold	1.42	18.78	1.77	0
TUCKERS 1974	Hold	1.41	17.72	1.34	0
TUCKERS 1975	Hold	0.75	6.34	0.46	-1
TUCKERS 1976	Hold	0.56	3.61	0.26	-1
TUCKERS 1977	Hold	0.71	10.02	0.62	-1
TUCKERS 1978	Hold	-0.60	-5.32	-0.34	-2
TUCKERS 1979	Hold	0.52	4.46	0.37	-1

Sub-Total 1970s
 Predictive Accuracy

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	0	1	1	0	1	1	0	1
TRIOMF 1974	0	1	1	0	1	1	0	1
TRIOMF 1975	0	1	1	0	1	1	unknown	0
TRIOMF 1976	-1	1	1	0	1	1	-2	1
TRIOMF 1977	-2	1	1	-2	1	1	-2	1
TRIOMF 1978	-1	1	1	-1	1	1	-2	0
TRIOMF 1979	0	1	1	0	1	1	0	1
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	0	1	1	0	1	1	0	1
TUCKERS 1974	0	1	1	0	1	1	0	1
TUCKERS 1975	-1	1	1	-1	1	1	0	1
TUCKERS 1976	-1	1	1	-1	1	1	0	1
TUCKERS 1977	0	1	1	-1	1	1	0	1
TUCKERS 1978	-2	1	1	-2	1	1	-2	1
TUCKERS 1979	-1	1	1	-1	1	1	0	1
Sub-Total 1970s		115	115		114	115		93
Predictive Accuracy		100.0%			99.1%			80.9%

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	1	0	1	1	0	1	1	0
TRIOMF 1974	1	0	1	1	0	1	1	0
TRIOMF 1975	1	0	1	1	0	1	1	unknown
TRIOMF 1976	1	-1	1	1	0	0	1	-2
TRIOMF 1977	1	-2	1	1	-2	1	1	-2
TRIOMF 1978	1	-1	0	1	-1	0	1	-2
TRIOMF 1979	1	0	1	1	0	1	1	0
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	1	0	1	1	0	1	1	0
TUCKERS 1974	1	0	1	1	0	1	1	0
TUCKERS 1975	1	-1	1	1	-1	1	1	0
TUCKERS 1976	1	-1	1	1	-1	1	1	0
TUCKERS 1977	1	0	0	1	-1	1	1	0
TUCKERS 1978	1	-2	1	1	-2	1	1	-2
TUCKERS 1979	1	-1	1	1	-1	1	1	0
Sub-Total 1970s	115		97	115		95	115	
Predictive Accuracy			84.3%			82.6%		

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 3: States 0 & -1 vs State -2						
		De La Rey Model		Yn Naive Model			Yn CHAID Model	
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	1	1	0	1	1	0	1	1
TRIOMF 1974	1	1	0	1	1	0	1	1
TRIOMF 1975	0	1	0	1	1	0	1	1
TRIOMF 1976	1	1	-1	1	1	0	1	1
TRIOMF 1977	1	1	-2	1	1	-2	1	1
TRIOMF 1978	0	1	-1	1	1	-1	1	1
TRIOMF 1979	1	1	0	1	1	0	1	1
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	1	1	0	1	1	0	1	1
TUCKERS 1974	1	1	0	1	1	0	1	1
TUCKERS 1975	0	1	-1	1	1	-1	1	1
TUCKERS 1976	0	1	-1	1	1	-1	1	1
TUCKERS 1977	0	1	0	1	1	-1	1	1
TUCKERS 1978	1	1	-2	1	1	-2	1	1
TUCKERS 1979	0	1	-1	1	1	-1	1	1
Sub-Total 1970s	78	115		115	115		113	115
Predictive Accuracy	67.8%			100.0%			98.3%	

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
TRIOMF 1970	no data	no data	no data
TRIOMF 1971	no data	no data	no data
TRIOMF 1972	no data	no data	no data
TRIOMF 1973	0	1	1
TRIOMF 1974	0	1	1
TRIOMF 1975	unknown	0	1
TRIOMF 1976	-2	0	1
TRIOMF 1977	-2	1	1
TRIOMF 1978	-2	0	1
TRIOMF 1979	0	1	1
TUCKERS 1970	no data	no data	no data
TUCKERS 1971	no data	no data	no data
TUCKERS 1972	no data	no data	no data
TUCKERS 1973	0	1	1
TUCKERS 1974	0	1	1
TUCKERS 1975	0	1	1
TUCKERS 1976	0	1	1
TUCKERS 1977	0	1	1
TUCKERS 1978	-2	1	1
TUCKERS 1979	0	1	1
Sub-Total 1970s		81	115
Predictive Accuracy		70.4%	

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
BIDVEST 1980	Hold	0.60	12.29	0.81	0
BIDVEST 1981	Hold	1.50	24.03	1.04	0
BIDVEST 1982	Hold	0.99	17.76	0.55	0
BIDVEST 1983	Hold	0.40	9.02	0.34	-1
BIDVEST 1984	Hold	0.48	9.58	0.27	-1
BIDVEST 1985	Hold	0.24	5.27	0.18	-1
BIDVEST 1986	Hold	0.35	5.99	0.31	-1
BIDVEST 1987	Hold	-0.76	-11.30	-0.65	-2
BIDVEST 1988	Hold	0.66	12.45	0.50	0
BIDVEST 1989	Hold	3.83	39.63	1.76	0
BRICK CLAY 1980	Hold	no data	no data	no data	no data
BRICK CLAY 1981	Hold	0.29	17.65	0.48	no data
BRICK CLAY 1982	Hold	0.37	69.34	0.44	no data
BRICK CLAY 1983	Hold	-3.35	-416.08	-1.27	-2
BRICK CLAY 1984	Hold	-1.18	14.67	0.04	0
BRICK CLAY 1985	Hold	-4.88	-82.01	-1.44	-2
BRICK CLAY 1986	Hold	-0.79	26.96	0.75	0
BRICK CLAY 1987	Hold	1.18	103.67	1.83	0
BRICK CLAY 1988	Hold	1.59	445.84	1.56	0
BRISTOL 1980	Hold	0.26	11.00	0.74	0
BRISTOL 1981	Hold	0.61	12.82	0.97	0
BRISTOL 1982	Hold	-0.33	6.28	0.22	-1
BRISTOL 1983	Hold	-0.39	4.11	0.13	-1
BRISTOL 1984	Hold	1.48	16.82	0.82	0
BRISTOL 1985	Hold	0.79	9.40	0.35	0
BRISTOL 1986	Hold	0.94	6.90	0.30	-1
BRISTOL 1987	Hold	1.17	5.97	0.40	-1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	0	1	1	-1	1	1	0	1
BIDVEST 1981	0	1	1	0	1	1	0	1
BIDVEST 1982	0	1	1	0	1	1	0	1
BIDVEST 1983	-1	1	1	-1	1	1	0	1
BIDVEST 1984	-1	1	1	-1	1	1	0	1
BIDVEST 1985	-1	1	1	-1	1	1	0	1
BIDVEST 1986	-1	1	1	-1	1	1	0	1
BIDVEST 1987	-2	1	1	-2	1	1	-2	1
BIDVEST 1988	0	1	1	0	1	1	0	1
BIDVEST 1989	0	1	1	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	-2	1	1	-2	1	1	-2	1
BRICK CLAY 1984	-1	1	1	0	1	1	-2	0
BRICK CLAY 1985	-2	1	1	-2	1	1	-2	1
BRICK CLAY 1986	0	1	1	0	1	1	-2	0
BRICK CLAY 1987	0	1	1	0	1	1	0	1
BRICK CLAY 1988	0	1	1	0	1	1	0	1
BRISTOL 1980	0	1	1	-1	1	1	0	1
BRISTOL 1981	0	1	1	0	1	1	0	1
BRISTOL 1982	-1	1	1	-1	1	1	-2	1
BRISTOL 1983	-1	1	1	-1	1	1	-2	1
BRISTOL 1984	0	1	1	0	1	1	0	1
BRISTOL 1985	-1	1	1	-1	1	1	0	1
BRISTOL 1986	-1	1	1	-1	1	1	0	1
BRISTOL 1987	-1	1	1	-1	1	1	0	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
		Yn Naive Model			Yn CHAID Model			Yn
Company & year	del	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BIDVEST 1980	1	0	1	1	-1	0	1	0
BIDVEST 1981	1	0	1	1	0	1	1	0
BIDVEST 1982	1	0	1	1	0	1	1	0
BIDVEST 1983	1	-1	1	1	-1	1	1	0
BIDVEST 1984	1	-1	1	1	-1	1	1	0
BIDVEST 1985	1	-1	1	1	-1	1	1	0
BIDVEST 1986	1	-1	1	1	-1	1	1	0
BIDVEST 1987	1	-2	1	1	-2	1	1	-2
BIDVEST 1988	1	0	1	1	0	1	1	0
BIDVEST 1989	1	0	1	1	0	1	1	0
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	1	-2	1	1	-2	1	1	-2
BRICK CLAY 1984	1	-1	0	1	0	1	1	-2
BRICK CLAY 1985	1	-2	1	1	-2	1	1	-2
BRICK CLAY 1986	1	0	1	1	0	1	1	-2
BRICK CLAY 1987	1	0	1	1	0	1	1	0
BRICK CLAY 1988	1	0	1	1	0	1	1	0
BRISTOL 1980	1	0	1	1	-1	0	1	0
BRISTOL 1981	1	0	1	1	0	1	1	0
BRISTOL 1982	1	-1	1	1	-1	1	1	-2
BRISTOL 1983	1	-1	1	1	-1	1	1	-2
BRISTOL 1984	1	0	1	1	0	1	1	0
BRISTOL 1985	1	-1	0	1	-1	0	1	0
BRISTOL 1986	1	-1	1	1	-1	1	1	0
BRISTOL 1987	1	-1	1	1	-1	1	1	0

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	De La Rey Model		Yn Naive Model			Yn CHAID Model		
	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BIDVEST 1980	1	1	0	1	1	-1	1	1
BIDVEST 1981	1	1	0	1	1	0	1	1
BIDVEST 1982	1	1	0	1	1	0	1	1
BIDVEST 1983	0	1	-1	1	1	-1	1	1
BIDVEST 1984	0	1	-1	1	1	-1	1	1
BIDVEST 1985	0	1	-1	1	1	-1	1	1
BIDVEST 1986	0	1	-1	1	1	-1	1	1
BIDVEST 1987	1	1	-2	1	1	-2	1	1
BIDVEST 1988	1	1	0	1	1	0	1	1
BIDVEST 1989	1	1	0	1	1	0	1	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	1	1	-2	1	1	-2	1	1
BRICK CLAY 1984	0	1	-1	1	1	0	1	1
BRICK CLAY 1985	1	1	-2	1	1	-2	1	1
BRICK CLAY 1986	0	1	0	1	1	0	1	1
BRICK CLAY 1987	1	1	0	1	1	0	1	1
BRICK CLAY 1988	1	1	0	1	1	0	1	1
BRISTOL 1980	1	1	0	1	1	-1	1	1
BRISTOL 1981	1	1	0	1	1	0	1	1
BRISTOL 1982	1	1	-1	1	1	-1	1	1
BRISTOL 1983	1	1	-1	1	1	-1	1	1
BRISTOL 1984	1	1	0	1	1	0	1	1
BRISTOL 1985	1	1	-1	1	1	-1	1	1
BRISTOL 1986	0	1	-1	1	1	-1	1	1
BRISTOL 1987	0	1	-1	1	1	-1	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BIDVEST 1980	0	1	1
BIDVEST 1981	0	1	1
BIDVEST 1982	0	1	1
BIDVEST 1983	0	1	1
BIDVEST 1984	0	1	1
BIDVEST 1985	0	1	1
BIDVEST 1986	0	1	1
BIDVEST 1987	-2	1	1
BIDVEST 1988	0	1	1
BIDVEST 1989	0	1	1
BRICK CLAY 1980	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data
BRICK CLAY 1983	-2	1	1
BRICK CLAY 1984	-2	0	1
BRICK CLAY 1985	-2	1	1
BRICK CLAY 1986	-2	0	1
BRICK CLAY 1987	0	1	1
BRICK CLAY 1988	0	1	1
BRISTOL 1980	0	1	1
BRISTOL 1981	0	1	1
BRISTOL 1982	-2	0	1
BRISTOL 1983	-2	0	1
BRISTOL 1984	0	1	1
BRISTOL 1985	0	1	1
BRISTOL 1986	0	1	1
BRISTOL 1987	0	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
BRISTOL 1988	Hold	1.43	7.37	0.57	-1
BRISTOL 1989	Hold	1.83	16.89	0.95	0
DRG 1980	Hold	0.92	21.62	1.12	no data
DRG 1981	Hold	0.26	9.52	0.34	-1
DRG 1982	Hold	-0.40	-0.49	-0.01	-2
H PARKER 1980	Hold	-0.27	14.73	0.41	-1
H PARKER 1981	Hold	0.23	17.42	0.67	0
H PARKER 1982	Hold	-0.29	4.95	0.14	-1
IL BACK 1980	Hold	-1.56	-23.81	-1.04	-2
IL BACK 1981	Hold	-2.25	-58.76	-1.18	-2
IL BACK 1982	Hold	1.28	-11.88	-0.76	-2
KTL 1980	Hold	1.70	34.53	1.76	0
KTL 1981	Hold	1.54	30.55	0.94	0
KTL 1982	Hold	1.06	27.79	0.61	0
KTL 1983	Hold	1.08	29.17	0.76	0
KTL 1984	Hold	1.11	20.62	0.52	-1
KTL 1985	Hold	0.29	10.94	0.25	-1
KTL 1986	Hold	-0.14	5.07	0.17	-1
KTL 1987	Hold	0.64	17.89	0.74	0
KTL 1988	Hold	1.06	28.49	0.66	0
KTL 1989	Hold	0.81	35.98	0.55	0
OMNIA 1980	Hold	0.40	26.23	0.60	0
OMNIA 1981	Hold	1.64	71.07	1.29	0
OMNIA 1982	Hold	0.73	36.47	0.42	0
OMNIA 1983	Hold	-0.49	21.36	0.18	-1
OMNIA 1984	Hold	-0.85	-1.32	-0.01	-2
OMNIA 1985	Hold	-0.73	5.50	0.05	-1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	0	1	1	-1	1	1	0	1
BRISTOL 1989	0	1	1	0	1	1	0	1
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	-1	1	1	-1	1	1	0	1
DRG 1982	-2	1	1	-2	1	1	-2	1
H PARKER 1980	-1	1	1	0	1	1	-2	1
H PARKER 1981	0	1	1	0	1	1	0	1
H PARKER 1982	-1	1	1	-1	1	1	-2	1
IL BACK 1980	-2	1	1	-2	1	1	-2	1
IL BACK 1981	-2	1	1	-2	1	1	-2	1
IL BACK 1982	-2	1	1	-2	1	1	0	0
KTL 1980	0	1	1	0	1	1	0	1
KTL 1981	0	1	1	0	1	1	0	1
KTL 1982	0	1	1	0	1	1	0	1
KTL 1983	0	1	1	0	1	1	0	1
KTL 1984	0	1	1	0	1	1	0	1
KTL 1985	-1	1	1	-1	1	1	0	1
KTL 1986	-1	1	1	-1	1	1	unknown	0
KTL 1987	0	1	1	0	1	1	0	1
KTL 1988	0	1	1	0	1	1	0	1
KTL 1989	0	1	1	0	1	1	0	1
OMNIA 1980	0	1	1	0	1	1	0	1
OMNIA 1981	0	1	1	0	1	1	0	1
OMNIA 1982	-1	1	1	0	1	1	0	1
OMNIA 1983	-1	1	1	0	1	1	-2	1
OMNIA 1984	-2	1	1	-2	1	1	-2	1
OMNIA 1985	-1	1	1	-1	1	1	-2	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BRISTOL 1988	1	0	0	1	-1	1	1	0
BRISTOL 1989	1	0	1	1	0	1	1	0
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	1	-1	1	1	-1	1	1	0
DRG 1982	1	-2	1	1	-2	1	1	-2
H PARKER 1980	1	-1	1	1	0	0	1	-2
H PARKER 1981	1	0	1	1	0	1	1	0
H PARKER 1982	1	-1	1	1	-1	1	1	-2
IL BACK 1980	1	-2	1	1	-2	1	1	-2
IL BACK 1981	1	-2	1	1	-2	1	1	-2
IL BACK 1982	1	-2	1	1	-2	1	1	0
KTL 1980	1	0	1	1	0	1	1	0
KTL 1981	1	0	1	1	0	1	1	0
KTL 1982	1	0	1	1	0	1	1	0
KTL 1983	1	0	1	1	0	1	1	0
KTL 1984	1	0	0	1	0	0	1	0
KTL 1985	1	-1	1	1	-1	1	1	0
KTL 1986	1	-1	1	1	-1	1	1	unknown
KTL 1987	1	0	1	1	0	1	1	0
KTL 1988	1	0	1	1	0	1	1	0
KTL 1989	1	0	1	1	0	1	1	0
OMNIA 1980	1	0	1	1	0	1	1	0
OMNIA 1981	1	0	1	1	0	1	1	0
OMNIA 1982	1	-1	0	1	0	1	1	0
OMNIA 1983	1	-1	1	1	0	0	1	-2
OMNIA 1984	1	-2	1	1	-2	1	1	-2
OMNIA 1985	1	-1	1	1	-1	1	1	-2

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 3: States 0 & -1 vs State -2							
		De La Rey Model		Yn Naive Model			Yn CHAID Model		
Company & year		# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BRISTOL 1988		0	1	0	1	1	-1	1	1
BRISTOL 1989		1	1	0	1	1	0	1	1
DRG 1980		no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981		0	1	-1	1	1	-1	1	1
DRG 1982		1	1	-2	1	1	-2	1	1
H PARKER 1980		1	1	-1	1	1	0	1	1
H PARKER 1981		1	1	0	1	1	0	1	1
H PARKER 1982		1	1	-1	1	1	-1	1	1
IL BACK 1980		1	1	-2	1	1	-2	1	1
IL BACK 1981		1	1	-2	1	1	-2	1	1
IL BACK 1982		0	1	-2	1	1	-2	1	1
KTL 1980		1	1	0	1	1	0	1	1
KTL 1981		1	1	0	1	1	0	1	1
KTL 1982		1	1	0	1	1	0	1	1
KTL 1983		1	1	0	1	1	0	1	1
KTL 1984		0	1	0	1	1	0	1	1
KTL 1985		0	1	-1	1	1	-1	1	1
KTL 1986		0	1	-1	1	1	-1	1	1
KTL 1987		1	1	0	1	1	0	1	1
KTL 1988		1	1	0	1	1	0	1	1
KTL 1989		1	1	0	1	1	0	1	1
OMNIA 1980		1	1	0	1	1	0	1	1
OMNIA 1981		1	1	0	1	1	0	1	1
OMNIA 1982		1	1	-1	1	1	0	1	1
OMNIA 1983		1	1	-1	1	1	0	1	1
OMNIA 1984		1	1	-2	1	1	-2	1	1
OMNIA 1985		1	1	-1	1	1	-1	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BRISTOL 1988	0	1	1
BRISTOL 1989	0	1	1
DRG 1980	no data	no data	no data
DRG 1981	0	1	1
DRG 1982	-2	1	1
H PARKER 1980	-2	0	1
H PARKER 1981	0	1	1
H PARKER 1982	-2	0	1
IL BACK 1980	-2	1	1
IL BACK 1981	-2	1	1
IL BACK 1982	0	0	1
KTL 1980	0	1	1
KTL 1981	0	1	1
KTL 1982	0	1	1
KTL 1983	0	1	1
KTL 1984	0	1	1
KTL 1985	0	1	1
KTL 1986	unknown	0	1
KTL 1987	0	1	1
KTL 1988	0	1	1
KTL 1989	0	1	1
OMNIA 1980	0	1	1
OMNIA 1981	0	1	1
OMNIA 1982	0	1	1
OMNIA 1983	-2	0	1
OMNIA 1984	-2	1	1
OMNIA 1985	-2	0	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
OMNIA 1986	Hold	-0.64	6.63	0.13	0
OMNIA 1987	Hold	-0.42	21.21	0.38	0
OMNIA 1988	Hold	0.01	25.91	0.55	0
OMNIA 1989	Hold	0.62	33.59	0.59	0
ROMATEX 1980	Hold	1.25	22.63	1.30	0
ROMATEX 1981	Hold	1.65	27.33	1.70	0
ROMATEX 1982	Hold	1.36	20.64	0.99	-1
ROMATEX 1983	Hold	0.83	12.91	0.45	-1
ROMATEX 1984	Hold	1.01	14.51	0.56	-1
ROMATEX 1985	Hold	-0.09	1.71	0.05	-1
ROMATEX 1986	Hold	0.47	9.99	0.29	-1
ROMATEX 1987	Hold	0.83	13.97	0.63	0
ROMATEX 1988	Hold	1.09	18.00	0.90	0
ROMATEX 1989	Hold	1.00	17.12	0.70	0
TRIOMF 1980	Hold	1.13	41.44	1.29	0
TRIOMF 1981	Hold	-0.11	15.27	0.70	-1
TRIOMF 1982	Hold	-0.32	0.23	0.01	-1
TRIOMF 1983	Hold	-0.14	-0.76	-0.03	-2
TRIOMF 1984	Hold	no data	no data	no data	no data
TRIOMF 1985	Hold	-1.92	-40.43	-0.21	-2
TRIOMF 1986	Hold	-2.79	-39.92	-2.01	-2
TRIOMF 1987	Hold	1.43	-0.36	-0.02	-2
TUCKERS 1980	Hold	0.52	4.36	0.39	-1
TUCKERS 1981	Hold	0.18	7.91	0.40	0
TUCKERS 1982	Hold	0.42	18.54	0.48	0

Sub-Total 1980s

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1986	-1	1	1	-1	1	1	-2	0
OMNIA 1987	-1	1	1	0	1	1	-2	0
OMNIA 1988	0	1	1	0	1	1	unknown	0
OMNIA 1989	0	1	1	0	1	1	0	1
ROMATEX 1980	0	1	1	0	1	1	0	1
ROMATEX 1981	0	1	1	0	1	1	0	1
ROMATEX 1982	0	1	1	0	1	1	0	1
ROMATEX 1983	-1	1	1	0	1	1	0	1
ROMATEX 1984	0	1	1	0	1	1	0	1
ROMATEX 1985	-1	1	1	-1	1	1	unknown	0
ROMATEX 1986	-1	1	1	-1	1	1	0	1
ROMATEX 1987	0	1	1	0	1	1	0	1
ROMATEX 1988	0	1	1	0	1	1	0	1
ROMATEX 1989	0	1	1	0	1	1	0	1
TRIOMF 1980	0	1	1	0	1	1	0	1
TRIOMF 1981	0	1	1	0	1	1	unknown	0
TRIOMF 1982	-1	1	1	-2	1	1	-2	1
TRIOMF 1983	-2	1	1	-2	1	1	unknown	0
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	-2	1	1	-2	1	1	-2	1
TRIOMF 1986	-2	1	1	-2	1	1	-2	1
TRIOMF 1987	-2	1	1	-2	1	1	0	0
TUCKERS 1980	-1	1	1	-1	1	1	0	1
TUCKERS 1981	-1	1	1	-1	1	1	unknown	0
TUCKERS 1982	-1	1	1	0	1	1	0	1
Sub-Total 1980s		74	74		74	74		62

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
	del	Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
OMNIA 1986	1	-1	0	1	-1	0	1	-2
OMNIA 1987	1	-1	0	1	0	1	1	-2
OMNIA 1988	1	0	1	1	0	1	1	unknown
OMNIA 1989	1	0	1	1	0	1	1	0
ROMATEX 1980	1	0	1	1	0	1	1	0
ROMATEX 1981	1	0	1	1	0	1	1	0
ROMATEX 1982	1	0	0	1	0	0	1	0
ROMATEX 1983	1	-1	1	1	0	0	1	0
ROMATEX 1984	1	0	0	1	0	0	1	0
ROMATEX 1985	1	-1	1	1	-1	1	1	unknown
ROMATEX 1986	1	-1	1	1	-1	1	1	0
ROMATEX 1987	1	0	1	1	0	1	1	0
ROMATEX 1988	1	0	1	1	0	1	1	0
ROMATEX 1989	1	0	1	1	0	1	1	0
TRIOMF 1980	1	0	1	1	0	1	1	0
TRIOMF 1981	1	0	0	1	0	0	1	unknown
TRIOMF 1982	1	-1	1	1	-2	1	1	-2
TRIOMF 1983	1	-2	1	1	-2	1	1	unknown
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	1	-2	1	1	-2	1	1	-2
TRIOMF 1986	1	-2	1	1	-2	1	1	-2
TRIOMF 1987	1	-2	1	1	-2	1	1	0
TUCKERS 1980	1	-1	1	1	-1	1	1	0
TUCKERS 1981	1	-1	0	1	-1	0	1	unknown
TUCKERS 1982	1	-1	0	1	0	1	1	0
Sub-Total 1980s	74		62	74		62	74	

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	De La Rey Model		Yn Naive Model			Yn CHAID Model		
	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
OMNIA 1986	0	1	-1	1	1	-1	1	1
OMNIA 1987	0	1	-1	1	1	0	1	1
OMNIA 1988	0	1	0	1	1	0	1	1
OMNIA 1989	1	1	0	1	1	0	1	1
ROMATEX 1980	1	1	0	1	1	0	1	1
ROMATEX 1981	1	1	0	1	1	0	1	1
ROMATEX 1982	0	1	0	1	1	0	1	1
ROMATEX 1983	0	1	-1	1	1	0	1	1
ROMATEX 1984	0	1	0	1	1	0	1	1
ROMATEX 1985	0	1	-1	1	1	-1	1	1
ROMATEX 1986	0	1	-1	1	1	-1	1	1
ROMATEX 1987	1	1	0	1	1	0	1	1
ROMATEX 1988	1	1	0	1	1	0	1	1
ROMATEX 1989	1	1	0	1	1	0	1	1
TRIOMF 1980	1	1	0	1	1	0	1	1
TRIOMF 1981	0	1	0	1	1	0	1	1
TRIOMF 1982	1	1	-1	1	1	-2	0	1
TRIOMF 1983	0	1	-2	1	1	-2	1	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	1	1	-2	1	1	-2	1	1
TRIOMF 1986	1	1	-2	1	1	-2	1	1
TRIOMF 1987	0	1	-2	1	1	-2	1	1
TUCKERS 1980	0	1	-1	1	1	-1	1	1
TUCKERS 1981	0	1	-1	1	1	-1	1	1
TUCKERS 1982	1	1	-1	1	1	0	1	1
Sub-Total 1980s	47	74		74	74		73	74

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
OMNIA 1986	-2	0	1
OMNIA 1987	-2	0	1
OMNIA 1988	unknown	0	1
OMNIA 1989	0	1	1
ROMATEX 1980	0	1	1
ROMATEX 1981	0	1	1
ROMATEX 1982	0	1	1
ROMATEX 1983	0	1	1
ROMATEX 1984	0	1	1
ROMATEX 1985	unknown	0	1
ROMATEX 1986	0	1	1
ROMATEX 1987	0	1	1
ROMATEX 1988	0	1	1
ROMATEX 1989	0	1	1
TRIOMF 1980	0	1	1
TRIOMF 1981	unknown	0	1
TRIOMF 1982	-2	0	1
TRIOMF 1983	unknown	0	1
TRIOMF 1984	no data	no data	no data
TRIOMF 1985	-2	1	1
TRIOMF 1986	-2	1	1
TRIOMF 1987	0	0	1
TUCKERS 1980	0	1	1
TUCKERS 1981	unknown	0	1
TUCKERS 1982	0	1	1
Sub-Total 1980s		55	74

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

	Data				
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
Predictive Accuracy					
BIDVEST 1990	Hold	2.04	33.80	0.65	0
BIDVEST 1991	Hold	0.34	36.49	0.32	0
BIDVEST 1992	Hold	0.45	49.16	0.51	0
BIDVEST 1993	Hold	0.25	15.33	0.38	0
BIDVEST 1994	Hold	0.54	25.60	0.62	0
BIDVEST 1995	Hold	0.68	28.20	0.61	0
BIDVEST 1996	Hold	0.88	27.57	0.58	0
BIDVEST 1997	Hold	0.66	14.68	0.37	0
BIDVEST 1998	Hold	1.24	16.30	0.50	0
BRISTOL 1990	Hold	0.75	6.41	0.29	-1
BRISTOL 1991	Hold	0.88	7.41	0.31	-1
BRISTOL 1992	Hold	1.12	7.85	0.36	-1
BRISTOL 1993	Hold	1.30	6.51	0.33	-1
BRISTOL 1994	Hold	0.82	5.61	0.32	-1
KTL 1990	Hold	0.65	94.62	0.39	0
KTL 1991	Hold	-0.09	15.79	0.20	-1
KTL 1992	Hold	-0.59	0.70	0.01	-1
KTL 1993	Hold	-0.01	28.72	0.36	0
KTL 1994	Hold	0.56	47.63	0.65	0
KTL 1995	Hold	0.47	39.09	0.50	0
KTL 1996	Hold	1.43	69.07	0.85	0
KTL 1997	Hold	0.16	41.19	0.34	-1
KTL 1998	Hold	1.70	36.23	1.49	-1
KTL 1999	Hold	5.32	52.54	2.55	-1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
Company & year	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
Predictive Accuracy	100.0%			100.0%			83.8%	
BIDVEST 1990	0	1	1	0	1	1	0	1
BIDVEST 1991	-1	1	1	0	1	1	0	1
BIDVEST 1992	0	1	1	0	1	1	0	1
BIDVEST 1993	-1	1	1	0	1	1	0	1
BIDVEST 1994	0	1	1	0	1	1	0	1
BIDVEST 1995	0	1	1	0	1	1	0	1
BIDVEST 1996	0	1	1	0	1	1	0	1
BIDVEST 1997	-1	1	1	0	1	1	0	1
BIDVEST 1998	0	1	1	0	1	1	0	1
BRISTOL 1990	-1	1	1	-1	1	1	0	1
BRISTOL 1991	-1	1	1	-1	1	1	0	1
BRISTOL 1992	-1	1	1	-1	1	1	0	1
BRISTOL 1993	-1	1	1	-1	1	1	0	1
BRISTOL 1994	-1	1	1	-1	1	1	0	1
KTL 1990	-1	1	1	0	1	1	0	1
KTL 1991	-1	1	1	0	1	1	unknown	0
KTL 1992	-1	1	1	-2	1	1	-2	1
KTL 1993	-1	1	1	0	1	1	unknown	0
KTL 1994	0	1	1	0	1	1	0	1
KTL 1995	0	1	1	0	1	1	0	1
KTL 1996	0	1	1	0	1	1	0	1
KTL 1997	-1	1	1	0	1	1	unknown	0
KTL 1998	0	1	1	0	1	1	0	1
KTL 1999	0	1	1	0	1	1	0	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2							
		Yn Naive Model			Yn CHAID Model			Yn	
Company & year	del	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
Predictive Accuracy			83.8%				83.8%		
BIDVEST 1990	1		0	1	1	0	1	1	0
BIDVEST 1991	1		-1	0	1	0	1	1	0
BIDVEST 1992	1		0	1	1	0	1	1	0
BIDVEST 1993	1		-1	0	1	0	1	1	0
BIDVEST 1994	1		0	1	1	0	1	1	0
BIDVEST 1995	1		0	1	1	0	1	1	0
BIDVEST 1996	1		0	1	1	0	1	1	0
BIDVEST 1997	1		-1	0	1	0	1	1	0
BIDVEST 1998	1		0	1	1	0	1	1	0
BRISTOL 1990	1		-1	1	1	-1	1	1	0
BRISTOL 1991	1		-1	1	1	-1	1	1	0
BRISTOL 1992	1		-1	1	1	-1	1	1	0
BRISTOL 1993	1		-1	1	1	-1	1	1	0
BRISTOL 1994	1		-1	1	1	-1	1	1	0
KTL 1990	1		-1	0	1	0	1	1	0
KTL 1991	1		-1	1	1	0	0	1	unknown
KTL 1992	1		-1	1	1	-2	1	1	-2
KTL 1993	1		-1	0	1	0	1	1	unknown
KTL 1994	1		0	1	1	0	1	1	0
KTL 1995	1		0	1	1	0	1	1	0
KTL 1996	1		0	1	1	0	1	1	0
KTL 1997	1		-1	1	1	0	0	1	unknown
KTL 1998	1		0	0	1	0	0	1	0
KTL 1999	1		0	0	1	0	0	1	0

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 3: States 0 & -1 vs State -2							
		De La Rey Model		Yn Naive Model			Yn CHAID Model		
Company & year		# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
Predictive Accuracy		63.5%		100.0%			98.6%		
BIDVEST 1990		1	1	0	1	1	0	1	1
BIDVEST 1991		1	1	-1	1	1	0	1	1
BIDVEST 1992		1	1	0	1	1	0	1	1
BIDVEST 1993		1	1	-1	1	1	0	1	1
BIDVEST 1994		1	1	0	1	1	0	1	1
BIDVEST 1995		1	1	0	1	1	0	1	1
BIDVEST 1996		1	1	0	1	1	0	1	1
BIDVEST 1997		1	1	-1	1	1	0	1	1
BIDVEST 1998		1	1	0	1	1	0	1	1
BRISTOL 1990		0	1	-1	1	1	-1	1	1
BRISTOL 1991		0	1	-1	1	1	-1	1	1
BRISTOL 1992		0	1	-1	1	1	-1	1	1
BRISTOL 1993		0	1	-1	1	1	-1	1	1
BRISTOL 1994		0	1	-1	1	1	-1	1	1
KTL 1990		1	1	-1	1	1	0	1	1
KTL 1991		0	1	-1	1	1	0	1	1
KTL 1992		1	1	-1	1	1	-2	0	1
KTL 1993		0	1	-1	1	1	0	1	1
KTL 1994		1	1	0	1	1	0	1	1
KTL 1995		1	1	0	1	1	0	1	1
KTL 1996		1	1	0	1	1	0	1	1
KTL 1997		0	1	-1	1	1	0	1	1
KTL 1998		0	1	0	1	1	0	1	1
KTL 1999		0	1	0	1	1	0	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Yn De La Rey Model			
Company & year	Pred State	# Correct	Sample Size
Predictive Accuracy	74.3%		
BIDVEST 1990	0	1	1
BIDVEST 1991	0	1	1
BIDVEST 1992	0	1	1
BIDVEST 1993	0	1	1
BIDVEST 1994	0	1	1
BIDVEST 1995	0	1	1
BIDVEST 1996	0	1	1
BIDVEST 1997	0	1	1
BIDVEST 1998	0	1	1
BRISTOL 1990	0	1	1
BRISTOL 1991	0	1	1
BRISTOL 1992	0	1	1
BRISTOL 1993	0	1	1
BRISTOL 1994	0	1	1
KTL 1990	0	1	1
KTL 1991	unknown	0	1
KTL 1992	-2	0	1
KTL 1993	unknown	0	1
KTL 1994	0	1	1
KTL 1995	0	1	1
KTL 1996	0	1	1
KTL 1997	unknown	0	1
KTL 1998	0	1	1
KTL 1999	0	1	1

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Company & year	Data				
	Test/Hold	De La Rey	PAT/SHE	SVA	3Year n
OMNIA 1990	Hold	0.39	24.90	0.45	0
OMNIA 1991	Hold	0.21	21.66	0.39	-1
OMNIA 1992	Hold	-0.23	13.51	0.24	-1
OMNIA 1993	Hold	0.41	25.46	0.60	0
OMNIA 1994	Hold	0.32	23.75	0.54	0
OMNIA 1995	Hold	0.07	22.34	0.39	0
OMNIA 1996	Hold	0.38	29.14	0.47	0
OMNIA 1997	Hold	0.73	28.50	0.57	0
OMNIA 1998	Hold	0.24	21.21	0.35	-1
ROMATEX 1990	Hold	0.49	12.30	0.38	-1
ROMATEX 1991	Hold	-0.26	0.51	0.01	-1
ROMATEX 1992	Hold	0.03	4.12	0.13	-1
ROMATEX 1993	Hold	0.56	10.76	0.38	0
ROMATEX 1994	Hold	0.69	11.62	0.49	0
ROMATEX 1995	Hold	0.52	9.71	0.44	-1
ROMATEX 1996	Hold	-0.02	0.36	0.01	-1
ROMATEX 1997	Hold	-1.18	-14.73	-0.53	-2
ROMATEX 1998	Hold	0.17	2.10	0.08	0

Sub-Total 1990s
 Predictive Accuracy

Grand Total
 Predictive Accuracy

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1990	-1	1	1	0	1	1	0	1
OMNIA 1991	-1	1	1	0	1	1	0	1
OMNIA 1992	-1	1	1	0	1	1	-2	1
OMNIA 1993	0	1	1	0	1	1	0	1
OMNIA 1994	0	1	1	0	1	1	0	1
OMNIA 1995	-1	1	1	0	1	1	unknown	0
OMNIA 1996	-1	1	1	0	1	1	0	1
OMNIA 1997	0	1	1	0	1	1	0	1
OMNIA 1998	-1	1	1	0	1	1	0	1
ROMATEX 1990	-1	1	1	-1	1	1	0	1
ROMATEX 1991	-1	1	1	-2	1	1	-2	1
ROMATEX 1992	-1	1	1	-1	1	1	unknown	0
ROMATEX 1993	-1	1	1	-1	1	1	0	1
ROMATEX 1994	0	1	1	-1	1	1	0	1
ROMATEX 1995	-1	1	1	-1	1	1	0	1
ROMATEX 1996	-1	1	1	-2	1	1	unknown	0
ROMATEX 1997	-2	1	1	-2	1	1	-2	1
ROMATEX 1998	-1	1	1	-1	1	1	unknown	0
Sub-Total 1990s		42	42		42	42		35
Predictive Accuracy		100.0%			100.0%			83.3%
Grand Total		231	231		230	231		190
Predictive Accuracy		100.0%			99.6%			82.3%

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
		Yn Naive Model			Yn CHAID Model			Yn
Company & year	del	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
OMNIA 1990	1	-1	0	1	0	1	1	0
OMNIA 1991	1	-1	1	1	0	0	1	0
OMNIA 1992	1	-1	1	1	0	0	1	-2
OMNIA 1993	1	0	1	1	0	1	1	0
OMNIA 1994	1	0	1	1	0	1	1	0
OMNIA 1995	1	-1	0	1	0	1	1	unknown
OMNIA 1996	1	-1	0	1	0	1	1	0
OMNIA 1997	1	0	1	1	0	1	1	0
OMNIA 1998	1	-1	1	1	0	0	1	0
ROMATEX 1990	1	-1	1	1	-1	1	1	0
ROMATEX 1991	1	-1	1	1	-2	1	1	-2
ROMATEX 1992	1	-1	1	1	-1	1	1	unknown
ROMATEX 1993	1	-1	0	1	-1	0	1	0
ROMATEX 1994	1	0	1	1	-1	0	1	0
ROMATEX 1995	1	-1	1	1	-1	1	1	0
ROMATEX 1996	1	-1	1	1	-2	1	1	unknown
ROMATEX 1997	1	-2	1	1	-2	1	1	-2
ROMATEX 1998	1	-1	0	1	-1	0	1	unknown
Sub-Total 1990s	42		30	42		32	42	
Predictive Accuracy			71.4%			76.2%		
Grand Total	231		189	231		189	231	
Predictive Accuracy			81.8%			81.8%		

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	De La Rey Model		Yn Naive Model			Yn CHAID Model		
	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
OMNIA 1990	1	1	-1	1	1	0	1	1
OMNIA 1991	0	1	-1	1	1	0	1	1
OMNIA 1992	1	1	-1	1	1	0	1	1
OMNIA 1993	1	1	0	1	1	0	1	1
OMNIA 1994	1	1	0	1	1	0	1	1
OMNIA 1995	0	1	-1	1	1	0	1	1
OMNIA 1996	1	1	-1	1	1	0	1	1
OMNIA 1997	1	1	0	1	1	0	1	1
OMNIA 1998	0	1	-1	1	1	0	1	1
ROMATEX 1990	0	1	-1	1	1	-1	1	1
ROMATEX 1991	1	1	-1	1	1	-2	0	1
ROMATEX 1992	0	1	-1	1	1	-1	1	1
ROMATEX 1993	1	1	-1	1	1	-1	1	1
ROMATEX 1994	1	1	0	1	1	-1	1	1
ROMATEX 1995	0	1	-1	1	1	-1	1	1
ROMATEX 1996	0	1	-1	1	1	-2	0	1
ROMATEX 1997	1	1	-2	1	1	-2	1	1
ROMATEX 1998	0	1	-1	1	1	-1	1	1
Sub-Total 1990s	24	42		42	42		39	42
Predictive Accuracy	57.1%			100.0%			92.9%	
Grand Total	149	231		231	231		225	231
Predictive Accuracy	64.5%			100.0%			97.4%	

APPENDIX F : 3 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
OMNIA 1990	0	1	1
OMNIA 1991	0	1	1
OMNIA 1992	-2	0	1
OMNIA 1993	0	1	1
OMNIA 1994	0	1	1
OMNIA 1995	unknown	0	1
OMNIA 1996	0	1	1
OMNIA 1997	0	1	1
OMNIA 1998	0	1	1
ROMATEX 1990	0	1	1
ROMATEX 1991	-2	0	1
ROMATEX 1992	unknown	0	1
ROMATEX 1993	0	1	1
ROMATEX 1994	0	1	1
ROMATEX 1995	0	1	1
ROMATEX 1996	unknown	0	1
ROMATEX 1997	-2	1	1
ROMATEX 1998	unknown	0	1
Sub-Total 1990s		32	42
Predictive Accuracy		76.2%	
Grand Total		168	231
Predictive Accuracy		72.7%	

APPENDIX G1 : 5 Year n Models (Test Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
A&P 1978	10.48	4.18	0.16	7.54	-1	-1	1	1
AVBAK 1979	12.93	13.56	1.00	15.98	0	0	1	1
BERZACK 1978	10.48	29.81	1.31	24.84	0	0	1	1
BROMAIN 1977	10.59	6.84	0.15	9.15	-1	-1	1	1
BTR 1979	12.93	29.50	1.32	21.86	0	0	1	1
CHEMSERVE 1979	12.93	21.75	0.72	14.11	0	0	1	1
COATES 1976	10.59	20.09	0.91	21.22	0	0	1	1
DESIREE 1977	11.70	18.54	0.51	14.03	0	0	1	1
DUBIN 1976	10.59	40.39	0.78	19.00	0	0	1	1
FINTECH 1977	11.70	16.80	0.62	17.07	0	0	1	1
FOWLER 1979	12.93	-46.03	-1.14	-13.81	-2	-2	1	1
FRASERS 1977	11.70	20.83	0.83	18.66	0	0	1	1
GLEN ANIL 1976	10.59	1.59	0.05	4.66	-1	-1	1	1
HANHILL 1976	10.59	12.31	0.30	16.18	-1	-1	1	1
HEPWORTHS 1979	10.48	-11.27	-0.41	1.41	-2	-2	1	1
LAWSON 1976	10.59	-1077.83	-6.54	-3.30	-2	-2	1	1
LTA 1977	10.59	20.42	0.60	8.58	0	0	1	1
LUCYS 1975	13.33	-246.11	-11.20	-24.64	-2	-2	1	1
MARSHALL 1977	11.70	2.77	0.10	6.22	-1	-1	1	1
SIMBA 1973	9.84	-23.16	-0.99	-3.44	-2	-2	1	1
Total							20	20
Predictive Accuracy							100%	

APPENDIX G1 : 5 Year n Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
A&P 1978	69.95	73.02	69.44	-1	1	1	-1	1
AVBAK 1979	108.97	120.54	124.47	0	1	1	0	1
BERZACK 1978	87.91	100.95	103.62	0	1	1	0	1
BROMAIN 1977	73.01	77.17	74.38	-1	1	1	-1	1
BTR 1979	115.09	130.05	136.10	0	1	1	0	1
CHEMSERVE 1979	107.03	117.53	120.78	0	1	1	0	1
COATES 1976	85.54	96.66	98.23	0	1	1	0	1
DESIREE 1977	91.80	100.43	101.43	0	1	1	0	1
DUBIN 1976	83.23	93.07	93.83	0	1	1	0	1
FINTECH 1977	94.96	105.34	107.43	0	1	1	0	1
FOWLER 1979	78.06	72.47	65.65	-2	1	1	-2	1
FRASERS 1977	96.61	107.90	110.56	0	1	1	0	1
GLEN ANIL 1976	68.35	69.93	65.51	-1	1	1	-2	0
HANHILL 1976	80.30	88.52	88.26	-1	1	1	-1	1
HEPWORTHS 1979	63.59	63.13	57.34	-2	1	1	-2	1
LAWSON 1976	60.08	57.08	49.79	-2	1	1	-2	1
LTA 1977	72.41	76.24	73.24	-1	0	1	0	1
LUCYS 1975	71.77	60.54	50.54	-2	1	1	-2	1
MARSHALL 1977	83.69	87.82	85.99	-1	1	1	-1	1
SIMBA 1973	50.67	46.47	37.76	-2	1	1	-2	1
Total					19	20		19
Predictive Accuracy					95%			95%

APPENDIX G1 : 5 Year n Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
A&P 1978	1
AVBAK 1979	1
BERZACK 1978	1
BROMAIN 1977	1
BTR 1979	1
CHEMSERVE 1979	1
COATES 1976	1
DESIREE 1977	1
DUBIN 1976	1
FINTECH 1977	1
FOWLER 1979	1
FRASERS 1977	1
GLEN ANIL 1976	1
HANHILL 1976	1
HEPWORTHS 1979	1
LAWSON 1976	1
LTA 1977	1
LUCYS 1975	1
MARSHALL 1977	1
SIMBA 1973	1

Total 20

Predictive Accuracy

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	5.88	7.07	0.34	8.93	no data	no data	no data	no data
BACKCLOTHING 1971	5.56	-2.89	-0.11	4.80	-2	-2	1	1
BACKCLOTHING 1972	7.02	-45.83	-1.11	2.66	-2	-2	1	1
BACKCLOTHING 1973	9.84	-88.85	-1.35	-1.82	-2	-2	1	1
BACKCLOTHING 1974	11.94	-380.70	-1.39	-4.54	-2	-2	1	1
BIDVEST 1970	5.88	19.14	0.91	15.23	no data	no data	no data	no data
BIDVEST 1971	5.56	10.89	0.50	12.44	no data	no data	no data	no data
BIDVEST 1972	7.02	11.67	0.57	12.60	no data	no data	no data	no data
BIDVEST 1973	9.84	9.79	0.67	11.09	no data	no data	no data	no data
BIDVEST 1974	11.94	10.89	0.58	11.36	no data	no data	no data	no data
BIDVEST 1975	13.33	12.81	0.58	13.08	0	0	1	1
BIDVEST 1976	10.59	13.09	0.56	13.60	0	0	1	1
BIDVEST 1977	11.70	8.07	0.35	10.15	-1	-1	1	1
BIDVEST 1978	10.48	10.92	0.54	12.62	-1	0	0	1
BIDVEST 1979	12.93	8.17	0.48	11.59	-1	-1	1	1
BRICK CLAY 1970	5.88	8.01	0.57	7.43	no data	no data	no data	no data
BRICK CLAY 1971	5.56	-13.06	-0.67	-3.37	-2	-2	1	1
BRICK CLAY 1972	7.02	0.45	0.02	9.88	no data	no data	no data	no data
BRICK CLAY 1973	9.84	14.69	0.83	10.42	no data	no data	no data	no data
BRICK CLAY 1974	11.94	8.59	0.41	13.84	no data	no data	no data	no data
BRICK CLAY 1975	13.33	18.22	0.69	12.37	0	0	1	1
BRICK CLAY 1976	10.59	17.79	0.65	14.19	0	0	1	1
BRICK CLAY 1977	11.70	11.21	0.40	12.32	-1	-1	1	1
BRICK CLAY 1978	10.48	8.02	0.25	11.26	-1	-1	1	1
BRICK CLAY 1979	12.93	10.93	0.43	13.88	-1	-1	1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971	6.44	0.64	-12.87	-2	1	1	-2	1
BACKCLOTHING 1972	22.25	17.38	5.76	-2	1	1	-2	1
BACKCLOTHING 1973	52.34	49.08	40.95	-2	1	1	-2	1
BACKCLOTHING 1974	75.47	73.75	68.48	-2	1	1	-2	1
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1975	110.93	121.43	125.05	0	1	1	0	1
BIDVEST 1976	77.63	84.36	83.18	-1	0	1	0	1
BIDVEST 1977	87.78	94.17	93.76	-1	1	1	-1	1
BIDVEST 1978	75.22	81.22	79.47	-1	1	1	-1	1
BIDVEST 1979	104.42	113.47	115.81	0	0	1	-1	1
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	-2.03	-12.54	-29.00	-2	1	1	-2	1
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1975	110.20	120.29	123.65	0	1	1	0	1
BRICK CLAY 1976	78.24	85.31	84.33	-1	0	1	0	1
BRICK CLAY 1977	90.03	97.68	98.05	0	0	1	-1	1
BRICK CLAY 1978	73.82	79.03	76.80	-1	1	1	-1	1
BRICK CLAY 1979	106.80	117.16	120.33	0	0	1	-1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BACKCLOTHING 1970	no data
BACKCLOTHING 1971	1
BACKCLOTHING 1972	1
BACKCLOTHING 1973	1
BACKCLOTHING 1974	1
BIDVEST 1970	no data
BIDVEST 1971	no data
BIDVEST 1972	no data
BIDVEST 1973	no data
BIDVEST 1974	no data
BIDVEST 1975	1
BIDVEST 1976	1
BIDVEST 1977	1
BIDVEST 1978	1
BIDVEST 1979	1
BRICK CLAY 1970	no data
BRICK CLAY 1971	1
BRICK CLAY 1972	no data
BRICK CLAY 1973	no data
BRICK CLAY 1974	no data
BRICK CLAY 1975	1
BRICK CLAY 1976	1
BRICK CLAY 1977	1
BRICK CLAY 1978	1
BRICK CLAY 1979	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
BRISTOL 1970	2.00	9.27	0.60	9.46	no data	no data	no data	no data
BRISTOL 1971	5.88	7.22	0.48	9.29	no data	no data	no data	no data
BRISTOL 1972	5.56	-6.85	-0.25	5.91	-2	-2	1	1
BRISTOL 1973	7.02	5.94	0.24	7.03	no data	no data	no data	no data
BRISTOL 1974	9.84	7.28	0.41	7.38	no data	no data	no data	no data
BRISTOL 1975	11.94	6.09	0.29	7.84	-1	-1	1	1
BRISTOL 1976	13.33	5.44	0.25	7.82	0	-1	0	1
BRISTOL 1977	10.59	4.54	0.20	7.29	0	-1	0	1
BRISTOL 1978	11.70	6.20	0.27	7.14	-1	-1	1	1
BRISTOL 1979	10.48	4.49	0.20	6.91	-1	-1	1	1
BURHOSE 1970	5.88	22.20	1.61	21.20	no data	no data	no data	no data
BURHOSE 1971	5.56	24.73	1.81	26.30	no data	no data	no data	no data
BURHOSE 1972	7.02	13.86	0.96	15.67	no data	no data	no data	no data
BURHOSE 1973	9.84	0.37	0.03	2.08	no data	no data	no data	no data
BURHOSE 1974	11.94	8.47	0.52	11.01	no data	no data	no data	no data
BURHOSE 1975	13.33	26.25	1.30	21.14	0	0	1	1
BURHOSE 1976	10.59	12.65	0.66	14.62	-1	0	0	1
BURHOSE 1977	11.70	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	10.48	5.48	0.20	6.26	no data	no data	no data	no data
BURHOSE 1979	12.93	27.36	0.98	12.72	no data	no data	no data	no data
CONJERS 1970	5.88	19.44	0.87	14.87	no data	no data	no data	no data
CONJERS 1971	5.56	19.78	0.95	16.32	no data	no data	no data	no data
CONJERS 1972	7.02	17.30	0.89	13.83	no data	no data	no data	no data
CONJERS 1973	9.84	-2.30	-0.12	6.83	-2	-2	1	1
CONJERS 1974	11.94	13.42	0.68	12.94	no data	no data	no data	no data
CONJERS 1975	13.33	-24.08	-1.02	-7.82	-2	-2	1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	7.60	2.44	-10.67	-2	1	1	-2	1
BRISTOL 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1975	88.31	93.73	92.92	-1	1	1	-1	1
BRISTOL 1976	105.47	112.93	114.65	0	1	1	-1	0
BRISTOL 1977	71.08	74.17	70.71	-1	0	1	-1	0
BRISTOL 1978	84.65	89.31	87.82	-1	1	1	-1	1
BRISTOL 1979	69.30	72.01	68.20	-1	1	1	-1	1
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1974	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1975	119.29	134.43	140.96	0	1	1	0	1
BURHOSE 1976	78.69	86.01	85.19	-1	1	1	0	0
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	61.32	63.04	58.04	-1	0	1	-2	1
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	89.24	87.70	83.77	-2	1	1	-2	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BRISTOL 1970	no data
BRISTOL 1971	no data
BRISTOL 1972	1
BRISTOL 1973	no data
BRISTOL 1974	no data
BRISTOL 1975	1
BRISTOL 1976	1
BRISTOL 1977	1
BRISTOL 1978	1
BRISTOL 1979	1
BURHOSE 1970	no data
BURHOSE 1971	no data
BURHOSE 1972	no data
BURHOSE 1973	no data
BURHOSE 1974	no data
BURHOSE 1975	1
BURHOSE 1976	1
BURHOSE 1977	no data
BURHOSE 1978	no data
BURHOSE 1979	no data
CONJERS 1970	no data
CONJERS 1971	no data
CONJERS 1972	no data
CONJERS 1973	1
CONJERS 1974	no data
CONJERS 1975	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
DRG 1978	10.48	24.22	1.07	20.13	no data	no data	no data	no data
DRG 1979	12.93	21.11	1.08	15.24	no data	no data	no data	no data
FAIRWEATHER 1970	5.88	24.54	1.11	18.56	no data	no data	no data	no data
FAIRWEATHER 1971	5.56	14.73	0.68	12.83	no data	no data	no data	no data
FAIRWEATHER 1972	7.02	-19.22	-0.20	7.13	-2	-2	1	1
FAIRWEATHER 1973	9.84	14.35	0.57	12.07	no data	no data	no data	no data
FAIRWEATHER 1974	11.94	-10.82	-0.33	9.40	-2	-2	1	1
FAIRWEATHER 1975	13.33	12.83	0.42	13.73	0	-1	0	1
FAIRWEATHER 1976	10.59	-31.93	-0.79	6.02	-2	-2	1	1
H PARKER 1970	2.00	50.08	0.58	3.84	no data	no data	no data	no data
H PARKER 1971	5.88	8.27	0.11	3.79	no data	no data	no data	no data
H PARKER 1972	5.56	-77.15	-0.87	0.74	-2	-2	1	1
H PARKER 1973	7.02	-60.06	-1.52	0.75	-2	-2	1	1
H PARKER 1974	9.84	38.41	1.47	11.99	no data	no data	no data	no data
H PARKER 1975	11.94	22.99	0.73	10.32	0	0	1	1
H PARKER 1976	13.33	3.52	0.06	4.07	0	-1	0	1
H PARKER 1977	10.59	22.12	0.47	10.73	0	-1	0	1
H PARKER 1978	11.70	7.61	0.14	11.66	-1	-1	1	1
H PARKER 1979	10.48	42.16	0.87	7.68	0	0	1	1
IL BACK 1970	2.00	10.58	0.49	8.78	no data	no data	no data	no data
IL BACK 1971	5.88	1.02	0.06	5.31	no data	no data	no data	no data
IL BACK 1972	5.56	-22.79	-0.95	2.75	-2	-2	1	1
IL BACK 1973	7.02	-15.36	-0.59	-1.86	-2	-2	1	1
IL BACK 1974	9.84	-52.17	-1.44	-4.11	-2	-2	1	1
IL BACK 1975	11.94	12.83	0.37	10.31	0	-1	0	1
IL BACK 1976	13.33	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	10.59	-56.88	-0.77	-1.18	-2	-2	1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	26.88	24.59	14.58	-2	1	1	-2	1
FAIRWEATHER 1973	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1974	89.93	96.25	96.00	-1	0	1	-2	1
FAIRWEATHER 1975	111.60	122.48	126.33	0	1	1	0	1
FAIRWEATHER 1976	69.76	72.12	68.20	-1	0	1	-2	1
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	2.23	-5.91	-20.89	-2	1	1	-2	1
H PARKER 1973	20.27	14.30	1.99	-2	1	1	-2	1
H PARKER 1974	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1975	90.89	97.73	97.82	0	1	1	0	1
H PARKER 1976	101.58	106.89	107.26	0	1	1	-1	0
H PARKER 1977	74.64	79.72	77.49	-1	0	1	0	1
H PARKER 1978	89.35	96.61	96.75	0	0	1	-1	1
H PARKER 1979	70.10	73.26	69.73	-1	0	1	0	1
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972	4.31	-2.66	-16.92	-2	1	1	-2	1
IL BACK 1973	17.56	10.09	-3.17	-2	1	1	-2	1
IL BACK 1974	49.97	45.38	36.43	-2	1	1	-2	1
IL BACK 1975	90.88	97.72	97.81	0	1	1	0	1
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	62.28	60.50	53.97	-2	1	1	-2	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
DRG 1978	no data
DRG 1979	no data
FAIRWEATHER 1970	no data
FAIRWEATHER 1971	no data
FAIRWEATHER 1972	1
FAIRWEATHER 1973	no data
FAIRWEATHER 1974	1
FAIRWEATHER 1975	1
FAIRWEATHER 1976	1
H PARKER 1970	no data
H PARKER 1971	no data
H PARKER 1972	1
H PARKER 1973	1
H PARKER 1974	no data
H PARKER 1975	1
H PARKER 1976	1
H PARKER 1977	1
H PARKER 1978	1
H PARKER 1979	1
IL BACK 1970	no data
IL BACK 1971	no data
IL BACK 1972	1
IL BACK 1973	1
IL BACK 1974	1
IL BACK 1975	1
IL BACK 1976	no data
IL BACK 1977	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
IL BACK 1978	11.70	-139.85	-1.95	-16.30	-2	-2	1	1
IL BACK 1979	10.48	-59.04	-0.78	-1.94	-2	-2	1	1
KTL 1970	5.88	19.28	0.84	10.86	no data	no data	no data	no data
KTL 1971	5.56	18.98	0.67	10.05	no data	no data	no data	no data
KTL 1972	7.02	24.69	1.17	18.34	no data	no data	no data	no data
KTL 1973	9.84	35.92	2.08	25.13	no data	no data	no data	no data
KTL 1974	11.94	42.70	1.88	26.19	no data	no data	no data	no data
KTL 1975	13.33	36.40	1.37	18.80	0	0	1	1
KTL 1976	10.59	27.56	1.07	15.01	0	0	1	1
KTL 1977	11.70	18.78	0.81	16.42	-1	0	0	1
KTL 1978	10.48	21.10	0.92	18.93	-1	0	0	1
KTL 1979	12.93	24.18	1.03	17.93	-1	0	0	1
OMNIA 1970	5.88	19.42	1.34	19.85	no data	no data	no data	no data
OMNIA 1971	5.56	17.14	1.12	17.97	no data	no data	no data	no data
OMNIA 1972	7.02	16.88	1.17	18.78	no data	no data	no data	no data
OMNIA 1973	9.84	15.32	1.16	17.02	no data	no data	no data	no data
OMNIA 1974	11.94	17.08	0.90	16.50	no data	no data	no data	no data
OMNIA 1975	13.33	29.16	0.88	15.09	0	0	1	1
OMNIA 1976	10.59	-7.01	-0.18	4.28	-2	-2	1	1
OMNIA 1977	11.70	-93.18	-0.91	-8.09	-2	-2	1	1
OMNIA 1978	10.48	-73.54	-0.61	6.68	-2	-2	1	1
OMNIA 1979	12.93	-0.40	-0.04	0.00	-2	-2	1	1
PAN 1970	5.88	15.43	1.18	11.35	no data	no data	no data	no data
PAN 1971	5.56	14.37	0.96	12.00	no data	no data	no data	no data
PAN 1972	7.02	1.32	0.07	3.79	no data	no data	no data	no data
PAN 1973	9.84	-38.03	-0.99	0.79	-2	-2	1	1
PAN 1974	11.94	-17.75	-0.38	2.13	-2	-2	1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	60.32	51.47	41.52	-2	1	1	-2	1
IL BACK 1979	60.12	57.73	50.73	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1974	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1975	116.87	130.66	136.34	0	1	1	0	1
KTL 1976	79.08	86.62	85.94	-1	0	1	0	1
KTL 1977	94.29	104.29	106.15	0	0	1	0	0
KTL 1978	81.77	91.40	91.93	0	0	1	0	0
KTL 1979	111.00	123.70	128.33	0	0	1	0	0
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1974	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1975	113.01	124.67	129.01	0	1	1	0	1
OMNIA 1976	67.95	69.31	64.75	-1	0	1	-2	1
OMNIA 1977	68.84	64.72	57.73	-2	1	1	-2	1
OMNIA 1978	69.06	71.64	67.76	-1	0	1	-2	1
OMNIA 1979	92.39	94.76	92.92	-1	0	1	-2	1
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	55.05	53.28	46.10	-2	1	1	-2	1
PAN 1974	82.39	84.52	81.65	-1	0	1	-2	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
IL BACK 1978	1
IL BACK 1979	1
KTL 1970	no data
KTL 1971	no data
KTL 1972	no data
KTL 1973	no data
KTL 1974	no data
KTL 1975	1
KTL 1976	1
KTL 1977	1
KTL 1978	1
KTL 1979	1
OMNIA 1970	no data
OMNIA 1971	no data
OMNIA 1972	no data
OMNIA 1973	no data
OMNIA 1974	no data
OMNIA 1975	1
OMNIA 1976	1
OMNIA 1977	1
OMNIA 1978	1
OMNIA 1979	1
PAN 1970	no data
PAN 1971	no data
PAN 1972	no data
PAN 1973	1
PAN 1974	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
PIONEER H 1973	9.84	7.13	0.48	9.73	no data	no data	no data	no data
PIONEER H 1974	11.94	7.88	0.51	8.34	no data	no data	no data	no data
PIONEER H 1975	13.33	9.92	0.58	8.69	no data	no data	no data	no data
PIONEER H 1976	10.59	6.50	0.37	8.91	no data	no data	no data	no data
PIONEER H 1977	11.70	6.59	0.39	10.01	no data	no data	no data	no data
PIONEER H 1978	10.48	7.12	0.44	10.61	-1	-1	1	1
PIONEER H 1979	12.93	9.52	0.71	11.47	-1	0	0	1
ROMATEX 1970	2.00	3.36	0.25	6.90	no data	no data	no data	no data
ROMATEX 1971	5.88	4.83	0.33	5.74	no data	no data	no data	no data
ROMATEX 1972	5.56	5.04	0.31	7.21	no data	no data	no data	no data
ROMATEX 1973	7.02	7.02	0.42	10.88	no data	no data	no data	no data
ROMATEX 1974	9.84	14.95	0.94	13.12	no data	no data	no data	no data
ROMATEX 1975	11.94	-20.30	-0.94	6.94	-2	-2	1	1
ROMATEX 1976	13.33	11.43	0.52	15.31	0	0	1	1
ROMATEX 1977	10.59	12.29	0.60	12.53	0	0	1	1
ROMATEX 1978	11.70	13.66	0.73	13.72	0	0	1	1
ROMATEX 1979	10.48	14.92	0.85	16.13	0	0	1	1
SCHACHAT 1970	5.88	20.48	0.64	11.73	no data	no data	no data	no data
SCHACHAT 1971	5.56	22.70	0.74	14.29	no data	no data	no data	no data
SCHACHAT 1972	7.02	25.15	0.94	17.44	no data	no data	no data	no data
SCHACHAT 1973	9.84	22.27	0.78	12.54	no data	no data	no data	no data
SCHACHAT 1974	11.94	14.85	0.47	11.46	no data	no data	no data	no data
SCHACHAT 1975	13.33	14.22	0.44	14.95	-1	-1	1	1
SCHACHAT 1976	10.59	18.18	0.55	16.27	-1	0	0	1
SCHACHAT 1977	11.70	9.79	0.32	11.98	-1	-1	1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1977	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1978	73.14	77.98	75.51	-1	1	1	-1	1
PIONEER H 1979	104.30	113.28	115.58	0	0	1	-1	1
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1974	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1975	87.38	92.28	91.15	-1	0	1	-2	1
ROMATEX 1976	113.25	125.03	129.45	0	1	1	-1	0
ROMATEX 1977	76.51	82.63	81.06	-1	0	1	-1	0
ROMATEX 1978	91.48	99.93	100.81	0	1	1	0	1
ROMATEX 1979	78.87	86.89	86.42	-1	0	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1974	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1975	112.86	124.44	128.73	0	0	1	0	0
SCHACHAT 1976	80.39	88.66	88.44	-1	1	1	0	0
SCHACHAT 1977	89.68	97.12	97.38	0	0	1	-1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
PIONEER H 1973	no data
PIONEER H 1974	no data
PIONEER H 1975	no data
PIONEER H 1976	no data
PIONEER H 1977	no data
PIONEER H 1978	1
PIONEER H 1979	1
ROMATEX 1970	no data
ROMATEX 1971	no data
ROMATEX 1972	no data
ROMATEX 1973	no data
ROMATEX 1974	no data
ROMATEX 1975	1
ROMATEX 1976	1
ROMATEX 1977	1
ROMATEX 1978	1
ROMATEX 1979	1
SCHACHAT 1970	no data
SCHACHAT 1971	no data
SCHACHAT 1972	no data
SCHACHAT 1973	no data
SCHACHAT 1974	no data
SCHACHAT 1975	1
SCHACHAT 1976	1
SCHACHAT 1977	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
SPECTRO 1970	5.88	5.70	0.50	7.97	no data	no data	no data	no data
SPECTRO 1971	5.56	13.09	1.10	13.36	no data	no data	no data	no data
SPECTRO 1972	7.02	11.01	0.94	13.55	no data	no data	no data	no data
SPECTRO 1973	9.84	21.93	1.43	11.53	no data	no data	no data	no data
SPECTRO 1974	11.94	18.04	0.78	8.65	no data	no data	no data	no data
SPECTRO 1975	13.33	-11.67	-0.38	-0.17	-2	-2	1	1
STUTTAFORDS 1970	2.00	10.15	0.93	12.82	no data	no data	no data	no data
STUTTAFORDS 1971	5.88	14.69	1.51	6.96	no data	no data	no data	no data
STUTTAFORDS 1972	5.56	4.24	0.40	6.07	no data	no data	no data	no data
STUTTAFORDS 1973	7.02	13.64	1.18	6.00	no data	no data	no data	no data
STUTTAFORDS 1974	9.84	5.70	0.54	6.08	no data	no data	no data	no data
STUTTAFORDS 1975	11.94	5.94	0.43	8.32	-1	-1	1	1
STUTTAFORDS 1976	13.33	5.13	0.32	7.42	-1	-1	1	1
STUTTAFORDS 1977	10.59	5.44	0.32	7.96	-1	-1	1	1
STUTTAFORDS 1978	11.70	4.45	0.25	6.22	-1	-1	1	1
TAPSA 1970	2.00	23.95	1.17	14.91	no data	no data	no data	no data
TAPSA 1971	5.88	20.06	0.81	13.34	no data	no data	no data	no data
TAPSA 1972	5.56	10.78	0.41	11.52	no data	no data	no data	no data
TAPSA 1973	7.02	12.47	0.40	8.32	no data	no data	no data	no data
TAPSA 1974	9.84	-35.05	-0.98	4.39	-2	-2	1	1
TAPSA 1975	11.94	-344.15	-3.81	-11.26	-2	-2	1	1
TIGERIND 1970	5.88	4.17	0.11	7.51	no data	no data	no data	no data
TIGERIND 1971	5.56	-26.54	-0.69	6.10	-2	-2	1	1
TIGERIND 1972	7.02	-61.58	-2.64	7.66	-2	-2	1	1
TIGERIND 1973	9.84	0.87	0.02	5.91	no data	no data	no data	no data

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1975	97.18	100.05	98.88	-1	0	1	-2	1
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1974	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1975	88.81	94.50	93.87	-1	1	1	-1	1
STUTTAFORDS 1976	105.06	112.29	113.87	0	0	1	-1	1
STUTTAFORDS 1977	71.77	75.26	72.03	-1	1	1	-1	1
STUTTAFORDS 1978	83.69	87.82	86.00	-1	1	1	-1	1
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1974	58.80	59.11	53.23	-1	0	1	-2	1
TAPSA 1975	68.48	62.89	55.19	-2	1	1	-2	1
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	7.79	2.75	-10.30	-2	1	1	-2	1
TIGERIND 1972	27.43	25.45	15.63	-2	1	1	-2	1
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
SPECTRO 1970	no data
SPECTRO 1971	no data
SPECTRO 1972	no data
SPECTRO 1973	no data
SPECTRO 1974	no data
SPECTRO 1975	1
STUTTAFORDS 1970	no data
STUTTAFORDS 1971	no data
STUTTAFORDS 1972	no data
STUTTAFORDS 1973	no data
STUTTAFORDS 1974	no data
STUTTAFORDS 1975	1
STUTTAFORDS 1976	1
STUTTAFORDS 1977	1
STUTTAFORDS 1978	1
TAPSA 1970	no data
TAPSA 1971	no data
TAPSA 1972	no data
TAPSA 1973	no data
TAPSA 1974	1
TAPSA 1975	1
TIGERIND 1970	no data
TIGERIND 1971	1
TIGERIND 1972	1
TIGERIND 1973	no data

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point	12.31	0.49
Lower Cut-off point	1.59	0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
TRIOMF 1970	5.88	11.53	0.59	9.47	no data	no data	no data	no data
TRIOMF 1971	5.56	22.50	0.67	9.41	no data	no data	no data	no data
TRIOMF 1972	7.02	45.44	1.46	23.79	no data	no data	no data	no data
TRIOMF 1973	9.84	44.97	1.54	22.56	no data	no data	no data	no data
TRIOMF 1974	11.94	48.34	1.14	19.59	no data	no data	no data	no data
TRIOMF 1975	13.33	54.27	0.62	14.20	0	0	1	1
TRIOMF 1976	10.59	36.54	0.23	9.07	-1	-1	1	1
TRIOMF 1977	11.70	-38.33	-0.39	0.85	-2	-2	1	1
TRIOMF 1978	10.48	12.00	0.12	9.15	-1	-1	1	1
TRIOMF 1979	12.93	61.54	1.10	17.28	0	0	1	1
TUCKERS 1970	5.88	24.59	1.80	15.34	no data	no data	no data	no data
TUCKERS 1971	5.56	17.61	1.21	15.04	no data	no data	no data	no data
TUCKERS 1972	7.02	15.27	1.19	12.89	no data	no data	no data	no data
TUCKERS 1973	9.84	18.78	1.77	15.88	no data	no data	no data	no data
TUCKERS 1974	11.94	17.72	1.34	14.94	no data	no data	no data	no data
TUCKERS 1975	13.33	6.34	0.46	6.70	-1	-1	1	1
TUCKERS 1976	10.59	3.61	0.26	4.11	-1	-1	1	1
TUCKERS 1977	11.70	10.02	0.62	9.37	-1	0	0	1
TUCKERS 1978	10.48	-5.32	-0.34	-2.85	-2	-2	1	1
TUCKERS 1979	12.93	4.46	0.37	4.90	-1	-1	1	1

Sub-Total 1970s	70	84
Predictive Accuracy	83.3%	

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1974	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1975	112.09	123.23	127.25	0	1	1	0	1
TRIOMF 1976	72.93	77.05	74.23	-1	1	1	0	0
TRIOMF 1977	78.12	79.15	75.38	-1	0	1	-2	1
TRIOMF 1978	71.63	75.63	72.64	-1	1	1	-1	1
TRIOMF 1979	110.33	122.65	127.05	0	1	1	0	1
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1975	104.31	111.14	112.45	0	0	1	-1	1
TUCKERS 1976	67.77	69.04	64.42	-1	1	1	-1	1
TUCKERS 1977	86.97	92.91	92.22	-1	1	1	-1	1
TUCKERS 1978	59.17	56.26	48.93	-2	1	1	-2	1
TUCKERS 1979	97.48	102.67	102.60	-1	1	1	-1	1
Sub-Total 1970s					53	84		72
Predictive Accuracy					63.1%			85.7%

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
TRIOMF 1970	no data
TRIOMF 1971	no data
TRIOMF 1972	no data
TRIOMF 1973	no data
TRIOMF 1974	no data
TRIOMF 1975	1
TRIOMF 1976	1
TRIOMF 1977	1
TRIOMF 1978	1
TRIOMF 1979	1
TUCKERS 1970	no data
TUCKERS 1971	no data
TUCKERS 1972	no data
TUCKERS 1973	no data
TUCKERS 1974	no data
TUCKERS 1975	1
TUCKERS 1976	1
TUCKERS 1977	1
TUCKERS 1978	1
TUCKERS 1979	1

Sub-Total 1970s 84

Predictive Accuracy

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
BIDVEST 1980	13.74	12.29	0.81	14.31	-1	0	0	1
BIDVEST 1981	15.44	24.03	1.04	19.02	0	0	1	1
BIDVEST 1982	14.53	17.76	0.55	17.65	0	0	1	1
BIDVEST 1983	12.69	9.02	0.34	12.31	-1	-1	1	1
BIDVEST 1984	11.26	9.58	0.27	10.42	-1	-1	1	1
BIDVEST 1985	16.60	5.27	0.18	9.39	-1	-1	1	1
BIDVEST 1986	18.40	5.99	0.31	9.00	-1	-1	1	1
BIDVEST 1987	16.13	-11.30	-0.65	13.30	-2	-2	1	1
BIDVEST 1988	12.88	12.45	0.50	16.62	0	0	1	1
BIDVEST 1989	14.77	39.63	1.76	23.98	0	0	1	1
BRICK CLAY 1980	13.74	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	15.44	17.65	0.48	14.14	no data	no data	no data	no data
BRICK CLAY 1982	14.53	69.34	0.44	14.59	no data	no data	no data	no data
BRICK CLAY 1983	12.69	-416.08	-1.27	-2.99	-2	-2	1	1
BRICK CLAY 1984	11.26	14.67	0.04	11.27	no data	no data	no data	no data
BRICK CLAY 1985	16.60	-82.01	-1.44	-2.59	-2	-2	1	1
BRICK CLAY 1986	18.40	26.96	0.75	19.43	0	0	1	1
BRICK CLAY 1987	16.13	103.67	1.83	23.45	0	0	1	1
BRICK CLAY 1988	12.88	445.84	1.56	24.15	0	0	1	1
BRISTOL 1980	12.93	11.00	0.74	6.98	0	0	1	1
BRISTOL 1981	13.74	12.82	0.97	8.38	0	0	1	1
BRISTOL 1982	15.44	6.28	0.22	6.72	-1	-1	1	1
BRISTOL 1983	14.53	4.11	0.13	8.00	-1	-1	1	1
BRISTOL 1984	12.69	16.82	0.82	17.38	0	0	1	1
BRISTOL 1985	11.26	9.40	0.35	9.85	-1	-1	1	1
BRISTOL 1986	16.60	6.90	0.30	6.46	-1	-1	1	1
BRISTOL 1987	18.40	5.97	0.40	5.65	-1	-1	1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	117.23	129.04	133.84	0	0	1	-1	1
BIDVEST 1981	143.02	160.05	169.64	0	1	1	0	1
BIDVEST 1982	130.48	145.39	152.84	0	1	1	0	1
BIDVEST 1983	102.20	111.30	113.47	0	0	1	-1	1
BIDVEST 1984	82.62	88.52	87.41	-1	1	1	-1	1
BIDVEST 1985	147.36	160.57	168.79	0	0	1	-1	1
BIDVEST 1986	169.19	184.85	196.21	0	0	1	-1	1
BIDVEST 1987	145.63	160.39	169.17	0	0	1	-2	1
BIDVEST 1988	109.00	120.86	124.93	0	1	1	0	1
BIDVEST 1989	139.90	158.80	168.95	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	86.32	86.62	83.26	-1	0	1	-2	1
BRICK CLAY 1984	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1985	134.93	141.25	145.14	0	0	1	-2	1
BRICK CLAY 1986	180.03	201.70	216.82	0	1	1	0	1
BRICK CLAY 1987	156.16	176.78	189.22	0	1	1	0	1
BRICK CLAY 1988	116.81	133.01	139.79	0	1	1	0	1
BRISTOL 1980	99.64	106.03	106.71	0	1	1	-1	0
BRISTOL 1981	111.07	119.46	122.12	0	1	1	0	1
BRISTOL 1982	130.25	140.21	145.35	0	0	1	-1	1
BRISTOL 1983	120.46	129.81	133.78	0	0	1	-1	1
BRISTOL 1984	107.47	119.49	123.50	0	1	1	0	1
BRISTOL 1985	82.03	87.60	86.28	-1	1	1	-1	1
BRISTOL 1986	144.32	155.85	163.01	0	0	1	-1	1
BRISTOL 1987	165.71	179.44	189.59	0	0	1	-1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1980	1
BIDVEST 1981	1
BIDVEST 1982	1
BIDVEST 1983	1
BIDVEST 1984	1
BIDVEST 1985	1
BIDVEST 1986	1
BIDVEST 1987	1
BIDVEST 1988	1
BIDVEST 1989	1
BRICK CLAY 1980	no data
BRICK CLAY 1981	no data
BRICK CLAY 1982	no data
BRICK CLAY 1983	1
BRICK CLAY 1984	no data
BRICK CLAY 1985	1
BRICK CLAY 1986	1
BRICK CLAY 1987	1
BRICK CLAY 1988	1
BRISTOL 1980	1
BRISTOL 1981	1
BRISTOL 1982	1
BRISTOL 1983	1
BRISTOL 1984	1
BRISTOL 1985	1
BRISTOL 1986	1
BRISTOL 1987	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
BRISTOL 1988	16.13	7.37	0.57	5.42	-1	0	0	1
BRISTOL 1989	12.88	16.89	0.95	7.61	0	0	1	1
DRG 1980	13.74	21.62	1.12	15.85	no data	no data	no data	no data
DRG 1981	15.44	9.52	0.34	8.36	no data	no data	no data	no data
DRG 1982	14.53	-0.49	-0.01	5.42	-2	-2	1	1
H PARKER 1980	12.93	14.73	0.41	10.91	-1	-1	1	1
H PARKER 1981	13.74	17.42	0.67	12.05	0	0	1	1
H PARKER 1982	15.44	4.95	0.14	10.75	-1	-1	1	1
IL BACK 1980	12.93	-23.81	-1.04	-6.76	-2	-2	1	1
IL BACK 1981	13.74	-58.76	-1.18	-8.60	-2	-2	1	1
IL BACK 1982	15.44	-11.88	-0.76	7.34	-2	-2	1	1
KTL 1980	13.74	34.53	1.76	18.66	0	0	1	1
KTL 1981	15.44	30.55	0.94	16.09	0	0	1	1
KTL 1982	14.53	27.79	0.61	19.93	0	0	1	1
KTL 1983	12.69	29.17	0.76	15.25	0	0	1	1
KTL 1984	11.26	20.62	0.52	12.92	-1	0	0	1
KTL 1985	16.60	10.94	0.25	10.14	-1	-1	1	1
KTL 1986	18.40	5.07	0.17	6.55	-1	-1	1	1
KTL 1987	16.13	17.89	0.74	7.37	-1	0	0	1
KTL 1988	12.88	28.49	0.66	16.30	0	0	1	1
KTL 1989	14.77	35.98	0.55	15.53	0	0	1	1
OMNIA 1980	13.74	26.23	0.60	8.80	0	0	1	1
OMNIA 1981	15.44	71.07	1.29	20.73	0	0	1	1
OMNIA 1982	14.53	36.47	0.42	9.38	0	-1	0	1
OMNIA 1983	12.69	21.36	0.18	4.42	0	-1	0	1
OMNIA 1984	11.26	-1.32	-0.01	8.72	-2	-2	1	1
OMNIA 1985	16.60	5.50	0.05	9.21	-1	-1	1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	137.45	147.68	153.61	0	0	1	-1	1
BRISTOL 1989	99.64	106.32	107.13	0	1	1	0	1
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	117.79	125.66	128.69	0	0	1	-2	1
H PARKER 1980	103.71	112.36	114.46	0	0	1	0	0
H PARKER 1981	114.88	125.39	129.37	0	1	1	0	1
H PARKER 1982	134.43	146.71	153.30	0	0	1	-1	1
IL BACK 1980	85.38	83.85	79.57	-2	1	1	-2	1
IL BACK 1981	93.45	92.07	88.60	-2	1	1	-2	1
IL BACK 1982	130.90	141.20	146.57	0	0	1	-2	1
KTL 1980	121.74	136.05	142.42	0	1	1	0	1
KTL 1981	139.98	155.33	163.86	0	1	1	0	1
KTL 1982	132.85	149.07	157.35	0	1	1	0	1
KTL 1983	105.26	116.05	119.28	0	1	1	0	1
KTL 1984	85.22	92.55	92.35	-1	1	1	0	0
KTL 1985	148.14	161.79	170.28	0	0	1	-1	1
KTL 1986	166.65	180.90	191.37	0	0	1	-1	1
KTL 1987	139.47	150.82	157.45	0	0	1	0	0
KTL 1988	108.66	120.34	124.29	0	1	1	0	1
KTL 1989	131.13	145.16	152.27	0	1	1	0	1
OMNIA 1980	111.51	120.15	122.96	0	1	1	0	1
OMNIA 1981	144.79	162.81	173.01	0	1	1	0	1
OMNIA 1982	121.90	132.05	136.51	0	1	1	0	1
OMNIA 1983	94.02	98.58	97.90	-1	0	1	0	1
OMNIA 1984	80.86	85.78	84.05	-1	0	1	-2	1
OMNIA 1985	147.18	160.29	168.45	0	0	1	-1	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BRISTOL 1988	1
BRISTOL 1989	1
DRG 1980	no data
DRG 1981	no data
DRG 1982	1
H PARKER 1980	1
H PARKER 1981	1
H PARKER 1982	1
IL BACK 1980	1
IL BACK 1981	1
IL BACK 1982	1
KTL 1980	1
KTL 1981	1
KTL 1982	1
KTL 1983	1
KTL 1984	1
KTL 1985	1
KTL 1986	1
KTL 1987	1
KTL 1988	1
KTL 1989	1
OMNIA 1980	1
OMNIA 1981	1
OMNIA 1982	1
OMNIA 1983	1
OMNIA 1984	1
OMNIA 1985	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
OMNIA 1986	18.40	6.63	0.13	8.81	-1	-1	1	1
OMNIA 1987	16.13	21.21	0.38	8.51	0	-1	0	1
OMNIA 1988	12.88	25.91	0.55	14.36	0	0	1	1
OMNIA 1989	14.77	33.59	0.59	20.46	0	0	1	1
ROMATEX 1980	12.93	22.63	1.30	18.80	0	0	1	1
ROMATEX 1981	13.74	27.33	1.70	24.84	0	0	1	1
ROMATEX 1982	15.44	20.64	0.99	20.39	0	0	1	1
ROMATEX 1983	14.53	12.91	0.45	13.94	-1	-1	1	1
ROMATEX 1984	12.69	14.51	0.56	13.43	-1	0	0	1
ROMATEX 1985	11.26	1.71	0.05	7.12	-1	-1	1	1
ROMATEX 1986	16.60	9.99	0.29	10.08	-1	-1	1	1
ROMATEX 1987	18.40	13.97	0.63	15.67	-1	0	0	1
ROMATEX 1988	16.13	18.00	0.90	20.22	0	0	1	1
ROMATEX 1989	12.88	17.12	0.70	17.22	0	0	1	1
TRIOMF 1980	13.74	41.44	1.29	15.51	0	0	1	1
TRIOMF 1981	15.44	15.27	0.70	12.60	-1	0	0	1
TRIOMF 1982	14.53	0.23	0.01	6.34	-1	-1	1	1
TRIOMF 1983	12.69	-0.76	-0.03	1.66	-2	-2	1	1
TRIOMF 1984	11.26	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	16.60	-40.43	-0.21	0.88	-2	-2	1	1
TRIOMF 1986	18.40	-39.92	-2.01	-5.98	-2	-2	1	1
TRIOMF 1987	16.13	-0.36	-0.02	0.86	-2	-2	1	1
TUCKERS 1980	13.74	4.36	0.39	4.33	-1	-1	1	1
TUCKERS 1981	15.44	7.91	0.40	5.65	-1	-1	1	1
TUCKERS 1982	14.53	18.54	0.48	10.88	0	-1	0	1
Sub-Total 1980s							61	72
Predictive Accuracy							84.7%	

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1986	169.00	184.56	195.85	0	0	1	-1	1
OMNIA 1987	140.65	152.66	159.71	0	1	1	0	1
OMNIA 1988	106.65	117.21	120.47	0	1	1	0	1
OMNIA 1989	136.24	153.12	162.00	0	1	1	0	1
ROMATEX 1980	111.90	125.10	130.04	0	1	1	0	1
ROMATEX 1981	128.15	146.03	154.63	0	1	1	0	1
ROMATEX 1982	144.45	162.28	172.35	0	1	1	0	1
ROMATEX 1983	126.64	139.41	145.53	0	0	1	0	0
ROMATEX 1984	103.36	113.11	115.68	0	0	1	0	0
ROMATEX 1985	79.20	83.19	80.89	-1	1	1	-1	1
ROMATEX 1986	148.08	161.69	170.17	0	0	1	-1	1
ROMATEX 1987	176.12	195.63	209.39	0	0	1	0	0
ROMATEX 1988	152.81	171.57	182.84	0	1	1	0	1
ROMATEX 1989	109.63	121.84	126.12	0	1	1	0	1
TRIOMF 1980	118.47	130.98	136.21	0	1	1	0	1
TRIOMF 1981	136.36	149.70	156.97	0	0	1	0	0
TRIOMF 1982	118.74	127.14	130.50	0	0	1	-2	0
TRIOMF 1983	91.14	94.11	92.43	-1	0	1	-2	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	138.53	146.83	151.98	0	0	1	-2	1
TRIOMF 1986	153.64	160.67	166.62	0	0	1	-2	1
TRIOMF 1987	132.71	140.31	144.60	0	0	1	-2	1
TUCKERS 1980	106.87	112.93	114.13	0	0	1	-1	1
TUCKERS 1981	129.14	138.48	143.23	0	0	1	-1	1
TUCKERS 1982	123.45	134.46	139.47	0	1	1	0	1
Sub-Total 1980s					37	72		63
Predictive Accuracy					51.4%			87.5%

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1986	1
OMNIA 1987	1
OMNIA 1988	1
OMNIA 1989	1
ROMATEX 1980	1
ROMATEX 1981	1
ROMATEX 1982	1
ROMATEX 1983	1
ROMATEX 1984	1
ROMATEX 1985	1
ROMATEX 1986	1
ROMATEX 1987	1
ROMATEX 1988	1
ROMATEX 1989	1
TRIOMF 1980	1
TRIOMF 1981	1
TRIOMF 1982	1
TRIOMF 1983	1
TRIOMF 1984	no data
TRIOMF 1985	1
TRIOMF 1986	1
TRIOMF 1987	1
TUCKERS 1980	1
TUCKERS 1981	1
TUCKERS 1982	1
Sub-Total 1980s	72
Predictive Accuracy	

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
BIDVEST 1990	14.23	33.80	0.65	29.24	0	0	1	1
BIDVEST 1991	15.36	36.49	0.32	13.75	0	-1	0	1
BIDVEST 1992	13.91	49.16	0.51	18.48	0	0	1	1
BIDVEST 1993	9.74	15.33	0.38	11.05	0	-1	0	1
BIDVEST 1994	8.88	25.60	0.62	15.85	0	0	1	1
BIDVEST 1995	8.70	28.20	0.61	17.28	0	0	1	1
BIDVEST 1996	7.40	27.57	0.58	16.19	0	0	1	1
BIDVEST 1997	8.57	14.68	0.37	10.86	0	-1	0	1
BIDVEST 1998	6.86	16.30	0.50	14.40	0	0	1	1
BRISTOL 1990	14.77	6.41	0.29	10.78	-1	-1	1	1
BRISTOL 1991	14.23	7.41	0.31	13.23	-1	-1	1	1
BRISTOL 1992	15.36	7.85	0.36	10.52	-1	-1	1	1
BRISTOL 1993	13.91	6.51	0.33	7.80	-1	-1	1	1
BRISTOL 1994	9.74	5.61	0.32	7.83	-1	-1	1	1
KTL 1990	14.23	94.62	0.39	19.06	0	-1	0	1
KTL 1991	15.36	15.79	0.20	15.37	-1	-1	1	1
KTL 1992	13.91	0.70	0.01	7.01	-1	-1	1	1
KTL 1993	9.74	28.72	0.36	9.92	-1	-1	1	1
KTL 1994	8.88	47.63	0.65	11.55	0	0	1	1
KTL 1995	8.70	39.09	0.50	12.05	0	0	1	1
KTL 1996	7.40	69.07	0.85	9.77	0	0	1	1
KTL 1997	8.57	41.19	0.34	10.36	-1	-1	1	1
KTL 1998	6.86	36.23	1.49	37.42	-1	0	0	1
KTL 1999	5.22	52.54	2.55	48.81	-1	0	0	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1990	138.75	159.89	170.97	0	1	1	0	1
BIDVEST 1991	136.60	150.48	158.02	0	1	1	0	1
BIDVEST 1992	123.58	138.04	144.64	0	1	1	0	1
BIDVEST 1993	64.53	68.53	64.88	-1	0	1	0	1
BIDVEST 1994	58.84	64.33	60.84	-1	0	1	0	1
BIDVEST 1995	58.11	64.16	60.86	-1	0	1	0	1
BIDVEST 1996	41.01	44.50	38.46	-1	0	1	0	1
BIDVEST 1997	49.85	52.00	46.15	-1	0	1	0	1
BIDVEST 1998	32.51	34.17	26.50	-1	0	1	0	1
BRISTOL 1990	126.19	137.49	142.87	0	0	1	-1	1
BRISTOL 1991	122.14	134.05	139.35	0	0	1	-1	1
BRISTOL 1992	133.23	145.26	151.63	0	0	1	-1	1
BRISTOL 1993	112.50	120.80	123.55	0	0	1	-1	1
BRISTOL 1994	61.18	63.34	58.52	-1	1	1	-1	1
KTL 1990	128.19	143.46	150.87	0	1	1	0	1
KTL 1991	138.27	153.09	161.21	0	0	1	0	0
KTL 1992	111.68	119.52	121.99	0	0	1	-2	0
KTL 1993	63.35	66.70	62.64	-1	1	1	0	0
KTL 1994	54.38	57.40	52.36	-1	0	1	0	1
KTL 1995	52.68	55.71	50.52	-1	0	1	0	1
KTL 1996	34.34	34.14	25.77	-2	0	1	0	1
KTL 1997	49.33	51.19	45.16	-1	1	1	0	0
KTL 1998	56.40	71.32	71.96	0	0	1	0	0
KTL 1999	47.95	67.00	68.76	0	0	1	0	0

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1990	1
BIDVEST 1991	1
BIDVEST 1992	1
BIDVEST 1993	1
BIDVEST 1994	1
BIDVEST 1995	1
BIDVEST 1996	1
BIDVEST 1997	1
BIDVEST 1998	1
BRISTOL 1990	1
BRISTOL 1991	1
BRISTOL 1992	1
BRISTOL 1993	1
BRISTOL 1994	1
KTL 1990	1
KTL 1991	1
KTL 1992	1
KTL 1993	1
KTL 1994	1
KTL 1995	1
KTL 1996	1
KTL 1997	1
KTL 1998	1
KTL 1999	1

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point 12.31 0.49
 Lower Cut-off point 1.59 0

Company & year	Data					Yn Naive Model		
	CPI%	PAT/SHE	SVA	TEBIT/TA	5Year n	Pred State	# Correct	Sample Size
OMNIA 1990	14.23	24.90	0.45	17.36	0	-1	0	1
OMNIA 1991	15.36	21.66	0.39	17.27	0	-1	0	1
OMNIA 1992	13.91	13.51	0.24	13.48	-1	-1	1	1
OMNIA 1993	9.74	25.46	0.60	19.74	0	0	1	1
OMNIA 1994	8.88	23.75	0.54	14.90	-1	0	0	1
OMNIA 1995	8.70	22.34	0.39	13.57	-1	-1	1	1
OMNIA 1996	7.40	29.14	0.47	16.49	0	-1	0	1
OMNIA 1997	8.57	28.50	0.57	18.12	0	0	1	1
OMNIA 1998	6.86	21.21	0.35	15.38	0	-1	0	1
ROMATEX 1990	14.77	12.30	0.38	11.97	-1	-1	1	1
ROMATEX 1991	14.23	0.51	0.01	7.84	-1	-1	1	1
ROMATEX 1992	15.36	4.12	0.13	7.69	-1	-1	1	1
ROMATEX 1993	13.91	10.76	0.38	11.06	-1	-1	1	1
ROMATEX 1994	9.74	11.62	0.49	13.41	-1	0	0	1
ROMATEX 1995	8.88	9.71	0.44	9.89	-1	-1	1	1
ROMATEX 1996	8.70	0.36	0.01	0.49	-1	-1	1	1
ROMATEX 1997	7.40	-14.73	-0.53	-6.17	-2	-2	1	1
ROMATEX 1998	8.57	2.10	0.08	1.96	-1	-1	1	1

Sub-Total 1990s							30	42
Predictive Accuracy							71.4%	
Grand Total							161	198
Predictive Accuracy							81.3%	

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn Fisher Discriminant Analysis						Yn CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1990	126.43	140.72	147.51	0	1	1	0	1
OMNIA 1991	140.25	156.16	164.97	0	1	1	0	1
OMNIA 1992	118.39	129.97	134.77	0	0	1	0	0
OMNIA 1993	73.55	82.56	82.05	-1	0	1	0	1
OMNIA 1994	57.86	62.81	58.98	-1	1	1	0	0
OMNIA 1995	54.26	58.17	53.53	-1	1	1	0	0
OMNIA 1996	41.31	44.98	39.04	-1	0	1	0	1
OMNIA 1997	57.39	63.72	60.49	-1	0	1	0	1
OMNIA 1998	33.52	35.75	28.43	-1	0	1	0	1
ROMATEX 1990	127.42	139.40	145.22	0	0	1	-1	1
ROMATEX 1991	116.55	125.36	128.72	0	0	1	-2	0
ROMATEX 1992	130.30	140.70	146.05	0	0	1	-1	1
ROMATEX 1993	115.89	126.07	130.00	0	0	1	-1	1
ROMATEX 1994	66.97	72.34	69.54	-1	1	1	-1	1
ROMATEX 1995	52.66	54.72	49.08	-1	1	1	-1	1
ROMATEX 1996	40.68	37.06	27.70	-2	0	1	-2	0
ROMATEX 1997	17.80	8.42	-5.70	-2	1	1	-2	1
ROMATEX 1998	40.61	37.64	28.58	-2	0	1	-1	1
Sub-Total 1990s					14	42		31
Predictive Accuracy					33.3%			73.8%
Grand Total					104	198		166
Predictive Accuracy					52.5%			83.8%

APPENDIX G2 : 5 Year n Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1990	1
OMNIA 1991	1
OMNIA 1992	1
OMNIA 1993	1
OMNIA 1994	1
OMNIA 1995	1
OMNIA 1996	1
OMNIA 1997	1
OMNIA 1998	1
ROMATEX 1990	1
ROMATEX 1991	1
ROMATEX 1992	1
ROMATEX 1993	1
ROMATEX 1994	1
ROMATEX 1995	1
ROMATEX 1996	1
ROMATEX 1997	1
ROMATEX 1998	1
Sub-Total 1990s	42
Predictive Accuracy	
Grand Total	198
Predictive Accuracy	

APPENDIX H1 : 5 Year n-1 Models (Test Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
A&P 1977	0	0.42	0.89	0.03	-1	-1	1	1
AVBAK 1978	0	4.75	18.33	0.39	0	-1	0	1
BERZACK 1977	0	7.75	14.24	0.62	0	0	1	1
BROMAIN 1976	0	3.20	4.87	0.27	-1	-1	1	1
BTR 1978	0	9.32	16.64	0.77	0	0	1	1
CHEMSERVE 1978	0	7.01	11.01	0.58	0	0	1	1
COATES 1975	0	11.04	22.47	0.94	0	0	1	1
DESIREE 1976	0	7.89	12.40	0.64	0	0	1	1
DUBIN 1975	0	13.49	23.00	1.14	0	0	1	1
FINTECH 1976	0	9.12	15.70	0.74	0	0	1	1
FOWLER 1978	1	-47.44	-43.94	-3.91	-2	-2	1	1
FRASERS 1976	0	12.36	24.51	1.01	0	0	1	1
GLEN ANIL 1975	0	4.02	8.29	0.34	-1	-1	1	1
HANHILL 1975	0	4.57	6.28	0.39	-1	-1	1	1
HEPWORTHS 1978	0	-6.60	-12.96	-0.53	-2	-2	1	1
LAWSON 1975	0	-5.78	-8.51	-0.49	-2	-2	1	1
LTA 1976	0	7.06	10.34	0.60	0	0	1	1
LUCYS 1974	0	-7.88	-10.07	-0.77	-2	-2	1	1
MARSHALL 1976	0	1.04	1.96	0.08	-1	-1	1	1
SIMBA 1972	0	-3.78	-5.17	-0.43	-2	-2	1	1

Total							19	20
Predictive Accuracy							95%	

APPENDIX H1 : 5 Year n-1 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
A&P 1977	-4.32	-1.27	-8.24	-1	1	1	-2	0
AVBAK 1978	-13.30	2.15	8.27	0	1	1	0	1
BERZACK 1977	-11.20	1.35	4.40	0	1	1	0	1
BROMAIN 1976	-6.37	-0.49	-4.47	-1	1	1	-1	1
BTR 1978	-12.43	1.82	6.67	0	1	1	0	1
CHEMSERVE 1978	-9.53	0.72	1.35	0	1	1	0	1
COATES 1975	-15.44	2.96	12.20	0	1	1	0	1
DESIREE 1976	-10.25	0.99	2.66	0	1	1	0	1
DUBIN 1975	-15.71	3.07	12.70	0	1	1	0	1
FINTECH 1976	-11.95	1.64	5.79	0	1	1	0	1
FOWLER 1978	4.85	-3.23	-17.78	-2	1	1	-2	1
FRASERS 1976	-16.48	3.36	14.13	0	1	1	0	1
GLEN ANIL 1975	-8.13	0.18	-1.23	-1	1	1	-1	1
HANHILL 1975	-7.09	-0.21	-3.14	-1	1	1	-1	1
HEPWORTHS 1978	2.81	-3.98	-21.35	-2	1	1	-2	1
LAWSON 1975	0.52	-3.11	-17.14	-2	1	1	-2	1
LTA 1976	-9.19	0.59	0.71	0	1	1	0	1
LUCYS 1974	1.33	-3.42	-18.62	-2	1	1	-2	1
MARSHALL 1976	-4.87	-1.06	-7.23	-1	1	1	-1	1
SIMBA 1972	-1.20	-2.46	-13.98	-2	1	1	-2	1
Total					20	20		19
Predictive Accuracy					100%			95%

APPENDIX H1 : 5 Year n-1 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
A&P 1977	1
AVBAK 1978	1
BERZACK 1977	1
BROMAIN 1976	1
BTR 1978	1
CHEMSERVE 1978	1
COATES 1975	1
DESIREE 1976	1
DUBIN 1975	1
FINTECH 1976	1
FOWLER 1978	1
FRASERS 1976	1
GLEN ANIL 1975	1
HANHILL 1975	1
HEPWORTHS 1978	1
LAWSON 1975	1
LTA 1976	1
LUCYS 1974	1
MARSHALL 1976	1
SIMBA 1972	1

Total 20

Predictive Accuracy

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	0	2.77	4.57	0.34	-2	-1	0	1
BACKCLOTHING 1971	0	-0.99	-1.51	-0.11	-2	-2	1	1
BACKCLOTHING 1972	0	-9.73	-12.35	-1.11	-2	-2	1	1
BACKCLOTHING 1973	0	-10.82	-12.32	-1.35	-2	-2	1	1
BACKCLOTHING 1974	1	-14.13	-13.62	-1.39	no data	no data	no data	no data
BIDVEST 1970	0	7.43	12.57	0.91	no data	no data	no data	no data
BIDVEST 1971	0	4.46	7.80	0.50	no data	no data	no data	no data
BIDVEST 1972	0	5.05	9.20	0.57	no data	no data	no data	no data
BIDVEST 1973	0	5.36	12.10	0.67	no data	no data	no data	no data
BIDVEST 1974	0	5.89	13.12	0.58	0	0	1	1
BIDVEST 1975	0	6.80	14.83	0.58	0	0	1	1
BIDVEST 1976	0	6.87	14.78	0.56	-1	-1	1	1
BIDVEST 1977	0	4.43	10.07	0.35	-1	-1	1	1
BIDVEST 1978	0	6.50	16.58	0.54	-1	-1	1	1
BIDVEST 1979	0	4.83	12.20	0.48	-1	-1	1	1
BRICK CLAY 1970	0	4.68	13.34	0.57	-2	0	0	1
BRICK CLAY 1971	0	-5.90	-11.77	-0.67	no data	no data	no data	no data
BRICK CLAY 1972	0	0.21	0.50	0.02	no data	no data	no data	no data
BRICK CLAY 1973	0	6.67	14.81	0.83	no data	no data	no data	no data
BRICK CLAY 1974	0	4.21	9.50	0.41	0	-1	0	1
BRICK CLAY 1975	0	8.18	16.40	0.69	0	0	1	1
BRICK CLAY 1976	0	7.97	15.47	0.65	-1	0	0	1
BRICK CLAY 1977	0	4.95	9.46	0.40	-1	-1	1	1
BRICK CLAY 1978	0	3.09	5.25	0.25	-1	-1	1	1
BRICK CLAY 1979	0	4.30	7.35	0.43	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	-6.21	-0.55	-4.76	-1	0	1	-1	0
BACKCLOTHING 1971	-3.09	-1.74	-10.51	-1	0	1	-2	1
BACKCLOTHING 1972	2.50	-3.86	-20.78	-2	1	1	-2	1
BACKCLOTHING 1973	2.48	-3.86	-20.75	-2	1	1	-2	1
BACKCLOTHING 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1974	-10.62	1.13	3.35	0	1	1	0	1
BIDVEST 1975	-11.50	1.46	4.96	0	1	1	0	1
BIDVEST 1976	-11.48	1.46	4.92	0	0	1	0	0
BIDVEST 1977	-9.05	0.53	0.46	-1	1	1	-1	1
BIDVEST 1978	-12.40	1.81	6.61	0	0	1	0	0
BIDVEST 1979	-10.14	0.95	2.47	0	0	1	0	0
BRICK CLAY 1970	-10.73	1.17	3.55	0	0	1	0	0
BRICK CLAY 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1974	-8.75	0.42	-0.09	-1	0	1	-1	0
BRICK CLAY 1975	-12.31	1.77	6.45	0	1	1	0	1
BRICK CLAY 1976	-11.83	1.59	5.56	0	0	1	0	0
BRICK CLAY 1977	-8.74	0.41	-0.12	-1	1	1	0	0
BRICK CLAY 1978	-6.56	-0.41	-4.11	-1	1	1	-1	1
BRICK CLAY 1979	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BACKCLOTHING 1970	1
BACKCLOTHING 1971	1
BACKCLOTHING 1972	1
BACKCLOTHING 1973	1
BACKCLOTHING 1974	no data
BIDVEST 1970	no data
BIDVEST 1971	no data
BIDVEST 1972	no data
BIDVEST 1973	no data
BIDVEST 1974	1
BIDVEST 1975	1
BIDVEST 1976	1
BIDVEST 1977	1
BIDVEST 1978	1
BIDVEST 1979	1
BRICK CLAY 1970	1
BRICK CLAY 1971	no data
BRICK CLAY 1972	no data
BRICK CLAY 1973	no data
BRICK CLAY 1974	1
BRICK CLAY 1975	1
BRICK CLAY 1976	1
BRICK CLAY 1977	1
BRICK CLAY 1978	1
BRICK CLAY 1979	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
BRISTOL 1970	0	4.80	9.97	0.60	no data	no data	no data	no data
BRISTOL 1971	0	3.91	8.55	0.48	-2	-1	0	1
BRISTOL 1972	0	-2.25	-3.35	-0.25	no data	no data	no data	no data
BRISTOL 1973	0	2.11	3.27	0.24	no data	no data	no data	no data
BRISTOL 1974	0	3.26	5.90	0.41	-1	-1	1	1
BRISTOL 1975	0	2.94	5.69	0.29	0	-1	0	1
BRISTOL 1976	0	2.96	6.49	0.25	0	-1	0	1
BRISTOL 1977	0	2.46	5.36	0.20	-1	-1	1	1
BRISTOL 1978	0	3.42	7.65	0.27	-1	-1	1	1
BRISTOL 1979	0	2.43	5.30	0.20	0	-1	0	1
BURHOSE 1970	0	13.18	32.43	1.61	no data	no data	no data	no data
BURHOSE 1971	0	15.98	45.15	1.81	no data	no data	no data	no data
BURHOSE 1972	0	8.42	21.45	0.96	no data	no data	no data	no data
BURHOSE 1973	0	0.23	0.63	0.03	no data	no data	no data	no data
BURHOSE 1974	0	5.33	14.40	0.52	0	-1	0	1
BURHOSE 1975	0	15.29	36.64	1.30	-1	0	0	1
BURHOSE 1976	0	8.05	22.10	0.66	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	0	2.42	4.33	0.20	no data	no data	no data	no data
BURHOSE 1979	0	9.83	15.33	0.98	no data	no data	no data	no data
CONJERS 1970	0	7.11	11.21	0.87	no data	no data	no data	no data
CONJERS 1971	0	8.38	14.54	0.95	no data	no data	no data	no data
CONJERS 1972	0	7.79	14.19	0.89	-2	0	0	1
CONJERS 1973	0	-0.94	-1.58	-0.12	no data	no data	no data	no data
CONJERS 1974	0	6.94	14.38	0.68	-2	0	0	1
CONJERS 1975	0	-12.08	-24.24	-1.02	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	-8.27	0.23	-0.98	-1	0	1	-1	0
BRISTOL 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1974	-6.90	-0.29	-3.49	-1	1	1	-1	1
BRISTOL 1975	-6.79	-0.33	-3.69	-1	0	1	-1	0
BRISTOL 1976	-7.21	-0.17	-2.93	-1	0	1	-1	0
BRISTOL 1977	-6.62	-0.39	-4.01	-1	1	1	-1	1
BRISTOL 1978	-7.80	0.06	-1.84	-1	1	1	-1	1
BRISTOL 1979	-6.59	-0.40	-4.06	-1	0	1	-1	0
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1974	-11.28	1.38	4.56	0	1	1	0	1
BURHOSE 1975	-22.73	5.74	25.62	0	0	1	0	0
BURHOSE 1976	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	-11.17	1.34	4.35	0	0	1	0	0
CONJERS 1973	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1974	-11.27	1.38	4.53	0	0	1	0	0
CONJERS 1975	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BRISTOL 1970	no data
BRISTOL 1971	1
BRISTOL 1972	no data
BRISTOL 1973	no data
BRISTOL 1974	1
BRISTOL 1975	1
BRISTOL 1976	1
BRISTOL 1977	1
BRISTOL 1978	1
BRISTOL 1979	1
BURHOSE 1970	no data
BURHOSE 1971	no data
BURHOSE 1972	no data
BURHOSE 1973	no data
BURHOSE 1974	1
BURHOSE 1975	1
BURHOSE 1976	no data
BURHOSE 1977	no data
BURHOSE 1978	no data
BURHOSE 1979	no data
CONJERS 1970	no data
CONJERS 1971	no data
CONJERS 1972	1
CONJERS 1973	no data
CONJERS 1974	1
CONJERS 1975	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
DRG 1978	0	12.98	36.56	1.07	no data	no data	no data	no data
DRG 1979	0	10.82	26.41	1.08	no data	no data	no data	no data
FAIRWEATHER 1970	0	9.02	14.27	1.11	no data	no data	no data	no data
FAIRWEATHER 1971	0	5.98	10.07	0.68	-2	0	0	1
FAIRWEATHER 1972	0	-1.76	-1.93	-0.20	no data	no data	no data	no data
FAIRWEATHER 1973	0	4.53	6.61	0.57	-2	-1	0	1
FAIRWEATHER 1974	0	-3.33	-4.82	-0.33	0	-2	0	1
FAIRWEATHER 1975	0	4.96	8.08	0.42	-2	-1	0	1
FAIRWEATHER 1976	0	-9.68	-13.89	-0.79	no data	no data	no data	no data
H PARKER 1970	0	4.62	5.09	0.58	no data	no data	no data	no data
H PARKER 1971	0	0.92	1.03	0.11	-2	-1	0	1
H PARKER 1972	0	-7.70	-8.55	-0.87	-2	-2	1	1
H PARKER 1973	0	-13.41	-17.26	-1.52	no data	no data	no data	no data
H PARKER 1974	0	11.75	16.96	1.47	0	0	1	1
H PARKER 1975	0	7.40	10.93	0.73	0	0	1	1
H PARKER 1976	0	0.71	0.89	0.06	0	-1	0	1
H PARKER 1977	0	5.74	7.75	0.47	-1	-1	1	1
H PARKER 1978	0	1.77	2.31	0.14	0	-1	0	1
H PARKER 1979	0	10.61	14.18	0.87	-1	0	0	1
IL BACK 1970	0	3.89	7.94	0.49	no data	no data	no data	no data
IL BACK 1971	0	0.45	1.11	0.06	-2	-1	0	1
IL BACK 1972	0	-8.38	-15.94	-0.95	-2	-2	1	1
IL BACK 1973	0	-5.20	-8.89	-0.59	-2	-2	1	1
IL BACK 1974	0	-11.53	-15.48	-1.44	0	-2	0	1
IL BACK 1975	0	3.74	5.59	0.37	no data	no data	no data	no data
IL BACK 1976	no data	no data	no data	no data	-2	no data	no data	no data
IL BACK 1977	0	-9.38	-11.74	-0.77	-2	-2	1	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	-9.05	0.53	0.46	-1	0	1	0	0
FAIRWEATHER 1972	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1973	-7.27	-0.15	-2.82	-1	0	1	-1	0
FAIRWEATHER 1974	-1.38	-2.39	-13.65	-2	0	1	-2	0
FAIRWEATHER 1975	-8.02	0.14	-1.43	-1	0	1	0	0
FAIRWEATHER 1976	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	-4.39	-1.24	-8.10	-1	0	1	-1	0
H PARKER 1972	0.54	-3.12	-17.18	-2	1	1	-2	1
H PARKER 1973	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1974	-12.60	1.88	6.98	0	1	1	0	1
H PARKER 1975	-9.49	0.70	1.27	0	1	1	0	1
H PARKER 1976	-4.32	-1.27	-8.24	-1	0	1	-1	0
H PARKER 1977	-7.85	0.08	-1.74	-1	1	1	0	0
H PARKER 1978	-5.05	-0.99	-6.90	-1	0	1	-1	0
H PARKER 1979	-11.17	1.34	4.35	0	0	1	0	0
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	-4.44	-1.22	-8.03	-1	0	1	-1	0
IL BACK 1972	4.35	-4.57	-24.18	-2	1	1	-2	1
IL BACK 1973	0.72	-3.18	-17.50	-2	1	1	-2	1
IL BACK 1974	4.11	-4.48	-23.74	-2	0	1	-2	0
IL BACK 1975	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	2.18	-3.74	-20.20	-2	1	1	-2	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
DRG 1978	no data
DRG 1979	no data
FAIRWEATHER 1970	no data
FAIRWEATHER 1971	1
FAIRWEATHER 1972	no data
FAIRWEATHER 1973	1
FAIRWEATHER 1974	1
FAIRWEATHER 1975	1
FAIRWEATHER 1976	no data
H PARKER 1970	no data
H PARKER 1971	1
H PARKER 1972	1
H PARKER 1973	no data
H PARKER 1974	1
H PARKER 1975	1
H PARKER 1976	1
H PARKER 1977	1
H PARKER 1978	1
H PARKER 1979	1
IL BACK 1970	no data
IL BACK 1971	1
IL BACK 1972	1
IL BACK 1973	1
IL BACK 1974	1
IL BACK 1975	no data
IL BACK 1976	no data
IL BACK 1977	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
IL BACK 1978	0	-24.40	-30.81	-1.95	-2	-2	1	1
IL BACK 1979	0	-9.43	-11.67	-0.78	-2	-2	1	1
KTL 1970	0	6.87	10.68	0.84	no data	no data	no data	no data
KTL 1971	0	5.88	8.51	0.67	no data	no data	no data	no data
KTL 1972	0	10.28	17.60	1.17	no data	no data	no data	no data
KTL 1973	0	16.61	30.89	2.08	no data	no data	no data	no data
KTL 1974	0	19.08	34.50	1.88	0	0	1	1
KTL 1975	0	16.21	29.23	1.37	0	0	1	1
KTL 1976	0	13.11	25.02	1.07	-1	0	0	1
KTL 1977	0	10.15	22.08	0.81	-1	0	0	1
KTL 1978	0	11.16	23.85	0.92	-1	0	0	1
KTL 1979	0	10.33	19.84	1.03	0	0	1	1
OMNIA 1970	0	10.93	26.62	1.34	no data	no data	no data	no data
OMNIA 1971	0	9.88	24.87	1.12	no data	no data	no data	no data
OMNIA 1972	0	10.31	28.70	1.17	no data	no data	no data	no data
OMNIA 1973	0	9.28	25.33	1.16	no data	no data	no data	no data
OMNIA 1974	0	9.14	20.74	0.90	0	0	1	1
OMNIA 1975	0	10.38	16.13	0.88	-2	0	0	1
OMNIA 1976	0	-2.22	-3.26	-0.18	-2	-2	1	1
OMNIA 1977	0	-11.43	-13.02	-0.91	-2	-2	1	1
OMNIA 1978	0	-7.44	-8.28	-0.61	-2	-2	1	1
OMNIA 1979	0	-0.40	-49.70	-0.04	0	-2	0	1
PAN 1970	0	9.65	26.09	1.18	no data	no data	no data	no data
PAN 1971	0	8.47	20.85	0.96	no data	no data	no data	no data
PAN 1972	0	0.65	1.29	0.07	-2	-1	0	1
PAN 1973	0	-7.93	-13.35	-0.99	-2	-2	1	1
PAN 1974	0	-3.87	-6.99	-0.38	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	12.01	-7.48	-38.26	-2	1	1	-2	1
IL BACK 1979	2.15	-3.73	-20.14	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1974	-21.63	5.32	23.59	0	1	1	0	1
KTL 1975	-18.92	4.29	18.60	0	1	1	0	1
KTL 1976	-16.75	3.46	14.61	0	0	1	0	0
KTL 1977	-15.23	2.89	11.83	0	0	1	0	0
KTL 1978	-16.14	3.23	13.50	0	0	1	0	0
KTL 1979	-14.08	2.45	9.71	0	1	1	0	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1974	-14.54	2.62	10.55	0	1	1	0	1
OMNIA 1975	-12.17	1.72	6.19	0	0	1	0	0
OMNIA 1976	-2.19	-2.08	-12.17	-1	0	1	-2	1
OMNIA 1977	2.84	-3.99	-21.42	-2	1	1	-2	1
OMNIA 1978	0.40	-3.06	-16.92	-2	1	1	-2	1
OMNIA 1979	21.73	-11.18	-56.15	-2	0	1	-2	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	-4.53	-1.19	-7.86	-1	0	1	-1	0
PAN 1973	3.01	-4.06	-21.73	-2	1	1	-2	1
PAN 1974	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
IL BACK 1978	1
IL BACK 1979	1
KTL 1970	no data
KTL 1971	no data
KTL 1972	no data
KTL 1973	no data
KTL 1974	1
KTL 1975	1
KTL 1976	1
KTL 1977	1
KTL 1978	1
KTL 1979	1
OMNIA 1970	no data
OMNIA 1971	no data
OMNIA 1972	no data
OMNIA 1973	no data
OMNIA 1974	1
OMNIA 1975	1
OMNIA 1976	1
OMNIA 1977	1
OMNIA 1978	1
OMNIA 1979	1
PAN 1970	no data
PAN 1971	no data
PAN 1972	1
PAN 1973	1
PAN 1974	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
PIONEER H 1973	0	3.80	8.14	0.48	no data	no data	no data	no data
PIONEER H 1974	0	5.19	15.18	0.51	no data	no data	no data	no data
PIONEER H 1975	0	6.84	22.00	0.58	no data	no data	no data	no data
PIONEER H 1976	0	4.53	15.00	0.37	no data	no data	no data	no data
PIONEER H 1977	0	4.84	18.28	0.39	-1	-1	1	1
PIONEER H 1978	0	5.30	20.74	0.44	-1	-1	1	1
PIONEER H 1979	0	7.07	27.41	0.71	no data	no data	no data	no data
ROMATEX 1970	0	2.00	5.49	0.25	no data	no data	no data	no data
ROMATEX 1971	0	2.68	6.74	0.33	no data	no data	no data	no data
ROMATEX 1972	0	2.77	6.55	0.31	no data	no data	no data	no data
ROMATEX 1973	0	3.71	8.90	0.42	no data	no data	no data	no data
ROMATEX 1974	0	7.50	16.12	0.94	-2	0	0	1
ROMATEX 1975	0	-9.60	-19.69	-0.94	0	-2	0	1
ROMATEX 1976	0	6.10	14.17	0.52	0	-1	0	1
ROMATEX 1977	0	7.38	20.21	0.60	0	0	1	1
ROMATEX 1978	0	9.10	27.92	0.73	0	0	1	1
ROMATEX 1979	0	10.29	33.57	0.85	0	0	1	1
SCHACHAT 1970	0	5.23	7.03	0.64	no data	no data	no data	no data
SCHACHAT 1971	0	6.54	9.20	0.74	no data	no data	no data	no data
SCHACHAT 1972	0	8.29	12.37	0.94	no data	no data	no data	no data
SCHACHAT 1973	0	6.25	8.78	0.78	no data	no data	no data	no data
SCHACHAT 1974	0	4.78	7.12	0.47	-1	-1	1	1
SCHACHAT 1975	0	5.20	8.29	0.44	-1	-1	1	1
SCHACHAT 1976	0	6.69	10.77	0.55	-1	-1	1	1
SCHACHAT 1977	0	3.96	6.83	0.32	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1977	-13.28	2.14	8.23	0	0	1	0	0
PIONEER H 1978	-14.54	2.62	10.56	0	0	1	0	0
PIONEER H 1979	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1974	-12.17	1.72	6.19	0	0	1	0	0
ROMATEX 1975	6.28	-5.30	-27.73	-2	0	1	-2	0
ROMATEX 1976	-11.16	1.33	4.33	0	1	1	0	1
ROMATEX 1977	-14.27	2.52	10.06	0	1	1	0	1
ROMATEX 1978	-18.24	4.03	17.36	0	1	1	0	1
ROMATEX 1979	-21.15	5.14	22.71	0	1	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1974	-7.53	-0.05	-2.34	-1	1	1	0	0
SCHACHAT 1975	-8.13	0.18	-1.23	-1	1	1	0	0
SCHACHAT 1976	-9.41	0.67	1.12	0	0	1	0	0
SCHACHAT 1977	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
PIONEER H 1973	no data
PIONEER H 1974	no data
PIONEER H 1975	no data
PIONEER H 1976	no data
PIONEER H 1977	1
PIONEER H 1978	1
PIONEER H 1979	no data
ROMATEX 1970	no data
ROMATEX 1971	no data
ROMATEX 1972	no data
ROMATEX 1973	no data
ROMATEX 1974	1
ROMATEX 1975	1
ROMATEX 1976	1
ROMATEX 1977	1
ROMATEX 1978	1
ROMATEX 1979	1
SCHACHAT 1970	no data
SCHACHAT 1971	no data
SCHACHAT 1972	no data
SCHACHAT 1973	no data
SCHACHAT 1974	1
SCHACHAT 1975	1
SCHACHAT 1976	1
SCHACHAT 1977	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
SPECTRO 1970	0	4.09	14.50	0.50	no data	no data	no data	no data
SPECTRO 1971	0	9.68	37.31	1.10	no data	no data	no data	no data
SPECTRO 1972	0	8.27	33.85	0.94	no data	no data	no data	no data
SPECTRO 1973	0	11.44	25.20	1.43	no data	no data	no data	no data
SPECTRO 1974	0	7.95	14.62	0.78	-2	0	0	1
SPECTRO 1975	0	-4.52	-7.73	-0.38	no data	no data	no data	no data
STUTTAFORDS 1970	0	7.41	34.55	0.93	no data	no data	no data	no data
STUTTAFORDS 1971	0	12.31	96.89	1.51	no data	no data	no data	no data
STUTTAFORDS 1972	0	3.54	26.71	0.40	no data	no data	no data	no data
STUTTAFORDS 1973	0	10.37	49.79	1.18	no data	no data	no data	no data
STUTTAFORDS 1974	0	4.35	21.21	0.54	-1	-1	1	1
STUTTAFORDS 1975	0	4.36	18.43	0.43	-1	-1	1	1
STUTTAFORDS 1976	0	3.76	15.78	0.32	-1	-1	1	1
STUTTAFORDS 1977	0	3.91	15.44	0.32	-1	-1	1	1
STUTTAFORDS 1978	0	3.07	10.81	0.25	no data	no data	no data	no data
TAPSA 1970	0	9.39	17.10	1.17	no data	no data	no data	no data
TAPSA 1971	0	6.65	10.41	0.81	no data	no data	no data	no data
TAPSA 1972	0	3.66	5.63	0.41	no data	no data	no data	no data
TAPSA 1973	0	3.53	4.95	0.40	-2	-1	0	1
TAPSA 1974	0	-7.83	-10.13	-0.98	-2	-2	1	1
TAPSA 1975	1	-38.69	-34.86	-3.81	no data	no data	no data	no data
TIGERIND 1970	0	0.87	1.22	0.11	-2	-1	0	1
TIGERIND 1971	0	-6.10	-9.03	-0.69	-2	-2	1	1
TIGERIND 1972	0	-23.19	-56.48	-2.64	no data	no data	no data	no data
TIGERIND 1973	0	0.17	0.25	0.02	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1974	-11.39	1.42	4.76	0	0	1	0	0
SPECTRO 1975	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1974	-14.78	2.71	11.00	0	0	1	-1	1
STUTTAFORDS 1975	-13.35	2.17	8.37	0	0	1	-1	1
STUTTAFORDS 1976	-11.99	1.65	5.86	0	0	1	-1	1
STUTTAFORDS 1977	-11.82	1.58	5.54	0	0	1	-1	1
STUTTAFORDS 1978	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	-6.41	-0.47	-4.40	-1	0	1	-1	0
TAPSA 1974	1.35	-3.43	-18.67	-2	1	1	-2	1
TAPSA 1975	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1970	-4.49	-1.20	-7.93	-1	0	1	-1	0
TIGERIND 1971	0.79	-3.21	-17.64	-2	1	1	-2	1
TIGERIND 1972	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
SPECTRO 1970	no data
SPECTRO 1971	no data
SPECTRO 1972	no data
SPECTRO 1973	no data
SPECTRO 1974	1
SPECTRO 1975	no data
STUTTAFORDS 1970	no data
STUTTAFORDS 1971	no data
STUTTAFORDS 1972	no data
STUTTAFORDS 1973	no data
STUTTAFORDS 1974	1
STUTTAFORDS 1975	1
STUTTAFORDS 1976	1
STUTTAFORDS 1977	1
STUTTAFORDS 1978	no data
TAPSA 1970	no data
TAPSA 1971	no data
TAPSA 1972	no data
TAPSA 1973	1
TAPSA 1974	1
TAPSA 1975	no data
TIGERIND 1970	1
TIGERIND 1971	1
TIGERIND 1972	no data
TIGERIND 1973	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point	4.57	0.57
Lower Cut-off point	0.42	0

	Data					Yn-1 Naive Model		
Company & year	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
TRIOMF 1970	0	4.85	8.39	0.59	no data	no data	no data	no data
TRIOMF 1971	0	5.92	8.04	0.67	no data	no data	no data	no data
TRIOMF 1972	0	12.82	17.85	1.46	no data	no data	no data	no data
TRIOMF 1973	0	12.35	17.03	1.54	no data	no data	no data	no data
TRIOMF 1974	0	11.56	15.20	1.14	0	0	1	1
TRIOMF 1975	0	7.30	8.43	0.62	-1	0	0	1
TRIOMF 1976	0	2.79	3.02	0.23	-2	-1	0	1
TRIOMF 1977	0	-4.85	-5.41	-0.39	-1	-2	0	1
TRIOMF 1978	0	1.46	1.65	0.12	0	-1	0	1
TRIOMF 1979	0	10.97	14.29	1.10	0	0	1	1
TUCKERS 1970	0	14.67	37.32	1.80	no data	no data	no data	no data
TUCKERS 1971	0	10.71	27.94	1.21	no data	no data	no data	no data
TUCKERS 1972	0	10.44	33.99	1.19	no data	no data	no data	no data
TUCKERS 1973	0	14.18	60.20	1.77	no data	no data	no data	no data
TUCKERS 1974	0	13.60	60.14	1.34	-1	0	0	1
TUCKERS 1975	0	5.38	35.55	0.46	-1	-1	1	1
TUCKERS 1976	0	3.13	23.61	0.26	-1	-1	1	1
TUCKERS 1977	0	7.77	34.62	0.62	-2	0	0	1
TUCKERS 1978	0	-4.16	-19.04	-0.34	-1	-2	0	1
TUCKERS 1979	0	3.74	23.41	0.37	-1	-1	1	1

Sub-Total 1970s	51	92
Predictive Accuracy	55.4%	

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1974	-11.69	1.54	5.31	0	1	1	0	1
TRIOMF 1975	-8.21	0.21	-1.10	-1	1	1	0	0
TRIOMF 1976	-5.42	-0.85	-6.22	-1	0	1	-1	0
TRIOMF 1977	-1.07	-2.50	-14.21	-2	0	1	-2	0
TRIOMF 1978	-4.71	-1.12	-7.52	-1	0	1	-1	0
TRIOMF 1979	-11.22	1.36	4.45	0	1	1	0	1
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1974	-34.84	10.35	47.87	0	0	1	0	0
TUCKERS 1975	-22.17	5.53	24.59	0	0	1	0	0
TUCKERS 1976	-16.02	3.19	13.28	0	0	1	-1	1
TUCKERS 1977	-21.69	5.34	23.70	0	0	1	0	0
TUCKERS 1978	5.94	-5.17	-27.12	-2	0	1	-2	0
TUCKERS 1979	-15.92	3.15	13.09	0	0	1	-1	1
Sub-Total 1970s					39	92		42
Predictive Accuracy					42.4%			45.7%

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
TRIOMF 1970	no data
TRIOMF 1971	no data
TRIOMF 1972	no data
TRIOMF 1973	no data
TRIOMF 1974	1
TRIOMF 1975	1
TRIOMF 1976	1
TRIOMF 1977	1
TRIOMF 1978	1
TRIOMF 1979	1
TUCKERS 1970	no data
TUCKERS 1971	no data
TUCKERS 1972	no data
TUCKERS 1973	no data
TUCKERS 1974	1
TUCKERS 1975	1
TUCKERS 1976	1
TUCKERS 1977	1
TUCKERS 1978	1
TUCKERS 1979	1

Sub-Total 1970s 92

Predictive Accuracy

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
BIDVEST 1980	0	7.73	21.66	0.81	0	0	1	1
BIDVEST 1981	0	14.58	38.49	1.04	0	0	1	1
BIDVEST 1982	0	10.71	28.03	0.55	-1	-1	1	1
BIDVEST 1983	0	5.65	15.21	0.34	-1	-1	1	1
BIDVEST 1984	0	5.98	16.33	0.27	-1	-1	1	1
BIDVEST 1985	0	3.87	15.02	0.18	-1	-1	1	1
BIDVEST 1986	0	4.50	18.23	0.31	-2	-1	0	1
BIDVEST 1987	0	-8.08	-28.54	-0.65	0	-2	0	1
BIDVEST 1988	0	7.61	19.68	0.50	0	-1	0	1
BIDVEST 1989	0	34.85	293.93	1.76	0	0	1	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	0	6.71	11.03	0.48	no data	no data	no data	no data
BRICK CLAY 1982	0	8.50	9.73	0.44	-2	-1	0	1
BRICK CLAY 1983	1	-21.21	-20.26	-1.27	no data	no data	no data	no data
BRICK CLAY 1984	1	0.86	0.82	0.04	-2	-1	0	1
BRICK CLAY 1985	1	-31.02	-22.61	-1.44	0	-2	0	1
BRICK CLAY 1986	1	10.69	7.70	0.75	0	0	1	1
BRICK CLAY 1987	1	22.83	18.80	1.83	0	0	1	1
BRICK CLAY 1988	0	23.92	25.40	1.56	no data	no data	no data	no data
BRISTOL 1980	0	7.42	22.79	0.74	0	0	1	1
BRISTOL 1981	0	9.17	32.24	0.97	-1	0	0	1
BRISTOL 1982	0	3.04	5.89	0.22	-1	-1	1	1
BRISTOL 1983	0	2.49	6.35	0.13	0	-1	0	1
BRISTOL 1984	0	13.59	70.74	0.82	-1	0	0	1
BRISTOL 1985	0	7.71	42.89	0.35	-1	-1	1	1
BRISTOL 1986	0	6.52	117.67	0.30	-1	-1	1	1
BRISTOL 1987	0	5.76	163.55	0.40	-1	-1	1	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	-15.02	2.80	11.43	0	1	1	0	1
BIDVEST 1981	-23.69	6.10	27.37	0	1	1	0	1
BIDVEST 1982	-18.30	4.05	17.46	0	0	1	0	0
BIDVEST 1983	-11.70	1.54	5.32	0	0	1	0	0
BIDVEST 1984	-12.28	1.76	6.39	0	0	1	0	0
BIDVEST 1985	-11.60	1.50	5.14	0	0	1	-1	1
BIDVEST 1986	-13.25	2.13	8.18	0	0	1	-1	0
BIDVEST 1987	10.84	-7.04	-36.11	-2	0	1	-2	0
BIDVEST 1988	-14.00	2.42	9.55	0	1	1	0	1
BIDVEST 1989	-155.24	56.17	269.27	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	-8.87	0.47	0.13	-1	0	1	0	0
BRICK CLAY 1983	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1984	-18.20	5.55	24.61	0	0	1	-1	0
BRICK CLAY 1985	-6.13	0.95	2.42	0	1	1	-2	0
BRICK CLAY 1986	-21.74	6.89	31.12	0	1	1	0	1
BRICK CLAY 1987	-27.46	9.07	41.64	0	1	1	0	1
BRICK CLAY 1988	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1980	-15.60	3.02	12.50	0	1	1	0	1
BRISTOL 1981	-20.46	4.88	21.44	0	0	1	0	0
BRISTOL 1982	-6.90	-0.29	-3.51	-1	1	1	-1	1
BRISTOL 1983	-7.13	-0.20	-3.07	-1	0	1	-1	0
BRISTOL 1984	-40.29	12.42	57.91	0	0	1	0	0
BRISTOL 1985	-25.95	6.97	31.54	0	0	1	0	0
BRISTOL 1986	-64.46	21.62	102.35	0	0	1	0	0
BRISTOL 1987	-88.09	30.61	145.80	0	0	1	0	0

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1980	1
BIDVEST 1981	1
BIDVEST 1982	1
BIDVEST 1983	1
BIDVEST 1984	1
BIDVEST 1985	1
BIDVEST 1986	1
BIDVEST 1987	1
BIDVEST 1988	1
BIDVEST 1989	1
BRICK CLAY 1980	no data
BRICK CLAY 1981	no data
BRICK CLAY 1982	1
BRICK CLAY 1983	no data
BRICK CLAY 1984	1
BRICK CLAY 1985	1
BRICK CLAY 1986	1
BRICK CLAY 1987	1
BRICK CLAY 1988	no data
BRISTOL 1980	1
BRISTOL 1981	1
BRISTOL 1982	1
BRISTOL 1983	1
BRISTOL 1984	1
BRISTOL 1985	1
BRISTOL 1986	1
BRISTOL 1987	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data				Yn-1 Naive Model			
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
BRISTOL 1988	0	7.16	256.81	0.57	0	0	1	1
BRISTOL 1989	0	14.60	107.85	0.95	-1	0	0	1
DRG 1980	0	10.62	24.43	1.12	no data	no data	no data	no data
DRG 1981	0	4.73	11.17	0.34	-2	-1	0	1
DRG 1982	0	-0.23	-0.54	-0.01	no data	no data	no data	no data
H PARKER 1980	0	4.07	5.63	0.41	0	-1	0	1
H PARKER 1981	0	6.33	9.94	0.67	-1	0	0	1
H PARKER 1982	0	1.92	3.15	0.14	no data	no data	no data	no data
IL BACK 1980	0	-10.40	-19.66	-1.04	-2	-2	1	1
IL BACK 1981	0	-11.26	-14.36	-1.18	-2	-2	1	1
IL BACK 1982	0	-10.65	-351.38	-0.76	no data	no data	no data	no data
KTL 1980	0	16.77	36.00	1.76	0	0	1	1
KTL 1981	0	13.13	28.29	0.94	0	0	1	1
KTL 1982	0	11.82	24.36	0.61	0	0	1	1
KTL 1983	0	12.73	26.55	0.76	-1	0	0	1
KTL 1984	0	11.57	29.66	0.52	-1	-1	1	1
KTL 1985	0	5.38	11.57	0.25	-1	-1	1	1
KTL 1986	0	2.44	5.11	0.17	-1	-1	1	1
KTL 1987	0	9.22	20.78	0.74	0	0	1	1
KTL 1988	0	10.05	19.62	0.66	0	0	1	1
KTL 1989	0	10.98	18.97	0.55	0	-1	0	1
OMNIA 1980	0	5.74	9.72	0.60	0	0	1	1
OMNIA 1981	0	18.04	34.44	1.29	0	0	1	1
OMNIA 1982	0	8.19	22.06	0.42	0	-1	0	1
OMNIA 1983	0	3.05	5.05	0.18	-2	-1	0	1
OMNIA 1984	0	-0.17	-0.26	-0.01	-1	-2	0	1
OMNIA 1985	0	1.11	1.67	0.05	-1	-1	1	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	-136.12	48.89	234.12	0	1	1	0	1
BRISTOL 1989	-59.40	19.70	93.05	0	0	1	0	0
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	-9.61	0.75	1.49	0	0	1	0	0
DRG 1982	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1980	-6.76	-0.34	-3.75	-1	0	1	-1	0
H PARKER 1981	-8.98	0.51	0.34	-1	1	1	0	0
H PARKER 1982	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1980	6.26	-5.29	-27.70	-2	1	1	-2	1
IL BACK 1981	3.53	-4.26	-22.68	-2	1	1	-2	1
IL BACK 1982	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1980	-22.40	5.61	25.01	0	1	1	0	1
KTL 1981	-18.43	4.10	17.71	0	1	1	0	1
KTL 1982	-16.41	3.33	13.98	0	1	1	0	1
KTL 1983	-17.54	3.76	16.06	0	0	1	0	0
KTL 1984	-19.14	4.37	19.01	0	0	1	0	0
KTL 1985	-9.82	0.83	1.87	0	0	1	0	0
KTL 1986	-6.49	-0.44	-4.24	-1	1	1	-1	1
KTL 1987	-14.56	2.63	10.59	0	1	1	0	1
KTL 1988	-13.97	2.40	9.50	0	1	1	0	1
KTL 1989	-13.63	2.28	8.88	0	1	1	0	1
OMNIA 1980	-8.87	0.46	0.13	-1	0	1	0	1
OMNIA 1981	-21.60	5.31	23.53	0	1	1	0	1
OMNIA 1982	-15.23	2.88	11.81	0	1	1	0	1
OMNIA 1983	-6.47	-0.45	-4.30	-1	0	1	-1	0
OMNIA 1984	-3.73	-1.49	-9.33	-1	1	1	-2	0
OMNIA 1985	-4.72	-1.11	-7.50	-1	1	1	-1	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BRISTOL 1988	1
BRISTOL 1989	1
DRG 1980	no data
DRG 1981	1
DRG 1982	no data
H PARKER 1980	1
H PARKER 1981	1
H PARKER 1982	no data
IL BACK 1980	1
IL BACK 1981	1
IL BACK 1982	no data
KTL 1980	1
KTL 1981	1
KTL 1982	1
KTL 1983	1
KTL 1984	1
KTL 1985	1
KTL 1986	1
KTL 1987	1
KTL 1988	1
KTL 1989	1
OMNIA 1980	1
OMNIA 1981	1
OMNIA 1982	1
OMNIA 1983	1
OMNIA 1984	1
OMNIA 1985	1

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
OMNIA 1986	0	1.91	3.02	0.13	0	-1	0	1
OMNIA 1987	0	4.78	6.51	0.38	0	-1	0	1
OMNIA 1988	0	8.42	13.46	0.55	0	-1	0	1
OMNIA 1989	0	11.77	18.12	0.59	0	0	1	1
ROMATEX 1980	0	12.95	30.30	1.30	0	0	1	1
ROMATEX 1981	0	16.18	39.73	1.70	0	0	1	1
ROMATEX 1982	0	13.79	41.64	0.99	-1	0	0	1
ROMATEX 1983	0	8.76	27.39	0.45	-1	-1	1	1
ROMATEX 1984	0	9.29	26.72	0.56	-1	-1	1	1
ROMATEX 1985	0	1.08	2.95	0.05	-1	-1	1	1
ROMATEX 1986	0	6.33	17.35	0.29	-1	-1	1	1
ROMATEX 1987	0	9.05	25.71	0.63	0	0	1	1
ROMATEX 1988	0	11.28	30.20	0.90	0	0	1	1
ROMATEX 1989	0	10.66	28.23	0.70	-1	0	0	1
TRIOMF 1980	0	12.30	23.30	1.29	-1	0	0	1
TRIOMF 1981	0	9.78	27.22	0.70	-1	0	0	1
TRIOMF 1982	0	0.17	0.68	0.01	-2	-1	0	1
TRIOMF 1983	0	-0.51	-6.80	-0.03	no data	no data	no data	no data
TRIOMF 1984	no data	no data	no data	no data	-2	no data	no data	no data
TRIOMF 1985	0	-4.57	-5.59	-0.21	-2	-2	1	1
TRIOMF 1986	1	-28.83	-29.94	-2.01	-2	-2	1	1
TRIOMF 1987	1	-0.22	-5.62	-0.02	no data	no data	no data	no data
TUCKERS 1980	0	3.66	23.08	0.39	-1	-1	1	1
TUCKERS 1981	0	5.60	19.11	0.40	0	-1	0	1
TUCKERS 1982	0	9.31	18.70	0.48	no data	no data	no data	no data
Sub-Total 1980s							40	67
Predictive Accuracy							59.7%	

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1986	-5.42	-0.85	-6.23	-1	0	1	-1	0
OMNIA 1987	-7.21	-0.17	-2.92	-1	0	1	0	1
OMNIA 1988	-10.79	1.20	3.66	0	1	1	0	1
OMNIA 1989	-13.20	2.11	8.08	0	1	1	0	1
ROMATEX 1980	-19.47	4.50	19.61	0	1	1	0	1
ROMATEX 1981	-24.32	6.34	28.54	0	1	1	0	1
ROMATEX 1982	-25.31	6.72	30.35	0	0	1	0	0
ROMATEX 1983	-17.97	3.93	16.85	0	0	1	0	0
ROMATEX 1984	-17.62	3.80	16.22	0	0	1	0	0
ROMATEX 1985	-5.38	-0.86	-6.29	-1	1	1	-1	1
ROMATEX 1986	-12.80	1.96	7.35	0	0	1	0	0
ROMATEX 1987	-17.10	3.60	15.26	0	1	1	0	1
ROMATEX 1988	-19.41	4.48	19.52	0	1	1	0	1
ROMATEX 1989	-18.40	4.09	17.65	0	0	1	0	0
TRIOMF 1980	-15.86	3.12	12.98	0	0	1	0	0
TRIOMF 1981	-17.88	3.89	16.69	0	0	1	0	0
TRIOMF 1982	-4.21	-1.31	-8.44	-1	0	1	-2	1
TRIOMF 1983	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	-0.98	-2.54	-14.38	-2	1	1	-2	1
TRIOMF 1986	-2.36	-0.48	-4.52	-1	0	1	-2	1
TRIOMF 1987	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1980	-15.75	3.08	12.77	0	0	1	-1	1
TUCKERS 1981	-13.71	2.30	9.02	0	1	1	0	1
TUCKERS 1982	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1980s					33	67		36
Predictive Accuracy					49.3%			53.7%

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1986	1
OMNIA 1987	1
OMNIA 1988	1
OMNIA 1989	1
ROMATEX 1980	1
ROMATEX 1981	1
ROMATEX 1982	1
ROMATEX 1983	1
ROMATEX 1984	1
ROMATEX 1985	1
ROMATEX 1986	1
ROMATEX 1987	1
ROMATEX 1988	1
ROMATEX 1989	1
TRIOMF 1980	1
TRIOMF 1981	1
TRIOMF 1982	1
TRIOMF 1983	no data
TRIOMF 1984	no data
TRIOMF 1985	1
TRIOMF 1986	1
TRIOMF 1987	no data
TUCKERS 1980	1
TUCKERS 1981	1
TUCKERS 1982	no data

Sub-Total 1980s 67

Predictive Accuracy

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
BIDVEST 1990	0	13.67	45.05	0.65	0	0	1	1
BIDVEST 1991	0	6.48	8.39	0.32	0	-1	0	1
BIDVEST 1992	0	9.56	12.75	0.51	0	-1	0	1
BIDVEST 1993	0	6.22	10.46	0.38	0	-1	0	1
BIDVEST 1994	0	9.70	15.63	0.62	0	0	1	1
BIDVEST 1995	0	10.91	17.80	0.61	0	0	1	1
BIDVEST 1996	0	11.37	20.70	0.58	0	0	1	1
BIDVEST 1997	0	7.42	16.16	0.37	0	-1	0	1
BIDVEST 1998	0	10.93	36.12	0.50	no data	no data	no data	no data
BRISTOL 1990	0	5.68	49.94	0.29	-1	-1	1	1
BRISTOL 1991	0	6.54	55.73	0.31	-1	-1	1	1
BRISTOL 1992	0	7.21	88.70	0.36	-1	-1	1	1
BRISTOL 1993	0	6.26	163.12	0.33	-1	-1	1	1
BRISTOL 1994	0	5.21	73.53	0.32	no data	no data	no data	no data
KTL 1990	0	8.13	13.89	0.39	-1	-1	1	1
KTL 1991	0	4.05	6.78	0.20	-1	-1	1	1
KTL 1992	0	0.14	0.22	0.01	-1	-1	1	1
KTL 1993	0	5.83	9.05	0.36	0	-1	0	1
KTL 1994	0	10.07	16.45	0.65	0	0	1	1
KTL 1995	0	8.86	14.69	0.50	0	-1	0	1
KTL 1996	0	16.64	30.61	0.85	-1	0	0	1
KTL 1997	0	6.74	14.82	0.34	-1	-1	1	1
KTL 1998	0	32.51	316.89	1.49	-1	0	0	1
KTL 1999	0	45.98	368.44	2.55	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1990	-27.06	7.39	33.58	0	1	1	0	1
BIDVEST 1991	-8.18	0.20	-1.14	-1	0	1	0	1
BIDVEST 1992	-10.43	1.06	2.99	0	1	1	0	1
BIDVEST 1993	-9.25	0.61	0.82	0	1	1	0	1
BIDVEST 1994	-11.91	1.62	5.72	0	1	1	0	1
BIDVEST 1995	-13.03	2.05	7.77	0	1	1	0	1
BIDVEST 1996	-14.52	2.61	10.52	0	1	1	0	1
BIDVEST 1997	-12.19	1.73	6.22	0	1	1	0	1
BIDVEST 1998	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1990	-29.58	8.35	38.21	0	0	1	0	0
BRISTOL 1991	-32.56	9.48	43.70	0	0	1	0	0
BRISTOL 1992	-49.55	15.94	74.92	0	0	1	0	0
BRISTOL 1993	-87.87	30.53	145.39	0	0	1	0	0
BRISTOL 1994	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1990	-11.01	1.28	4.07	0	0	1	0	0
KTL 1991	-7.35	-0.11	-2.66	-1	1	1	-1	1
KTL 1992	-3.97	-1.40	-8.88	-1	1	1	-2	0
KTL 1993	-8.52	0.33	-0.52	-1	0	1	0	1
KTL 1994	-12.34	1.78	6.50	0	1	1	0	1
KTL 1995	-11.43	1.44	4.83	0	1	1	0	1
KTL 1996	-19.63	4.56	19.90	0	0	1	0	0
KTL 1997	-11.49	1.46	4.95	0	0	1	0	0
KTL 1998	-167.06	60.67	291.01	0	0	1	0	0
KTL 1999	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
BIDVEST 1990	1
BIDVEST 1991	1
BIDVEST 1992	1
BIDVEST 1993	1
BIDVEST 1994	1
BIDVEST 1995	1
BIDVEST 1996	1
BIDVEST 1997	1
BIDVEST 1998	no data
BRISTOL 1990	1
BRISTOL 1991	1
BRISTOL 1992	1
BRISTOL 1993	1
BRISTOL 1994	no data
KTL 1990	1
KTL 1991	1
KTL 1992	1
KTL 1993	1
KTL 1994	1
KTL 1995	1
KTL 1996	1
KTL 1997	1
KTL 1998	1
KTL 1999	no data

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point 4.57 0.57
 Lower Cut-off point 0.42 0

Company & year	Data					Yn-1 Naive Model		
	PAT/SHE D	PAT/TA	PAT/TL	SVA	5Year n-1	Pred State	# Correct	Sample Size
OMNIA 1990	0	9.46	15.26	0.45	0	-1	0	1
OMNIA 1991	0	7.94	12.53	0.39	-1	-1	1	1
OMNIA 1992	0	4.53	6.80	0.24	0	-1	0	1
OMNIA 1993	0	9.71	15.70	0.60	-1	0	0	1
OMNIA 1994	0	8.46	13.22	0.54	-1	-1	1	1
OMNIA 1995	0	6.99	10.21	0.39	0	-1	0	1
OMNIA 1996	0	9.13	13.33	0.47	0	-1	0	1
OMNIA 1997	0	11.49	19.33	0.57	0	0	1	1
OMNIA 1998	0	7.53	11.70	0.35	no data	no data	no data	no data
ROMATEX 1990	0	7.46	18.96	0.38	-1	-1	1	1
ROMATEX 1991	0	0.31	0.79	0.01	-1	-1	1	1
ROMATEX 1992	0	2.62	7.16	0.13	-1	-1	1	1
ROMATEX 1993	0	7.25	22.17	0.38	-1	-1	1	1
ROMATEX 1994	0	7.92	24.90	0.49	-1	-1	1	1
ROMATEX 1995	0	6.89	23.77	0.44	-1	-1	1	1
ROMATEX 1996	0	0.26	0.97	0.01	-2	-1	0	1
ROMATEX 1997	0	-10.35	-34.78	-0.53	-1	-2	0	1
ROMATEX 1998	0	1.52	5.47	0.08	no data	no data	no data	no data
Sub-Total 1990s							22	37
Predictive Accuracy							59.5%	
Grand Total							113	196
Predictive Accuracy							57.7%	

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-1 Fisher Discriminant Analysis						Yn-1 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1990	-11.72	1.55	5.37	0	1	1	0	1
OMNIA 1991	-10.32	1.01	2.79	0	0	1	0	0
OMNIA 1992	-7.37	-0.11	-2.64	-1	0	1	-1	0
OMNIA 1993	-11.95	1.64	5.79	0	0	1	0	0
OMNIA 1994	-10.67	1.15	3.44	0	0	1	0	0
OMNIA 1995	-9.12	0.56	0.58	0	1	1	0	1
OMNIA 1996	-10.73	1.17	3.55	0	1	1	0	1
OMNIA 1997	-13.82	2.35	9.23	0	1	1	0	1
OMNIA 1998	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1990	-13.63	2.27	8.87	0	0	1	0	0
ROMATEX 1991	-4.27	-1.29	-8.33	-1	1	1	-2	0
ROMATEX 1992	-7.55	-0.04	-2.30	-1	1	1	-1	1
ROMATEX 1993	-15.28	2.90	11.91	0	0	1	0	0
ROMATEX 1994	-16.69	3.44	14.50	0	0	1	0	0
ROMATEX 1995	-16.10	3.22	13.42	0	0	1	0	0
ROMATEX 1996	-4.36	-1.25	-8.16	-1	0	1	-2	1
ROMATEX 1997	14.05	-8.26	-42.02	-2	0	1	-2	0
ROMATEX 1998	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1990s					17	37		18
Predictive Accuracy					45.9%			48.6%
Grand Total					89	196		96
Predictive Accuracy					45.4%			49.0%

APPENDIX H2 : 5 Year n-1 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
OMNIA 1990	1
OMNIA 1991	1
OMNIA 1992	1
OMNIA 1993	1
OMNIA 1994	1
OMNIA 1995	1
OMNIA 1996	1
OMNIA 1997	1
OMNIA 1998	no data
ROMATEX 1990	1
ROMATEX 1991	1
ROMATEX 1992	1
ROMATEX 1993	1
ROMATEX 1994	1
ROMATEX 1995	1
ROMATEX 1996	1
ROMATEX 1997	1
ROMATEX 1998	no data

Sub-Total 1990s 37

Predictive Accuracy

Grand Total 196

Predictive Accuracy

APPENDIX I1 : 5 Year n-2 Models (Test Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Company & year	Data			Yn-2 Naive Model		
	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
A&P 1976	4.14	0.34	-1	-1	1	1
AVBAK 1977	6.17	0.49	0	-1	0	1
BERZACK 1976	10.05	0.82	0	0	1	1
BROMAIN 1975	4.04	0.40	-1	-1	1	1
BTR 1977	8.51	0.68	0	0	1	1
CHEMSERVE 1977	5.04	0.40	0	-1	0	1
COATES 1974	8.87	0.87	0	0	1	1
DESIREE 1975	6.14	0.52	0	-1	0	1
DUBIN 1974	9.59	0.94	0	0	1	1
FINTECH 1975	6.99	0.59	0	0	1	1
FOWLER 1977	-3.04	-0.24	-2	-2	1	1
FRASERS 1975	12.38	1.05	0	0	1	1
GLEN ANIL 1974	5.25	0.52	-1	-1	1	1
HANHILL 1974	4.47	0.44	-1	-1	1	1
HEPWORTHS 1977	2.86	0.23	-2	-2	1	1
LAWSON 1974	0.88	0.09	-2	-2	1	1
LTA 1975	7.97	0.78	0	0	1	1
LUCYS 1973	-1.25	-0.16	-2	-2	1	1
MARSHALL 1975	3.11	0.26	-1	-1	1	1
SIMBA 1971	-8.20	-0.93	-2	-2	1	1
Total					17	20
Predictive Accuracy					85%	

APPENDIX I1 : 5 Year n-2 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
A&P 1976	-2.31	0.08	-1.04	-1	1	1	-1	1
AVBAK 1977	-2.80	1.19	1.26	0	1	1	0	1
BERZACK 1976	-3.74	3.30	5.63	0	1	1	0	1
BROMAIN 1975	-2.29	0.03	-1.15	-1	1	1	-1	1
BTR 1977	-3.37	2.46	3.89	0	1	1	0	1
CHEMSERVE 1977	-2.53	0.57	-0.02	-1	0	1	-1	0
COATES 1974	-3.46	2.65	4.30	0	1	1	0	1
DESIREE 1975	-2.80	1.17	1.22	0	1	1	0	1
DUBIN 1974	-3.63	3.05	5.11	0	1	1	0	1
FINTECH 1975	-3.00	1.63	2.18	0	1	1	0	1
FOWLER 1977	-0.58	-3.82	-9.13	-2	1	1	-2	1
FRASERS 1975	-4.31	4.57	8.26	0	1	1	0	1
GLEN ANIL 1974	-2.58	0.69	0.22	-1	1	1	-1	1
HANHILL 1974	-2.39	0.26	-0.66	-1	1	1	-1	1
HEPWORTHS 1977	-2.00	-0.62	-2.49	-1	0	1	-1	0
LAWSON 1974	-1.52	-1.69	-4.72	-2	1	1	-1	0
LTA 1975	-3.24	2.17	3.28	0	1	1	0	1
LUCYS 1973	-1.01	-2.85	-7.12	-2	1	1	-2	1
MARSHALL 1975	-2.06	-0.48	-2.20	-1	1	1	-1	1
SIMBA 1971	0.68	-6.63	-14.96	-2	1	1	-2	1
Total					18	20		17
Predictive Accuracy					90%			85%

APPENDIX I1 : 5 Year n-2 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
A&P 1976	1
AVBAK 1977	1
BERZACK 1976	1
BROMAIN 1975	1
BTR 1977	1
CHEMSERVE 1977	1
COATES 1974	1
DESIREE 1975	1
DUBIN 1974	1
FINTECH 1975	1
FOWLER 1977	1
FRASERS 1975	1
GLEN ANIL 1974	1
HANHILL 1974	1
HEPWORTHS 1977	1
LAWSON 1974	1
LTA 1975	1
LUCYS 1973	1
MARSHALL 1975	1
SIMBA 1971	1

Total 20

Predictive Accuracy

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	2.77	0.34	-2	-1	0	1
BACKCLOTHING 1971	-0.99	-0.11	-2	-2	1	1
BACKCLOTHING 1972	-9.73	-1.11	-2	-2	1	1
BACKCLOTHING 1973	-10.82	-1.35	no data	no data	no data	no data
BACKCLOTHING 1974	-14.13	-1.39	no data	no data	no data	no data
BIDVEST 1970	7.43	0.91	no data	no data	no data	no data
BIDVEST 1971	4.46	0.50	no data	no data	no data	no data
BIDVEST 1972	5.05	0.57	no data	no data	no data	no data
BIDVEST 1973	5.36	0.67	0	0	1	1
BIDVEST 1974	5.89	0.58	0	0	1	1
BIDVEST 1975	6.80	0.58	-1	0	0	1
BIDVEST 1976	6.87	0.56	-1	-1	1	1
BIDVEST 1977	4.43	0.35	-1	-1	1	1
BIDVEST 1978	6.50	0.54	-1	-1	1	1
BIDVEST 1979	4.83	0.48	0	-1	0	1
BRICK CLAY 1970	4.68	0.57	no data	no data	no data	no data
BRICK CLAY 1971	-5.90	-0.67	no data	no data	no data	no data
BRICK CLAY 1972	0.21	0.02	no data	no data	no data	no data
BRICK CLAY 1973	6.67	0.83	0	0	1	1
BRICK CLAY 1974	4.21	0.41	0	-1	0	1
BRICK CLAY 1975	8.18	0.69	-1	0	0	1
BRICK CLAY 1976	7.97	0.65	-1	0	0	1
BRICK CLAY 1977	4.95	0.40	-1	-1	1	1
BRICK CLAY 1978	3.09	0.25	no data	no data	no data	no data
BRICK CLAY 1979	4.30	0.43	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	-1.98	-0.66	-2.58	-1	0	1	-1	0
BACKCLOTHING 1971	-1.07	-2.71	-6.82	-2	1	1	-2	1
BACKCLOTHING 1972	1.04	-7.46	-16.68	-2	1	1	-2	1
BACKCLOTHING 1973	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	-2.61	0.75	0.34	-1	0	1	-1	0
BIDVEST 1974	-2.74	1.03	0.94	-1	0	1	-1	0
BIDVEST 1975	-2.96	1.53	1.97	0	0	1	0	0
BIDVEST 1976	-2.97	1.57	2.04	0	0	1	0	0
BIDVEST 1977	-2.38	0.24	-0.71	-1	1	1	-1	1
BIDVEST 1978	-2.88	1.36	1.62	0	0	1	0	0
BIDVEST 1979	-2.48	0.46	-0.26	-1	0	1	-1	0
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	-2.92	1.46	1.81	0	1	1	0	1
BRICK CLAY 1974	-2.33	0.12	-0.96	-1	0	1	-1	0
BRICK CLAY 1975	-3.29	2.28	3.52	0	0	1	0	0
BRICK CLAY 1976	-3.24	2.17	3.28	0	0	1	0	0
BRICK CLAY 1977	-2.51	0.53	-0.12	-1	1	1	-1	1
BRICK CLAY 1978	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1979	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BACKCLOTHING 1970	1
BACKCLOTHING 1971	1
BACKCLOTHING 1972	1
BACKCLOTHING 1973	no data
BACKCLOTHING 1974	no data
BIDVEST 1970	no data
BIDVEST 1971	no data
BIDVEST 1972	no data
BIDVEST 1973	1
BIDVEST 1974	1
BIDVEST 1975	1
BIDVEST 1976	1
BIDVEST 1977	1
BIDVEST 1978	1
BIDVEST 1979	1
BRICK CLAY 1970	no data
BRICK CLAY 1971	no data
BRICK CLAY 1972	no data
BRICK CLAY 1973	1
BRICK CLAY 1974	1
BRICK CLAY 1975	1
BRICK CLAY 1976	1
BRICK CLAY 1977	1
BRICK CLAY 1978	no data
BRICK CLAY 1979	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
BRISTOL 1970	4.80	0.60	-2	0	0	1
BRISTOL 1971	3.91	0.48	no data	no data	no data	no data
BRISTOL 1972	-2.25	-0.25	no data	no data	no data	no data
BRISTOL 1973	2.11	0.24	-1	-2	0	1
BRISTOL 1974	3.26	0.41	0	-1	0	1
BRISTOL 1975	2.94	0.29	0	-1	0	1
BRISTOL 1976	2.96	0.25	-1	-1	1	1
BRISTOL 1977	2.46	0.20	-1	-2	0	1
BRISTOL 1978	3.42	0.27	0	-1	0	1
BRISTOL 1979	2.43	0.20	0	-2	0	1
BURHOSE 1970	13.18	1.61	no data	no data	no data	no data
BURHOSE 1971	15.98	1.81	no data	no data	no data	no data
BURHOSE 1972	8.42	0.96	no data	no data	no data	no data
BURHOSE 1973	0.23	0.03	0	-2	0	1
BURHOSE 1974	5.33	0.52	-1	-1	1	1
BURHOSE 1975	15.29	1.30	no data	no data	no data	no data
BURHOSE 1976	8.05	0.66	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data
BURHOSE 1978	2.42	0.20	no data	no data	no data	no data
BURHOSE 1979	9.83	0.98	no data	no data	no data	no data
CONJERS 1970	7.11	0.87	no data	no data	no data	no data
CONJERS 1971	8.38	0.95	-2	0	0	1
CONJERS 1972	7.79	0.89	no data	no data	no data	no data
CONJERS 1973	-0.94	-0.12	-2	-2	1	1
CONJERS 1974	6.94	0.68	no data	no data	no data	no data
CONJERS 1975	-12.08	-1.02	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	-2.47	0.44	-0.29	-1	0	1	-1	0
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1973	-1.82	-1.02	-3.33	-1	1	1	-1	1
BRISTOL 1974	-2.10	-0.40	-2.03	-1	0	1	-1	0
BRISTOL 1975	-2.02	-0.57	-2.39	-1	0	1	-1	0
BRISTOL 1976	-2.03	-0.56	-2.37	-1	1	1	-1	1
BRISTOL 1977	-1.90	-0.83	-2.93	-1	1	1	-1	1
BRISTOL 1978	-2.14	-0.31	-1.84	-1	0	1	-1	0
BRISTOL 1979	-1.90	-0.85	-2.96	-1	0	1	-1	0
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	-1.37	-2.04	-5.45	-2	0	1	-2	0
BURHOSE 1974	-2.60	0.73	0.31	-1	1	1	-1	1
BURHOSE 1975	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1976	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	-3.34	2.39	3.74	0	0	1	0	0
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	-1.08	-2.68	-6.76	-2	1	1	-2	1
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BRISTOL 1970	1
BRISTOL 1971	no data
BRISTOL 1972	no data
BRISTOL 1973	1
BRISTOL 1974	1
BRISTOL 1975	1
BRISTOL 1976	1
BRISTOL 1977	1
BRISTOL 1978	1
BRISTOL 1979	1
BURHOSE 1970	no data
BURHOSE 1971	no data
BURHOSE 1972	no data
BURHOSE 1973	1
BURHOSE 1974	1
BURHOSE 1975	no data
BURHOSE 1976	no data
BURHOSE 1977	no data
BURHOSE 1978	no data
BURHOSE 1979	no data
CONJERS 1970	no data
CONJERS 1971	1
CONJERS 1972	no data
CONJERS 1973	1
CONJERS 1974	no data
CONJERS 1975	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
DRG 1978	12.98	1.07	no data	no data	no data	no data
DRG 1979	10.82	1.08	no data	no data	no data	no data
FAIRWEATHER 1970	9.02	1.11	-2	0	0	1
FAIRWEATHER 1971	5.98	0.68	no data	no data	no data	no data
FAIRWEATHER 1972	-1.76	-0.20	-2	-2	1	1
FAIRWEATHER 1973	4.53	0.57	0	-1	0	1
FAIRWEATHER 1974	-3.33	-0.33	-2	-2	1	1
FAIRWEATHER 1975	4.96	0.42	no data	no data	no data	no data
FAIRWEATHER 1976	-9.68	-0.79	no data	no data	no data	no data
H PARKER 1970	4.62	0.58	-2	0	0	1
H PARKER 1971	0.92	0.11	-2	-2	1	1
H PARKER 1972	-7.70	-0.87	no data	no data	no data	no data
H PARKER 1973	-13.41	-1.52	0	-2	0	1
H PARKER 1974	11.75	1.47	0	0	1	1
H PARKER 1975	7.40	0.73	0	0	1	1
H PARKER 1976	0.71	0.06	-1	-2	0	1
H PARKER 1977	5.74	0.47	0	-1	0	1
H PARKER 1978	1.77	0.14	-1	-2	0	1
H PARKER 1979	10.61	0.87	0	0	1	1
IL BACK 1970	3.89	0.49	-2	-1	0	1
IL BACK 1971	0.45	0.06	-2	-2	1	1
IL BACK 1972	-8.38	-0.95	-2	-2	1	1
IL BACK 1973	-5.20	-0.59	0	-2	0	1
IL BACK 1974	-11.53	-1.44	no data	no data	no data	no data
IL BACK 1975	3.74	0.37	-2	-1	0	1
IL BACK 1976	no data	no data	-2	no data	no data	no data
IL BACK 1977	-9.38	-0.77	-2	-2	1	1

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	-3.49	2.74	4.47	0	0	1	0	0
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	-0.88	-3.13	-7.69	-2	1	1	-2	1
FAIRWEATHER 1973	-2.41	0.29	-0.60	-1	0	1	-1	0
FAIRWEATHER 1974	-0.50	-3.98	-9.47	-2	1	1	-2	1
FAIRWEATHER 1975	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1976	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1970	-2.43	0.35	-0.49	-1	0	1	-1	0
H PARKER 1971	-1.53	-1.67	-4.67	-2	1	1	-1	0
H PARKER 1972	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1973	1.93	-9.46	-20.83	-2	0	1	-2	0
H PARKER 1974	-4.15	4.22	7.54	0	1	1	0	1
H PARKER 1975	-3.10	1.86	2.64	0	1	1	0	1
H PARKER 1976	-1.48	-1.78	-4.91	-2	0	1	-2	0
H PARKER 1977	-2.70	0.95	0.76	-1	0	1	-1	0
H PARKER 1978	-1.74	-1.21	-3.71	-1	1	1	-1	1
H PARKER 1979	-3.88	3.60	6.26	0	1	1	0	1
IL BACK 1970	-2.25	-0.05	-1.32	-1	0	1	-1	0
IL BACK 1971	-1.42	-1.92	-5.19	-2	1	1	-2	1
IL BACK 1972	0.72	-6.73	-15.16	-2	1	1	-2	1
IL BACK 1973	-0.05	-5.00	-11.57	-2	0	1	-2	0
IL BACK 1974	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1975	-2.22	-0.14	-1.49	-1	0	1	-1	0
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	0.96	-7.27	-16.29	-2	1	1	-2	1

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
DRG 1978	no data
DRG 1979	no data
FAIRWEATHER 1970	1
FAIRWEATHER 1971	no data
FAIRWEATHER 1972	1
FAIRWEATHER 1973	1
FAIRWEATHER 1974	1
FAIRWEATHER 1975	no data
FAIRWEATHER 1976	no data
H PARKER 1970	1
H PARKER 1971	1
H PARKER 1972	no data
H PARKER 1973	1
H PARKER 1974	1
H PARKER 1975	1
H PARKER 1976	1
H PARKER 1977	1
H PARKER 1978	1
H PARKER 1979	1
IL BACK 1970	1
IL BACK 1971	1
IL BACK 1972	1
IL BACK 1973	1
IL BACK 1974	no data
IL BACK 1975	1
IL BACK 1976	no data
IL BACK 1977	1

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
IL BACK 1978	-24.40	-1.95	-2	-2	1	1
IL BACK 1979	-9.43	-0.78	-2	-2	1	1
KTL 1970	6.87	0.84	no data	no data	no data	no data
KTL 1971	5.88	0.67	no data	no data	no data	no data
KTL 1972	10.28	1.17	no data	no data	no data	no data
KTL 1973	16.61	2.08	0	0	1	1
KTL 1974	19.08	1.88	0	0	1	1
KTL 1975	16.21	1.37	-1	0	0	1
KTL 1976	13.11	1.07	-1	0	0	1
KTL 1977	10.15	0.81	-1	0	0	1
KTL 1978	11.16	0.92	0	0	1	1
KTL 1979	10.33	1.03	0	0	1	1
OMNIA 1970	10.93	1.34	no data	no data	no data	no data
OMNIA 1971	9.88	1.12	no data	no data	no data	no data
OMNIA 1972	10.31	1.17	no data	no data	no data	no data
OMNIA 1973	9.28	1.16	0	0	1	1
OMNIA 1974	9.14	0.90	-2	0	0	1
OMNIA 1975	10.38	0.88	-2	0	0	1
OMNIA 1976	-2.22	-0.18	-2	-2	1	1
OMNIA 1977	-11.43	-0.91	-2	-2	1	1
OMNIA 1978	-7.44	-0.61	0	-2	0	1
OMNIA 1979	-0.40	-0.04	0	-2	0	1
PAN 1970	9.65	1.18	no data	no data	no data	no data
PAN 1971	8.47	0.96	-2	0	0	1
PAN 1972	0.65	0.07	-2	-2	1	1
PAN 1973	-7.93	-0.99	no data	no data	no data	no data
PAN 1974	-3.87	-0.38	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	4.59	-15.44	-33.23	-2	1	1	-2	1
IL BACK 1979	0.97	-7.30	-16.35	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	-5.33	6.86	13.03	0	1	1	0	1
KTL 1974	-5.93	8.21	15.82	0	1	1	0	1
KTL 1975	-5.23	6.65	12.58	0	0	1	0	0
KTL 1976	-4.48	4.96	9.09	0	0	1	0	0
KTL 1977	-3.77	3.35	5.74	0	0	1	0	0
KTL 1978	-4.01	3.90	6.88	0	1	1	0	1
KTL 1979	-3.81	3.45	5.94	0	1	1	0	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	-3.56	2.88	4.76	0	1	1	0	1
OMNIA 1974	-3.52	2.80	4.60	0	0	1	0	0
OMNIA 1975	-3.82	3.48	6.01	0	0	1	0	0
OMNIA 1976	-0.77	-3.38	-8.21	-2	1	1	-2	1
OMNIA 1977	1.46	-8.39	-18.60	-2	1	1	-2	1
OMNIA 1978	0.49	-6.22	-14.10	-2	0	1	-2	0
OMNIA 1979	-1.21	-2.39	-6.16	-2	0	1	-2	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	-3.36	2.44	3.85	0	0	1	0	0
PAN 1972	-1.47	-1.82	-4.97	-2	1	1	-2	1
PAN 1973	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1974	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
IL BACK 1978	1
IL BACK 1979	1
KTL 1970	no data
KTL 1971	no data
KTL 1972	no data
KTL 1973	1
KTL 1974	1
KTL 1975	1
KTL 1976	1
KTL 1977	1
KTL 1978	1
KTL 1979	1
OMNIA 1970	no data
OMNIA 1971	no data
OMNIA 1972	no data
OMNIA 1973	1
OMNIA 1974	1
OMNIA 1975	1
OMNIA 1976	1
OMNIA 1977	1
OMNIA 1978	1
OMNIA 1979	1
PAN 1970	no data
PAN 1971	1
PAN 1972	1
PAN 1973	no data
PAN 1974	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
PIONEER H 1973	3.80	0.48	no data	no data	no data	no data
PIONEER H 1974	5.19	0.51	no data	no data	no data	no data
PIONEER H 1975	6.84	0.58	no data	no data	no data	no data
PIONEER H 1976	4.53	0.37	-1	-1	1	1
PIONEER H 1977	4.84	0.39	-1	-1	1	1
PIONEER H 1978	5.30	0.44	no data	no data	no data	no data
PIONEER H 1979	7.07	0.71	no data	no data	no data	no data
ROMATEX 1970	2.00	0.25	no data	no data	no data	no data
ROMATEX 1971	2.68	0.33	no data	no data	no data	no data
ROMATEX 1972	2.77	0.31	no data	no data	no data	no data
ROMATEX 1973	3.71	0.42	-2	-1	0	1
ROMATEX 1974	7.50	0.94	0	0	1	1
ROMATEX 1975	-9.60	-0.94	0	-2	0	1
ROMATEX 1976	6.10	0.52	0	-1	0	1
ROMATEX 1977	7.38	0.60	0	0	1	1
ROMATEX 1978	9.10	0.73	0	0	1	1
ROMATEX 1979	10.29	0.85	0	0	1	1
SCHACHAT 1970	5.23	0.64	no data	no data	no data	no data
SCHACHAT 1971	6.54	0.74	no data	no data	no data	no data
SCHACHAT 1972	8.29	0.94	no data	no data	no data	no data
SCHACHAT 1973	6.25	0.78	-1	0	0	1
SCHACHAT 1974	4.78	0.47	-1	-1	1	1
SCHACHAT 1975	5.20	0.44	-1	-1	1	1
SCHACHAT 1976	6.69	0.55	no data	no data	no data	no data
SCHACHAT 1977	3.96	0.32	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	-2.41	0.30	-0.59	-1	1	1	-1	1
PIONEER H 1977	-2.48	0.46	-0.25	-1	1	1	-1	1
PIONEER H 1978	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1979	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	-2.21	-0.15	-1.52	-1	0	1	-1	0
ROMATEX 1974	-3.12	1.91	2.75	0	1	1	0	1
ROMATEX 1975	1.01	-7.39	-16.54	-2	0	1	-2	0
ROMATEX 1976	-2.79	1.15	1.17	0	1	1	-1	0
ROMATEX 1977	-3.10	1.84	2.62	0	1	1	0	1
ROMATEX 1978	-3.51	2.78	4.56	0	1	1	0	1
ROMATEX 1979	-3.80	3.43	5.90	0	1	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	-2.82	1.23	1.35	0	0	1	0	0
SCHACHAT 1974	-2.47	0.43	-0.32	-1	1	1	-1	1
SCHACHAT 1975	-2.57	0.66	0.16	-1	1	1	-1	1
SCHACHAT 1976	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1977	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
PIONEER H 1973	no data
PIONEER H 1974	no data
PIONEER H 1975	no data
PIONEER H 1976	1
PIONEER H 1977	1
PIONEER H 1978	no data
PIONEER H 1979	no data
ROMATEX 1970	no data
ROMATEX 1971	no data
ROMATEX 1972	no data
ROMATEX 1973	1
ROMATEX 1974	1
ROMATEX 1975	1
ROMATEX 1976	1
ROMATEX 1977	1
ROMATEX 1978	1
ROMATEX 1979	1
SCHACHAT 1970	no data
SCHACHAT 1971	no data
SCHACHAT 1972	no data
SCHACHAT 1973	1
SCHACHAT 1974	1
SCHACHAT 1975	1
SCHACHAT 1976	no data
SCHACHAT 1977	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
SPECTRO 1970	4.09	0.50	no data	no data	no data	no data
SPECTRO 1971	9.68	1.10	no data	no data	no data	no data
SPECTRO 1972	8.27	0.94	no data	no data	no data	no data
SPECTRO 1973	11.44	1.43	-2	0	0	1
SPECTRO 1974	7.95	0.78	no data	no data	no data	no data
SPECTRO 1975	-4.52	-0.38	no data	no data	no data	no data
STUTTAFORDS 1970	7.41	0.93	no data	no data	no data	no data
STUTTAFORDS 1971	12.31	1.51	no data	no data	no data	no data
STUTTAFORDS 1972	3.54	0.40	no data	no data	no data	no data
STUTTAFORDS 1973	10.37	1.18	-1	0	0	1
STUTTAFORDS 1974	4.35	0.54	-1	-1	1	1
STUTTAFORDS 1975	4.36	0.43	-1	-1	1	1
STUTTAFORDS 1976	3.76	0.32	-1	-1	1	1
STUTTAFORDS 1977	3.91	0.32	no data	no data	no data	no data
STUTTAFORDS 1978	3.07	0.25	no data	no data	no data	no data
TAPSA 1970	9.39	1.17	no data	no data	no data	no data
TAPSA 1971	6.65	0.81	no data	no data	no data	no data
TAPSA 1972	3.66	0.41	-2	-1	0	1
TAPSA 1973	3.53	0.40	-2	-1	0	1
TAPSA 1974	-7.83	-0.98	no data	no data	no data	no data
TAPSA 1975	-38.69	-3.81	no data	no data	no data	no data
TIGERIND 1970	0.87	0.11	-2	-2	1	1
TIGERIND 1971	-6.10	-0.69	no data	no data	no data	no data
TIGERIND 1972	-23.19	-2.64	no data	no data	no data	no data
TIGERIND 1973	0.17	0.02	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	-4.08	4.05	7.19	0	0	1	0	0
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1975	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	-3.82	3.47	5.99	0	0	1	0	0
STUTTAFORDS 1974	-2.36	0.20	-0.80	-1	1	1	-1	1
STUTTAFORDS 1975	-2.37	0.20	-0.79	-1	1	1	-1	1
STUTTAFORDS 1976	-2.22	-0.12	-1.46	-1	1	1	-1	1
STUTTAFORDS 1977	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1978	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	-2.20	-0.18	-1.58	-1	0	1	-1	0
TAPSA 1973	-2.16	-0.25	-1.73	-1	0	1	-1	0
TAPSA 1974	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1975	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1970	-1.52	-1.70	-4.72	-2	1	1	-2	1
TIGERIND 1971	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1972	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
SPECTRO 1970	no data
SPECTRO 1971	no data
SPECTRO 1972	no data
SPECTRO 1973	1
SPECTRO 1974	no data
SPECTRO 1975	no data
STUTTAFORDS 1970	no data
STUTTAFORDS 1971	no data
STUTTAFORDS 1972	no data
STUTTAFORDS 1973	1
STUTTAFORDS 1974	1
STUTTAFORDS 1975	1
STUTTAFORDS 1976	1
STUTTAFORDS 1977	no data
STUTTAFORDS 1978	no data
TAPSA 1970	no data
TAPSA 1971	no data
TAPSA 1972	1
TAPSA 1973	1
TAPSA 1974	no data
TAPSA 1975	no data
TIGERIND 1970	1
TIGERIND 1971	no data
TIGERIND 1972	no data
TIGERIND 1973	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point	6.14	0.57
Lower Cut-off point	0.88	0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
TRIOMF 1970	4.85	0.59	no data	no data	no data	no data
TRIOMF 1971	5.92	0.67	no data	no data	no data	no data
TRIOMF 1972	12.82	1.46	no data	no data	no data	no data
TRIOMF 1973	12.35	1.54	0	0	1	1
TRIOMF 1974	11.56	1.14	-1	0	0	1
TRIOMF 1975	7.30	0.62	-2	0	0	1
TRIOMF 1976	2.79	0.23	-1	-2	0	1
TRIOMF 1977	-4.85	-0.39	0	-2	0	1
TRIOMF 1978	1.46	0.12	0	-2	0	1
TRIOMF 1979	10.97	1.10	-1	0	0	1
TUCKERS 1970	14.67	1.80	no data	no data	no data	no data
TUCKERS 1971	10.71	1.21	no data	no data	no data	no data
TUCKERS 1972	10.44	1.19	no data	no data	no data	no data
TUCKERS 1973	14.18	1.77	-1	0	0	1
TUCKERS 1974	13.60	1.34	-1	0	0	1
TUCKERS 1975	5.38	0.46	-1	-1	1	1
TUCKERS 1976	3.13	0.26	-2	-1	0	1
TUCKERS 1977	7.77	0.62	-1	0	0	1
TUCKERS 1978	-4.16	-0.34	-1	-2	0	1
TUCKERS 1979	3.74	0.37	-1	-1	1	1

Sub-Total 1970s

Predictive Accuracy

46 98

46.9%

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	-4.30	4.55	8.22	0	1	1	0	1
TRIOMF 1974	-4.11	4.12	7.34	0	0	1	0	0
TRIOMF 1975	-3.08	1.80	2.53	0	0	1	0	0
TRIOMF 1976	-1.98	-0.65	-2.56	-1	1	1	-1	1
TRIOMF 1977	-0.14	-4.81	-11.18	-2	0	1	-2	0
TRIOMF 1978	-1.66	-1.37	-4.06	-1	0	1	-1	0
TRIOMF 1979	-3.96	3.80	6.66	0	0	1	0	0
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	-4.74	5.55	10.29	0	0	1	0	0
TUCKERS 1974	-4.60	5.23	9.64	0	0	1	0	0
TUCKERS 1975	-2.61	0.76	0.36	-1	1	1	-1	1
TUCKERS 1976	-2.07	-0.47	-2.17	-1	0	1	-1	0
TUCKERS 1977	-3.19	2.06	3.06	0	0	1	0	0
TUCKERS 1978	-0.30	-4.43	-10.39	-2	0	1	-2	0
TUCKERS 1979	-2.22	-0.13	-1.48	-1	1	1	-1	1
Sub-Total 1970s					47	98		45
Predictive Accuracy					48.0%			45.9%

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
TRIOMF 1970	no data
TRIOMF 1971	no data
TRIOMF 1972	no data
TRIOMF 1973	1
TRIOMF 1974	1
TRIOMF 1975	1
TRIOMF 1976	1
TRIOMF 1977	1
TRIOMF 1978	1
TRIOMF 1979	1
TUCKERS 1970	no data
TUCKERS 1971	no data
TUCKERS 1972	no data
TUCKERS 1973	1
TUCKERS 1974	1
TUCKERS 1975	1
TUCKERS 1976	1
TUCKERS 1977	1
TUCKERS 1978	1
TUCKERS 1979	1

Sub-Total 1970s 98

Predictive Accuracy

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
BIDVEST 1980	7.73	0.81	0	0	1	1
BIDVEST 1981	14.58	1.04	-1	0	0	1
BIDVEST 1982	10.71	0.55	-1	-1	1	1
BIDVEST 1983	5.65	0.34	-1	-1	1	1
BIDVEST 1984	5.98	0.27	-1	-1	1	1
BIDVEST 1985	3.87	0.18	-2	-2	1	1
BIDVEST 1986	4.50	0.31	0	-1	0	1
BIDVEST 1987	-8.08	-0.65	0	-2	0	1
BIDVEST 1988	7.61	0.50	0	-1	0	1
BIDVEST 1989	34.85	1.76	0	0	1	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	6.71	0.48	-2	-1	0	1
BRICK CLAY 1982	8.50	0.44	no data	no data	no data	no data
BRICK CLAY 1983	-21.21	-1.27	-2	-2	1	1
BRICK CLAY 1984	0.86	0.04	0	-2	0	1
BRICK CLAY 1985	-31.02	-1.44	0	-2	0	1
BRICK CLAY 1986	10.69	0.75	0	0	1	1
BRICK CLAY 1987	22.83	1.83	no data	no data	no data	no data
BRICK CLAY 1988	23.92	1.56	no data	no data	no data	no data
BRISTOL 1980	7.42	0.74	-1	0	0	1
BRISTOL 1981	9.17	0.97	-1	0	0	1
BRISTOL 1982	3.04	0.22	0	-2	0	1
BRISTOL 1983	2.49	0.13	-1	-2	0	1
BRISTOL 1984	13.59	0.82	-1	0	0	1
BRISTOL 1985	7.71	0.35	-1	-1	1	1
BRISTOL 1986	6.52	0.30	-1	-1	1	1
BRISTOL 1987	5.76	0.40	0	-1	0	1

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	-3.18	2.03	3.01	0	1	1	0	1
BIDVEST 1981	-4.84	5.76	10.74	0	0	1	0	0
BIDVEST 1982	-3.90	3.66	6.38	0	0	1	0	0
BIDVEST 1983	-2.68	0.90	0.67	-1	1	1	-1	1
BIDVEST 1984	-2.76	1.09	1.04	-1	1	1	-1	1
BIDVEST 1985	-2.25	-0.07	-1.35	-1	0	1	-1	0
BIDVEST 1986	-2.40	0.28	-0.63	-1	0	1	-1	0
BIDVEST 1987	0.65	-6.57	-14.82	-2	0	1	-2	0
BIDVEST 1988	-3.15	1.97	2.88	0	1	1	0	1
BIDVEST 1989	-9.74	16.79	33.61	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	-2.93	1.48	1.87	0	0	1	0	0
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	3.82	-13.71	-29.64	-2	1	1	-2	1
BRICK CLAY 1984	-1.52	-1.70	-4.73	-2	0	1	-2	0
BRICK CLAY 1985	6.20	-19.04	-40.70	-2	0	1	-2	0
BRICK CLAY 1986	-3.90	3.64	6.35	0	1	1	0	1
BRICK CLAY 1987	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1988	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1980	-3.11	1.87	2.66	0	0	1	0	0
BRISTOL 1981	-3.53	2.82	4.64	0	0	1	0	0
BRISTOL 1982	-2.05	-0.52	-2.28	-1	0	1	-1	0
BRISTOL 1983	-1.91	-0.81	-2.89	-1	1	1	-1	1
BRISTOL 1984	-4.60	5.22	9.62	0	0	1	0	0
BRISTOL 1985	-3.18	2.03	2.99	0	0	1	0	0
BRISTOL 1986	-2.89	1.38	1.65	0	0	1	0	0
BRISTOL 1987	-2.70	0.96	0.79	-1	0	1	-1	0

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BIDVEST 1980	1
BIDVEST 1981	1
BIDVEST 1982	1
BIDVEST 1983	1
BIDVEST 1984	1
BIDVEST 1985	1
BIDVEST 1986	1
BIDVEST 1987	1
BIDVEST 1988	1
BIDVEST 1989	1
BRICK CLAY 1980	no data
BRICK CLAY 1981	1
BRICK CLAY 1982	no data
BRICK CLAY 1983	1
BRICK CLAY 1984	1
BRICK CLAY 1985	1
BRICK CLAY 1986	1
BRICK CLAY 1987	no data
BRICK CLAY 1988	no data
BRISTOL 1980	1
BRISTOL 1981	1
BRISTOL 1982	1
BRISTOL 1983	1
BRISTOL 1984	1
BRISTOL 1985	1
BRISTOL 1986	1
BRISTOL 1987	1

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
BRISTOL 1988	7.16	0.57	-1	0	0	1
BRISTOL 1989	14.60	0.95	-1	0	0	1
DRG 1980	10.62	1.12	-2	0	0	1
DRG 1981	4.73	0.34	no data	no data	no data	no data
DRG 1982	-0.23	-0.01	no data	no data	no data	no data
H PARKER 1980	4.07	0.41	-1	-1	1	1
H PARKER 1981	6.33	0.67	no data	no data	no data	no data
H PARKER 1982	1.92	0.14	no data	no data	no data	no data
IL BACK 1980	-10.40	-1.04	-2	-2	1	1
IL BACK 1981	-11.26	-1.18	no data	no data	no data	no data
IL BACK 1982	-10.65	-0.76	no data	no data	no data	no data
KTL 1980	16.77	1.76	0	0	1	1
KTL 1981	13.13	0.94	0	0	1	1
KTL 1982	11.82	0.61	-1	0	0	1
KTL 1983	12.73	0.76	-1	0	0	1
KTL 1984	11.57	0.52	-1	-1	1	1
KTL 1985	5.38	0.25	-1	-1	1	1
KTL 1986	2.44	0.17	0	-2	0	1
KTL 1987	9.22	0.74	0	0	1	1
KTL 1988	10.05	0.66	0	0	1	1
KTL 1989	10.98	0.55	-1	-1	1	1
OMNIA 1980	5.74	0.60	0	0	1	1
OMNIA 1981	18.04	1.29	0	0	1	1
OMNIA 1982	8.19	0.42	-2	-1	0	1
OMNIA 1983	3.05	0.18	-1	-2	0	1
OMNIA 1984	-0.17	-0.01	-1	-2	0	1
OMNIA 1985	1.11	0.05	0	-2	0	1

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	-3.04	1.73	2.38	0	0	1	0	0
BRISTOL 1989	-4.84	5.77	10.76	0	0	1	0	0
DRG 1980	-3.88	3.61	6.27	0	0	1	0	0
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1980	-2.30	0.04	-1.12	-1	1	1	-1	1
H PARKER 1981	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1982	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1980	1.21	-7.83	-17.44	-2	1	1	-2	1
IL BACK 1981	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1982	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1980	-5.37	6.95	13.21	0	1	1	0	1
KTL 1981	-4.49	4.98	9.11	0	1	1	0	1
KTL 1982	-4.17	4.26	7.62	0	0	1	0	0
KTL 1983	-4.39	4.75	8.65	0	0	1	0	0
KTL 1984	-4.11	4.12	7.34	0	0	1	0	0
KTL 1985	-2.61	0.76	0.36	-1	1	1	-1	1
KTL 1986	-1.90	-0.84	-2.95	-1	0	1	-1	0
KTL 1987	-3.54	2.85	4.69	0	1	1	0	1
KTL 1988	-3.74	3.30	5.63	0	1	1	0	1
KTL 1989	-3.97	3.80	6.68	0	0	1	0	0
OMNIA 1980	-2.70	0.95	0.77	-1	0	1	-1	0
OMNIA 1981	-5.68	7.64	14.64	0	1	1	0	1
OMNIA 1982	-3.29	2.29	3.53	0	0	1	0	0
OMNIA 1983	-2.05	-0.51	-2.27	-1	1	1	-1	1
OMNIA 1984	-1.27	-2.26	-5.90	-2	0	1	-2	0
OMNIA 1985	-1.58	-1.57	-4.46	-1	0	1	-1	0

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BRISTOL 1988	1
BRISTOL 1989	1
DRG 1980	1
DRG 1981	no data
DRG 1982	no data
H PARKER 1980	1
H PARKER 1981	no data
H PARKER 1982	no data
IL BACK 1980	1
IL BACK 1981	no data
IL BACK 1982	no data
KTL 1980	1
KTL 1981	1
KTL 1982	1
KTL 1983	1
KTL 1984	1
KTL 1985	1
KTL 1986	1
KTL 1987	1
KTL 1988	1
KTL 1989	1
OMNIA 1980	1
OMNIA 1981	1
OMNIA 1982	1
OMNIA 1983	1
OMNIA 1984	1
OMNIA 1985	1

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point	6.14	0.57
Lower Cut-off point	0.88	0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
OMNIA 1986	1.91	0.13	0	-2	0	1
OMNIA 1987	4.78	0.38	0	-1	0	1
OMNIA 1988	8.42	0.55	0	-1	0	1
OMNIA 1989	11.77	0.59	0	0	1	1
ROMATEX 1980	12.95	1.30	0	0	1	1
ROMATEX 1981	16.18	1.70	-1	0	0	1
ROMATEX 1982	13.79	0.99	-1	0	0	1
ROMATEX 1983	8.76	0.45	-1	-1	1	1
ROMATEX 1984	9.29	0.56	-1	-1	1	1
ROMATEX 1985	1.08	0.05	-1	-2	0	1
ROMATEX 1986	6.33	0.29	0	-1	0	1
ROMATEX 1987	9.05	0.63	0	0	1	1
ROMATEX 1988	11.28	0.90	-1	0	0	1
ROMATEX 1989	10.66	0.70	-1	0	0	1
TRIOMF 1980	12.30	1.29	-1	0	0	1
TRIOMF 1981	9.78	0.70	-2	0	0	1
TRIOMF 1982	0.17	0.01	no data	no data	no data	no data
TRIOMF 1983	-0.51	-0.03	-2	-2	1	1
TRIOMF 1984	no data	no data	-2	no data	no data	no data
TRIOMF 1985	-4.57	-0.21	-2	-2	1	1
TRIOMF 1986	-28.83	-2.01	no data	no data	no data	no data
TRIOMF 1987	-0.22	-0.02	no data	no data	no data	no data
TUCKERS 1980	3.66	0.39	0	-1	0	1
TUCKERS 1981	5.60	0.40	no data	no data	no data	no data
TUCKERS 1982	9.31	0.48	no data	no data	no data	no data

Sub-Total 1980s					28	63
Predictive Accuracy					44.4%	

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1986	-1.77	-1.13	-3.55	-1	0	1	-1	0
OMNIA 1987	-2.47	0.43	-0.32	-1	0	1	-1	0
OMNIA 1988	-3.35	2.41	3.79	0	1	1	0	1
OMNIA 1989	-4.16	4.23	7.57	0	1	1	0	1
ROMATEX 1980	-4.44	4.88	8.91	0	1	1	0	1
ROMATEX 1981	-5.22	6.63	12.54	0	0	1	0	0
ROMATEX 1982	-4.65	5.33	9.85	0	0	1	0	0
ROMATEX 1983	-3.43	2.59	4.17	0	0	1	0	0
ROMATEX 1984	-3.56	2.88	4.77	0	0	1	0	0
ROMATEX 1985	-1.57	-1.58	-4.49	-2	0	1	-1	1
ROMATEX 1986	-2.84	1.27	1.43	0	1	1	0	1
ROMATEX 1987	-3.50	2.75	4.50	0	1	1	0	1
ROMATEX 1988	-4.04	3.97	7.02	0	0	1	0	0
ROMATEX 1989	-3.89	3.63	6.31	0	0	1	0	0
TRIOMF 1980	-4.29	4.52	8.17	0	0	1	0	0
TRIOMF 1981	-3.68	3.15	5.33	0	0	1	0	0
TRIOMF 1982	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1983	-1.19	-2.45	-6.28	-2	1	1	-2	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	-0.20	-4.66	-10.87	-2	1	1	-2	1
TRIOMF 1986	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1987	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1980	-2.20	-0.18	-1.57	-1	0	1	-1	0
TUCKERS 1981	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1982	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1980s					24	63		25
Predictive Accuracy					38.1%			39.7%

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
OMNIA 1986	1
OMNIA 1987	1
OMNIA 1988	1
OMNIA 1989	1
ROMATEX 1980	1
ROMATEX 1981	1
ROMATEX 1982	1
ROMATEX 1983	1
ROMATEX 1984	1
ROMATEX 1985	1
ROMATEX 1986	1
ROMATEX 1987	1
ROMATEX 1988	1
ROMATEX 1989	1
TRIOMF 1980	1
TRIOMF 1981	1
TRIOMF 1982	no data
TRIOMF 1983	1
TRIOMF 1984	no data
TRIOMF 1985	1
TRIOMF 1986	no data
TRIOMF 1987	no data
TUCKERS 1980	1
TUCKERS 1981	no data
TUCKERS 1982	no data
Sub-Total 1980s	63
Predictive Accuracy	

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
BIDVEST 1990	13.67	0.65	0	0	1	1
BIDVEST 1991	6.48	0.32	0	-1	0	1
BIDVEST 1992	9.56	0.51	0	-1	0	1
BIDVEST 1993	6.22	0.38	0	-1	0	1
BIDVEST 1994	9.70	0.62	0	0	1	1
BIDVEST 1995	10.91	0.61	0	0	1	1
BIDVEST 1996	11.37	0.58	0	0	1	1
BIDVEST 1997	7.42	0.37	no data	no data	no data	no data
BIDVEST 1998	10.93	0.50	no data	no data	no data	no data
BRISTOL 1990	5.68	0.29	-1	-1	1	1
BRISTOL 1991	6.54	0.31	-1	-1	1	1
BRISTOL 1992	7.21	0.36	-1	-1	1	1
BRISTOL 1993	6.26	0.33	no data	no data	no data	no data
BRISTOL 1994	5.21	0.32	no data	no data	no data	no data
KTL 1990	8.13	0.39	-1	-1	1	1
KTL 1991	4.05	0.20	-1	-2	0	1
KTL 1992	0.14	0.01	0	-2	0	1
KTL 1993	5.83	0.36	0	-1	0	1
KTL 1994	10.07	0.65	0	0	1	1
KTL 1995	8.86	0.50	-1	-1	1	1
KTL 1996	16.64	0.85	-1	0	0	1
KTL 1997	6.74	0.34	-1	-1	1	1
KTL 1998	32.51	1.49	no data	no data	no data	no data
KTL 1999	45.98	2.55	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1990	-4.62	5.27	9.71	0	1	1	0	1
BIDVEST 1991	-2.88	1.35	1.60	0	1	1	0	1
BIDVEST 1992	-3.62	3.03	5.08	0	1	1	0	1
BIDVEST 1993	-2.81	1.21	1.31	0	1	1	0	1
BIDVEST 1994	-3.66	3.11	5.24	0	1	1	0	1
BIDVEST 1995	-3.95	3.77	6.60	0	1	1	0	1
BIDVEST 1996	-4.06	4.01	7.11	0	1	1	0	1
BIDVEST 1997	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1998	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1990	-2.69	0.92	0.70	-1	1	1	-1	1
BRISTOL 1991	-2.89	1.39	1.67	0	0	1	0	0
BRISTOL 1992	-3.06	1.75	2.43	0	0	1	0	0
BRISTOL 1993	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1994	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1990	-3.28	2.25	3.46	0	0	1	0	0
KTL 1991	-2.29	0.03	-1.14	-1	1	1	-1	1
KTL 1992	-1.34	-2.09	-5.55	-2	0	1	-2	0
KTL 1993	-2.72	1.00	0.87	-1	0	1	-1	0
KTL 1994	-3.75	3.31	5.65	0	1	1	0	1
KTL 1995	-3.46	2.65	4.29	0	0	1	0	0
KTL 1996	-5.34	6.88	13.07	0	0	1	0	0
KTL 1997	-2.94	1.49	1.89	0	0	1	0	0
KTL 1998	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1999	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BIDVEST 1990	1
BIDVEST 1991	1
BIDVEST 1992	1
BIDVEST 1993	1
BIDVEST 1994	1
BIDVEST 1995	1
BIDVEST 1996	1
BIDVEST 1997	no data
BIDVEST 1998	no data
BRISTOL 1990	1
BRISTOL 1991	1
BRISTOL 1992	1
BRISTOL 1993	no data
BRISTOL 1994	no data
KTL 1990	1
KTL 1991	1
KTL 1992	1
KTL 1993	1
KTL 1994	1
KTL 1995	1
KTL 1996	1
KTL 1997	1
KTL 1998	no data
KTL 1999	no data

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point 6.14 0.57
 Lower Cut-off point 0.88 0.25

Data				Yn-2 Naive Model		
Company & year	PAT/TA	SVA	5Year n-2	Pred State	# Correct	Sample Size
OMNIA 1990	9.46	0.45	-1	-1	1	1
OMNIA 1991	7.94	0.39	0	-1	0	1
OMNIA 1992	4.53	0.24	-1	-2	0	1
OMNIA 1993	9.71	0.60	-1	0	0	1
OMNIA 1994	8.46	0.54	0	-1	0	1
OMNIA 1995	6.99	0.39	0	-1	0	1
OMNIA 1996	9.13	0.47	0	-1	0	1
OMNIA 1997	11.49	0.57	no data	no data	no data	no data
OMNIA 1998	7.53	0.35	no data	no data	no data	no data
ROMATEX 1990	7.46	0.38	-1	-1	1	1
ROMATEX 1991	0.31	0.01	-1	-2	0	1
ROMATEX 1992	2.62	0.13	-1	-2	0	1
ROMATEX 1993	7.25	0.38	-1	-1	1	1
ROMATEX 1994	7.92	0.49	-1	-1	1	1
ROMATEX 1995	6.89	0.44	-2	-1	0	1
ROMATEX 1996	0.26	0.01	-1	-2	0	1
ROMATEX 1997	-10.35	-0.53	no data	no data	no data	no data
ROMATEX 1998	1.52	0.08	no data	no data	no data	no data

Sub-Total 1990s					15	32
Predictive Accuracy					46.9%	
 Grand Total					89	193
Predictive Accuracy					46.1%	

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-2 Fisher Discriminant Analysis						Yn-2 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1990	-3.60	2.98	4.97	0	0	1	0	0
OMNIA 1991	-3.23	2.15	3.25	0	1	1	0	1
OMNIA 1992	-2.41	0.29	-0.60	-1	1	1	-1	1
OMNIA 1993	-3.66	3.11	5.25	0	0	1	0	0
OMNIA 1994	-3.36	2.43	3.84	0	1	1	0	1
OMNIA 1995	-3.00	1.63	2.17	0	1	1	0	1
OMNIA 1996	-3.52	2.80	4.59	0	1	1	0	1
OMNIA 1997	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1998	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1990	-3.12	1.89	2.71	0	0	1	0	0
ROMATEX 1991	-1.38	-2.00	-5.36	-2	0	1	-2	0
ROMATEX 1992	-1.94	-0.75	-2.76	-1	1	1	-1	1
ROMATEX 1993	-3.06	1.77	2.47	0	0	1	0	0
ROMATEX 1994	-3.23	2.14	3.23	0	0	1	0	0
ROMATEX 1995	-2.98	1.58	2.07	0	0	1	0	0
ROMATEX 1996	-1.37	-2.03	-5.41	-2	0	1	-2	0
ROMATEX 1997	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1998	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1990s					16	32		16
Predictive Accuracy					50.0%			50.0%
Grand Total					87	193		86
Predictive Accuracy					45.1%			44.6%

APPENDIX I2 : 5 Year n-2 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
OMNIA 1990	1
OMNIA 1991	1
OMNIA 1992	1
OMNIA 1993	1
OMNIA 1994	1
OMNIA 1995	1
OMNIA 1996	1
OMNIA 1997	no data
OMNIA 1998	no data
ROMATEX 1990	1
ROMATEX 1991	1
ROMATEX 1992	1
ROMATEX 1993	1
ROMATEX 1994	1
ROMATEX 1995	1
ROMATEX 1996	1
ROMATEX 1997	no data
ROMATEX 1998	no data

Sub-Total 1990s 32

Predictive Accuracy

Grand Total 193

Predictive Accuracy

APPENDIX J1 : 5 Year n-3 Models (Test Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Company & year	Data			Yn-3 Naive Model		
	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
A&P 1975	17.02	0.62	-1	-1	1	1
AVBAK 1976	14.11	0.69	0	-1	0	1
BERZACK 1975	14.76	0.72	0	0	1	1
BROMAIN 1974	7.73	0.34	-1	-1	1	1
BTR 1976	19.80	0.93	0	0	1	1
CHEMSERVE 1976	11.68	0.46	0	-1	0	1
COATES 1973	20.37	1.52	0	0	1	1
DESIREE 1974	10.58	0.47	0	-1	0	1
DUBIN 1973	11.66	0.73	0	0	1	1
FINTECH 1974	16.43	0.74	0	0	1	1
FOWLER 1976	6.65	0.29	-2	-1	0	1
FRASERS 1974	17.36	0.97	0	0	1	1
GLEN ANIL 1973	9.05	0.80	-1	0	0	1
HANHILL 1973	12.97	0.67	-1	-1	1	1
HEPWORTHS 1976	18.36	0.74	-2	0	0	1
LAWSON 1973	0.32	-0.33	-2	-2	1	1
LTA 1974	10.34	0.79	0	0	1	1
LUCYS 1972	4.12	-0.26	-2	-2	1	1
MARSHALL 1974	9.77	0.43	-1	-1	1	1
SIMBA 1970	2.93	0.01	-2	-2	1	1
Total					14	20
Predictive Accuracy					70%	

APPENDIX J1 : 5 Year n-3 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
A&P 1975	-0.60	0.69	0.57	-1	1	1	0	0
AVBAK 1976	-0.53	1.05	1.14	0	1	1	0	1
BERZACK 1975	-0.50	1.21	1.39	0	1	1	0	1
BROMAIN 1974	-0.84	-0.67	-1.56	-1	1	1	0	0
BTR 1976	-0.32	2.26	3.04	0	1	1	0	1
CHEMSERVE 1976	-0.73	-0.07	-0.61	-1	0	1	0	1
COATES 1973	0.20	5.18	7.60	0	1	1	0	1
DESIREE 1974	-0.73	-0.05	-0.58	-1	0	1	0	1
DUBIN 1973	-0.50	1.24	1.44	0	1	1	0	1
FINTECH 1974	-0.48	1.32	1.56	0	1	1	0	1
FOWLER 1976	-0.89	-0.95	-1.99	-2	1	1	-2	1
FRASERS 1974	-0.28	2.47	3.36	0	1	1	0	1
GLEN ANIL 1973	-0.44	1.59	1.98	0	0	1	0	0
HANHILL 1973	-0.55	0.94	0.97	0	0	1	0	0
HEPWORTHS 1976	-0.49	1.32	1.55	0	0	1	0	0
LAWSON 1973	-1.43	-4.01	-6.78	-2	1	1	-2	1
LTA 1974	-0.44	1.55	1.91	0	1	1	0	1
LUCYS 1972	-1.36	-3.65	-6.21	-2	1	1	-2	1
MARSHALL 1974	-0.76	-0.25	-0.89	-1	1	1	0	0
SIMBA 1970	-1.13	-2.33	-4.15	-2	1	1	-2	1
Total					15	20		14
Predictive Accuracy					75%			70%

APPENDIX J1 : 5 Year n-3 Models (Test Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Sample Size
A&P 1975	1
AVBAK 1976	1
BERZACK 1975	1
BROMAIN 1974	1
BTR 1976	1
CHEMSERVE 1976	1
COATES 1973	1
DESIREE 1974	1
DUBIN 1973	1
FINTECH 1974	1
FOWLER 1976	1
FRASERS 1974	1
GLEN ANIL 1973	1
HANHILL 1973	1
HEPWORTHS 1976	1
LAWSON 1973	1
LTA 1974	1
LUCYS 1972	1
MARSHALL 1974	1
SIMBA 1970	1

Total 20

Predictive Accuracy

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	8.93	0.34	-2	-1	0	1
BACKCLOTHING 1971	4.33	-0.11	-2	-2	1	1
BACKCLOTHING 1972	-5.48	-1.11	no data	no data	no data	no data
BACKCLOTHING 1973	-6.24	-1.35	no data	no data	no data	no data
BACKCLOTHING 1974	-6.52	-1.39	no data	no data	no data	no data
BIDVEST 1970	15.24	0.91	no data	no data	no data	no data
BIDVEST 1971	12.43	0.50	no data	no data	no data	no data
BIDVEST 1972	12.65	0.57	0	-1	0	1
BIDVEST 1973	11.10	0.67	0	-1	0	1
BIDVEST 1974	11.46	0.58	-1	-1	1	1
BIDVEST 1975	13.02	0.58	-1	-1	1	1
BIDVEST 1976	13.58	0.56	-1	-1	1	1
BIDVEST 1977	10.08	0.35	-1	-1	1	1
BIDVEST 1978	12.59	0.54	0	-1	0	1
BIDVEST 1979	11.52	0.48	0	-1	0	1
BRICK CLAY 1970	7.86	0.57	no data	no data	no data	no data
BRICK CLAY 1971	-4.89	-0.67	no data	no data	no data	no data
BRICK CLAY 1972	2.89	0.02	0	-2	0	1
BRICK CLAY 1973	10.67	0.83	0	0	1	1
BRICK CLAY 1974	10.26	0.41	-1	-1	1	1
BRICK CLAY 1975	13.07	0.69	-1	-1	1	1
BRICK CLAY 1976	14.76	0.65	-1	-1	1	1
BRICK CLAY 1977	11.90	0.40	no data	no data	no data	no data
BRICK CLAY 1978	9.36	0.25	no data	no data	no data	no data
BRICK CLAY 1979	11.35	0.43	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	-0.84	-0.69	-1.58	-1	0	1	0	0
BACKCLOTHING 1971	-1.24	-2.93	-5.09	-2	1	1	-2	1
BACKCLOTHING 1972	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1973	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	-0.63	0.48	0.24	-1	0	1	0	1
BIDVEST 1973	-0.55	0.95	0.99	0	1	1	0	1
BIDVEST 1974	-0.63	0.50	0.28	-1	1	1	0	0
BIDVEST 1975	-0.63	0.49	0.26	-1	1	1	0	0
BIDVEST 1976	-0.65	0.41	0.14	-1	1	1	0	0
BIDVEST 1977	-0.83	-0.62	-1.47	-1	1	1	0	0
BIDVEST 1978	-0.67	0.29	-0.06	-1	0	1	0	1
BIDVEST 1979	-0.71	0.03	-0.47	-1	0	1	0	1
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1972	-1.12	-2.25	-4.03	-2	0	1	-2	0
BRICK CLAY 1973	-0.41	1.77	2.26	0	1	1	0	1
BRICK CLAY 1974	-0.77	-0.32	-1.00	-1	1	1	0	0
BRICK CLAY 1975	-0.53	1.07	1.17	0	0	1	0	0
BRICK CLAY 1976	-0.57	0.86	0.84	-1	1	1	0	0
BRICK CLAY 1977	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1978	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1979	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BACKCLOTHING 1970	1
BACKCLOTHING 1971	1
BACKCLOTHING 1972	no data
BACKCLOTHING 1973	no data
BACKCLOTHING 1974	no data
BIDVEST 1970	no data
BIDVEST 1971	no data
BIDVEST 1972	1
BIDVEST 1973	1
BIDVEST 1974	1
BIDVEST 1975	1
BIDVEST 1976	1
BIDVEST 1977	1
BIDVEST 1978	1
BIDVEST 1979	1
BRICK CLAY 1970	no data
BRICK CLAY 1971	no data
BRICK CLAY 1972	1
BRICK CLAY 1973	1
BRICK CLAY 1974	1
BRICK CLAY 1975	1
BRICK CLAY 1976	1
BRICK CLAY 1977	no data
BRICK CLAY 1978	no data
BRICK CLAY 1979	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
BRISTOL 1970	9.73	0.60	no data	no data	no data	no data
BRISTOL 1971	8.65	0.48	no data	no data	no data	no data
BRISTOL 1972	0.98	-0.25	-1	-2	0	1
BRISTOL 1973	7.40	0.24	0	-2	0	1
BRISTOL 1974	8.19	0.41	0	-1	0	1
BRISTOL 1975	7.93	0.29	-1	-1	1	1
BRISTOL 1976	8.05	0.25	-1	-1	1	1
BRISTOL 1977	7.29	0.20	0	-2	0	1
BRISTOL 1978	8.40	0.27	0	-1	0	1
BRISTOL 1979	7.30	0.20	-1	-2	0	1
BURHOSE 1970	21.20	1.61	no data	no data	no data	no data
BURHOSE 1971	26.30	1.81	no data	no data	no data	no data
BURHOSE 1972	15.48	0.96	0	0	1	1
BURHOSE 1973	2.08	0.03	-1	-2	0	1
BURHOSE 1974	11.06	0.52	no data	no data	no data	no data
BURHOSE 1975	21.16	1.30	no data	no data	no data	no data
BURHOSE 1976	14.50	0.66	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data
BURHOSE 1978	6.13	0.20	no data	no data	no data	no data
BURHOSE 1979	13.17	0.98	no data	no data	no data	no data
CONJERS 1970	14.87	0.87	-2	0	0	1
CONJERS 1971	16.48	0.95	no data	no data	no data	no data
CONJERS 1972	13.77	0.89	-2	0	0	1
CONJERS 1973	1.90	-0.12	no data	no data	no data	no data
CONJERS 1974	12.49	0.68	no data	no data	no data	no data
CONJERS 1975	-7.79	-1.02	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	-1.36	-3.64	-6.20	-2	0	1	-2	0
BRISTOL 1973	-0.93	-1.18	-2.36	-2	0	1	0	1
BRISTOL 1974	-0.78	-0.35	-1.06	-1	0	1	0	1
BRISTOL 1975	-0.88	-0.94	-1.97	-2	0	1	0	0
BRISTOL 1976	-0.92	-1.13	-2.27	-2	0	1	0	0
BRISTOL 1977	-0.96	-1.38	-2.66	-2	0	1	0	1
BRISTOL 1978	-0.90	-1.01	-2.09	-2	0	1	0	1
BRISTOL 1979	-0.96	-1.38	-2.66	-2	0	1	0	0
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	-0.30	2.38	3.22	0	1	1	0	1
BURHOSE 1973	-1.11	-2.23	-4.00	-2	0	1	-2	0
BURHOSE 1974	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1975	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1976	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	-0.37	1.95	2.55	0	0	1	0	0
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	-0.36	2.03	2.67	0	0	1	0	0
CONJERS 1973	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BRISTOL 1970	no data
BRISTOL 1971	no data
BRISTOL 1972	1
BRISTOL 1973	1
BRISTOL 1974	1
BRISTOL 1975	1
BRISTOL 1976	1
BRISTOL 1977	1
BRISTOL 1978	1
BRISTOL 1979	1
BURHOSE 1970	no data
BURHOSE 1971	no data
BURHOSE 1972	1
BURHOSE 1973	1
BURHOSE 1974	no data
BURHOSE 1975	no data
BURHOSE 1976	no data
BURHOSE 1977	no data
BURHOSE 1978	no data
BURHOSE 1979	no data
CONJERS 1970	1
CONJERS 1971	no data
CONJERS 1972	1
CONJERS 1973	no data
CONJERS 1974	no data
CONJERS 1975	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
DRG 1978	20.13	1.07	no data	no data	no data	no data
DRG 1979	15.24	1.08	-2	0	0	1
FAIRWEATHER 1970	18.54	1.11	no data	no data	no data	no data
FAIRWEATHER 1971	12.80	0.68	-2	-1	0	1
FAIRWEATHER 1972	6.81	-0.20	0	-2	0	1
FAIRWEATHER 1973	12.05	0.57	-2	-1	0	1
FAIRWEATHER 1974	4.23	-0.33	no data	no data	no data	no data
FAIRWEATHER 1975	13.71	0.42	no data	no data	no data	no data
FAIRWEATHER 1976	-2.91	-0.79	no data	no data	no data	no data
H PARKER 1970	6.98	0.58	-2	-1	0	1
H PARKER 1971	3.71	0.11	no data	no data	no data	no data
H PARKER 1972	-3.95	-0.87	0	-2	0	1
H PARKER 1973	-10.08	-1.52	0	-2	0	1
H PARKER 1974	14.72	1.47	0	0	1	1
H PARKER 1975	11.06	0.73	-1	0	0	1
H PARKER 1976	4.35	0.06	0	-2	0	1
H PARKER 1977	11.85	0.47	-1	-1	1	1
H PARKER 1978	8.36	0.14	0	-2	0	1
H PARKER 1979	17.88	0.87	-1	0	0	1
IL BACK 1970	8.78	0.49	-2	-1	0	1
IL BACK 1971	5.31	0.06	-2	-2	1	1
IL BACK 1972	-4.93	-0.95	0	-2	0	1
IL BACK 1973	-1.85	-0.59	no data	no data	no data	no data
IL BACK 1974	-6.36	-1.44	-2	-2	1	1
IL BACK 1975	10.51	0.37	-2	-1	0	1
IL BACK 1976	no data	no data	-2	no data	no data	no data
IL BACK 1977	-1.93	-0.77	-2	-2	1	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	-0.19	3.00	4.19	0	0	1	0	0
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	-0.54	0.99	1.04	0	0	1	0	0
FAIRWEATHER 1972	-1.31	-3.37	-5.78	-2	0	1	0	1
FAIRWEATHER 1973	-0.64	0.44	0.18	-1	0	1	0	0
FAIRWEATHER 1974	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1975	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1976	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1970	-0.63	0.50	0.27	-1	0	1	0	0
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	-1.91	-6.71	-11.00	-2	0	1	-2	0
H PARKER 1973	-2.48	-9.95	-16.08	-2	0	1	-2	0
H PARKER 1974	0.15	4.92	7.19	0	1	1	0	1
H PARKER 1975	-0.50	1.24	1.44	0	0	1	0	0
H PARKER 1976	-1.09	-2.08	-3.75	-2	0	1	-2	0
H PARKER 1977	-0.73	-0.05	-0.58	-1	1	1	0	0
H PARKER 1978	-1.01	-1.67	-3.12	-2	0	1	0	1
H PARKER 1979	-0.37	1.97	2.58	0	0	1	0	0
IL BACK 1970	-0.71	0.04	-0.44	-1	0	1	0	0
IL BACK 1971	-1.09	-2.10	-3.79	-2	1	1	-2	1
IL BACK 1972	-1.97	-7.09	-11.59	-2	0	1	-2	0
IL BACK 1973	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1974	-2.41	-9.54	-15.43	-2	1	1	-2	1
IL BACK 1975	-0.82	-0.55	-1.36	-1	0	1	0	0
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	-1.81	-6.18	-10.17	-2	1	1	-2	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
DRG 1978	no data
DRG 1979	1
FAIRWEATHER 1970	no data
FAIRWEATHER 1971	1
FAIRWEATHER 1972	1
FAIRWEATHER 1973	1
FAIRWEATHER 1974	no data
FAIRWEATHER 1975	no data
FAIRWEATHER 1976	no data
H PARKER 1970	1
H PARKER 1971	no data
H PARKER 1972	1
H PARKER 1973	1
H PARKER 1974	1
H PARKER 1975	1
H PARKER 1976	1
H PARKER 1977	1
H PARKER 1978	1
H PARKER 1979	1
IL BACK 1970	1
IL BACK 1971	1
IL BACK 1972	1
IL BACK 1973	no data
IL BACK 1974	1
IL BACK 1975	1
IL BACK 1976	no data
IL BACK 1977	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
IL BACK 1978	-16.90	-1.95	-2	-2	1	1
IL BACK 1979	-3.72	-0.78	-2	-2	1	1
KTL 1970	11.39	0.84	no data	no data	no data	no data
KTL 1971	10.61	0.67	no data	no data	no data	no data
KTL 1972	19.57	1.17	0	0	1	1
KTL 1973	26.15	2.08	0	0	1	1
KTL 1974	27.04	1.88	-1	0	0	1
KTL 1975	19.70	1.37	-1	0	0	1
KTL 1976	15.94	1.07	-1	0	0	1
KTL 1977	17.47	0.81	0	0	1	1
KTL 1978	19.98	0.92	0	0	1	1
KTL 1979	19.14	1.03	0	0	1	1
OMNIA 1970	19.85	1.34	no data	no data	no data	no data
OMNIA 1971	17.97	1.12	no data	no data	no data	no data
OMNIA 1972	18.78	1.17	0	0	1	1
OMNIA 1973	16.96	1.16	-2	0	0	1
OMNIA 1974	16.43	0.90	-2	0	0	1
OMNIA 1975	18.87	0.88	-2	0	0	1
OMNIA 1976	4.40	-0.18	-2	-2	1	1
OMNIA 1977	-7.16	-0.91	0	-2	0	1
OMNIA 1978	-1.69	-0.61	0	-2	0	1
OMNIA 1979	0.00	-0.04	0	-2	0	1
PAN 1970	12.20	1.18	-2	0	0	1
PAN 1971	11.95	0.96	-2	0	0	1
PAN 1972	3.54	0.07	no data	no data	no data	no data
PAN 1973	-2.84	-0.99	no data	no data	no data	no data
PAN 1974	0.85	-0.38	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	-2.86	-12.07	-19.40	-2	1	1	-2	1
IL BACK 1979	-1.82	-6.24	-10.27	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	-0.11	3.43	4.87	0	1	1	0	1
KTL 1973	0.69	7.94	11.92	0	1	1	0	1
KTL 1974	0.51	6.95	10.37	0	0	1	0	0
KTL 1975	0.07	4.46	6.47	0	0	1	0	0
KTL 1976	-0.20	2.94	4.10	0	0	1	0	0
KTL 1977	-0.42	1.66	2.09	0	1	1	0	1
KTL 1978	-0.33	2.20	2.94	0	1	1	0	1
KTL 1979	-0.23	2.76	3.81	0	1	1	0	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	-0.11	3.45	4.90	0	1	1	0	1
OMNIA 1973	-0.12	3.39	4.80	0	0	1	0	0
OMNIA 1974	-0.35	2.09	2.77	0	0	1	0	0
OMNIA 1975	-0.36	2.00	2.62	0	0	1	0	0
OMNIA 1976	-1.30	-3.28	-5.63	-2	1	1	-2	1
OMNIA 1977	-1.94	-6.92	-11.33	-2	0	1	-2	0
OMNIA 1978	-1.68	-5.42	-8.99	-2	0	1	-2	0
OMNIA 1979	-1.17	-2.57	-4.53	-2	0	1	-2	0
PAN 1970	-0.10	3.50	4.96	0	0	1	0	0
PAN 1971	-0.30	2.39	3.23	0	0	1	0	0
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1974	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
IL BACK 1978	1
IL BACK 1979	1
KTL 1970	no data
KTL 1971	no data
KTL 1972	1
KTL 1973	1
KTL 1974	1
KTL 1975	1
KTL 1976	1
KTL 1977	1
KTL 1978	1
KTL 1979	1
OMNIA 1970	no data
OMNIA 1971	no data
OMNIA 1972	1
OMNIA 1973	1
OMNIA 1974	1
OMNIA 1975	1
OMNIA 1976	1
OMNIA 1977	1
OMNIA 1978	1
OMNIA 1979	1
PAN 1970	1
PAN 1971	1
PAN 1972	no data
PAN 1973	no data
PAN 1974	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
PIONEER H 1973	9.98	0.48	no data	no data	no data	no data
PIONEER H 1974	10.67	0.51	no data	no data	no data	no data
PIONEER H 1975	11.97	0.58	-1	-1	1	1
PIONEER H 1976	9.50	0.37	-1	-1	1	1
PIONEER H 1977	10.09	0.39	no data	no data	no data	no data
PIONEER H 1978	10.58	0.44	no data	no data	no data	no data
PIONEER H 1979	12.75	0.71	no data	no data	no data	no data
ROMATEX 1970	4.71	0.25	no data	no data	no data	no data
ROMATEX 1971	5.74	0.33	no data	no data	no data	no data
ROMATEX 1972	6.44	0.31	-2	-1	0	1
ROMATEX 1973	7.84	0.42	0	-1	0	1
ROMATEX 1974	13.10	0.94	0	0	1	1
ROMATEX 1975	-5.05	-0.94	0	-2	0	1
ROMATEX 1976	12.49	0.52	0	-1	0	1
ROMATEX 1977	12.36	0.60	0	-1	0	1
ROMATEX 1978	14.28	0.73	0	0	1	1
ROMATEX 1979	16.20	0.85	0	0	1	1
SCHACHAT 1970	11.73	0.64	no data	no data	no data	no data
SCHACHAT 1971	14.29	0.74	no data	no data	no data	no data
SCHACHAT 1972	17.44	0.94	-1	0	0	1
SCHACHAT 1973	12.47	0.78	-1	0	0	1
SCHACHAT 1974	11.45	0.47	-1	-1	1	1
SCHACHAT 1975	14.95	0.44	no data	no data	no data	no data
SCHACHAT 1976	16.23	0.55	no data	no data	no data	no data
SCHACHAT 1977	11.73	0.32	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	-0.63	0.51	0.28	-1	1	1	0	0
PIONEER H 1976	-0.81	-0.54	-1.35	-1	1	1	0	0
PIONEER H 1977	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1978	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1979	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	-0.86	-0.82	-1.79	-1	0	1	-2	1
ROMATEX 1973	-0.77	-0.28	-0.94	-1	0	1	0	1
ROMATEX 1974	-0.31	2.28	3.06	0	1	1	0	1
ROMATEX 1975	-1.97	-7.07	-11.56	-2	0	1	-2	0
ROMATEX 1976	-0.68	0.20	-0.20	-1	0	1	0	1
ROMATEX 1977	-0.61	0.62	0.46	-1	0	1	0	1
ROMATEX 1978	-0.50	1.24	1.44	0	1	1	0	1
ROMATEX 1979	-0.39	1.84	2.37	0	1	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	-0.31	2.31	3.11	0	0	1	0	0
SCHACHAT 1973	-0.45	1.51	1.85	0	0	1	0	0
SCHACHAT 1974	-0.73	-0.04	-0.57	-1	1	1	0	0
SCHACHAT 1975	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1976	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1977	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
PIONEER H 1973	no data
PIONEER H 1974	no data
PIONEER H 1975	1
PIONEER H 1976	1
PIONEER H 1977	no data
PIONEER H 1978	no data
PIONEER H 1979	no data
ROMATEX 1970	no data
ROMATEX 1971	no data
ROMATEX 1972	1
ROMATEX 1973	1
ROMATEX 1974	1
ROMATEX 1975	1
ROMATEX 1976	1
ROMATEX 1977	1
ROMATEX 1978	1
ROMATEX 1979	1
SCHACHAT 1970	no data
SCHACHAT 1971	no data
SCHACHAT 1972	1
SCHACHAT 1973	1
SCHACHAT 1974	1
SCHACHAT 1975	no data
SCHACHAT 1976	no data
SCHACHAT 1977	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
SPECTRO 1970	7.47	0.50	no data	no data	no data	no data
SPECTRO 1971	12.89	1.10	no data	no data	no data	no data
SPECTRO 1972	13.39	0.94	-2	0	0	1
SPECTRO 1973	12.95	1.43	no data	no data	no data	no data
SPECTRO 1974	9.79	0.78	no data	no data	no data	no data
SPECTRO 1975	2.92	-0.38	no data	no data	no data	no data
STUTTAFORDS 1970	12.89	0.93	no data	no data	no data	no data
STUTTAFORDS 1971	15.35	1.51	no data	no data	no data	no data
STUTTAFORDS 1972	6.10	0.40	-1	-1	1	1
STUTTAFORDS 1973	12.96	1.18	-1	0	0	1
STUTTAFORDS 1974	7.28	0.54	-1	-1	1	1
STUTTAFORDS 1975	8.34	0.43	-1	-1	1	1
STUTTAFORDS 1976	7.47	0.32	no data	no data	no data	no data
STUTTAFORDS 1977	8.06	0.32	no data	no data	no data	no data
STUTTAFORDS 1978	6.28	0.25	no data	no data	no data	no data
TAPSA 1970	14.83	1.17	no data	no data	no data	no data
TAPSA 1971	13.22	0.81	-2	0	0	1
TAPSA 1972	11.50	0.41	-2	-1	0	1
TAPSA 1973	8.48	0.40	no data	no data	no data	no data
TAPSA 1974	0.92	-0.98	no data	no data	no data	no data
TAPSA 1975	-29.03	-3.81	no data	no data	no data	no data
TIGERIND 1970	7.47	0.11	no data	no data	no data	no data
TIGERIND 1971	0.00	-0.69	no data	no data	no data	no data
TIGERIND 1972	-9.26	-2.64	no data	no data	no data	no data
TIGERIND 1973	5.91	0.02	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point

Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	-0.31	2.30	3.09	0	0	1	0	0
SPECTRO 1973	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1975	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	-0.79	-0.39	-1.11	-1	1	1	-2	0
STUTTAFORDS 1973	-0.10	3.48	4.94	0	0	1	0	0
STUTTAFORDS 1974	-0.66	0.33	0.01	-1	1	1	0	0
STUTTAFORDS 1975	-0.76	-0.24	-0.89	-1	1	1	0	0
STUTTAFORDS 1976	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1977	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1978	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	-0.42	1.67	2.11	0	0	1	0	0
TAPSA 1972	-0.77	-0.31	-1.00	-1	0	1	0	0
TAPSA 1973	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1974	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1975	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1972	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
SPECTRO 1970	no data
SPECTRO 1971	no data
SPECTRO 1972	1
SPECTRO 1973	no data
SPECTRO 1974	no data
SPECTRO 1975	no data
STUTTAFORDS 1970	no data
STUTTAFORDS 1971	no data
STUTTAFORDS 1972	1
STUTTAFORDS 1973	1
STUTTAFORDS 1974	1
STUTTAFORDS 1975	1
STUTTAFORDS 1976	no data
STUTTAFORDS 1977	no data
STUTTAFORDS 1978	no data
TAPSA 1970	no data
TAPSA 1971	1
TAPSA 1972	1
TAPSA 1973	no data
TAPSA 1974	no data
TAPSA 1975	no data
TIGERIND 1970	no data
TIGERIND 1971	no data
TIGERIND 1972	no data
TIGERIND 1973	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
TRIOMF 1970	9.30	0.59	no data	no data	no data	no data
TRIOMF 1971	9.43	0.67	no data	no data	no data	no data
TRIOMF 1972	23.78	1.46	0	0	1	1
TRIOMF 1973	22.54	1.54	-1	0	0	1
TRIOMF 1974	19.58	1.14	-2	0	0	1
TRIOMF 1975	14.21	0.62	-1	-1	1	1
TRIOMF 1976	9.07	0.23	0	-2	0	1
TRIOMF 1977	2.60	-0.39	0	-2	0	1
TRIOMF 1978	9.13	0.12	-1	-2	0	1
TRIOMF 1979	17.61	1.10	-1	0	0	1
TUCKERS 1970	15.46	1.80	no data	no data	no data	no data
TUCKERS 1971	13.04	1.21	no data	no data	no data	no data
TUCKERS 1972	12.85	1.19	-1	0	0	1
TUCKERS 1973	15.88	1.77	-1	0	0	1
TUCKERS 1974	14.94	1.34	-1	0	0	1
TUCKERS 1975	6.09	0.46	-2	-1	0	1
TUCKERS 1976	4.11	0.26	-1	-1	1	1
TUCKERS 1977	9.37	0.62	-1	-1	1	1
TUCKERS 1978	-2.85	-0.34	-1	-2	0	1
TUCKERS 1979	4.68	0.37	0	-1	0	1

Sub-Total 1970s

39

102

Predictive Accuracy

38.2%

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	0.14	4.87	7.11	0	1	1	0	1
TRIOMF 1973	0.22	5.30	7.78	0	0	1	0	0
TRIOMF 1974	-0.14	3.28	4.62	0	0	1	0	0
TRIOMF 1975	-0.59	0.70	0.59	-1	1	1	0	0
TRIOMF 1976	-0.94	-1.24	-2.45	-2	0	1	0	1
TRIOMF 1977	-1.48	-4.30	-7.24	-2	0	1	-2	0
TRIOMF 1978	-1.03	-1.78	-3.28	-2	0	1	0	0
TRIOMF 1979	-0.17	3.07	4.30	0	0	1	0	0
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	-0.09	3.52	5.01	0	0	1	0	0
TUCKERS 1973	0.42	6.43	9.56	0	0	1	0	0
TUCKERS 1974	0.04	4.27	6.18	0	0	1	0	0
TUCKERS 1975	-0.74	-0.11	-0.68	-1	0	1	-2	1
TUCKERS 1976	-0.91	-1.10	-2.23	-2	0	1	-2	0
TUCKERS 1977	-0.59	0.71	0.61	-1	1	1	0	0
TUCKERS 1978	-1.44	-4.08	-6.89	-2	0	1	-2	0
TUCKERS 1979	-0.81	-0.51	-1.31	-1	0	1	-2	0
Sub-Total 1970s					36	102		36
Predictive Accuracy					35.3%			35.3%

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
TRIOMF 1970	no data
TRIOMF 1971	no data
TRIOMF 1972	1
TRIOMF 1973	1
TRIOMF 1974	1
TRIOMF 1975	1
TRIOMF 1976	1
TRIOMF 1977	1
TRIOMF 1978	1
TRIOMF 1979	1
TUCKERS 1970	no data
TUCKERS 1971	no data
TUCKERS 1972	1
TUCKERS 1973	1
TUCKERS 1974	1
TUCKERS 1975	1
TUCKERS 1976	1
TUCKERS 1977	1
TUCKERS 1978	1
TUCKERS 1979	1

Sub-Total 1970s 102

Predictive Accuracy

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
BIDVEST 1980	14.47	0.81	-1	0	0	1
BIDVEST 1981	22.07	1.04	-1	0	0	1
BIDVEST 1982	17.75	0.55	-1	-1	1	1
BIDVEST 1983	12.26	0.34	-1	-1	1	1
BIDVEST 1984	10.39	0.27	-2	-1	0	1
BIDVEST 1985	9.33	0.18	0	-2	0	1
BIDVEST 1986	8.97	0.31	0	-1	0	1
BIDVEST 1987	-1.28	-0.65	0	-2	0	1
BIDVEST 1988	16.25	0.50	0	-1	0	1
BIDVEST 1989	48.68	1.76	0	0	1	1
BRICK CLAY 1980	no data	no data	-2	no data	no data	no data
BRICK CLAY 1981	11.45	0.48	no data	no data	no data	no data
BRICK CLAY 1982	13.33	0.44	-2	-1	0	1
BRICK CLAY 1983	-13.11	-1.27	0	-2	0	1
BRICK CLAY 1984	9.66	0.04	0	-2	0	1
BRICK CLAY 1985	-16.54	-1.44	0	-2	0	1
BRICK CLAY 1986	17.91	0.75	no data	no data	no data	no data
BRICK CLAY 1987	23.48	1.83	no data	no data	no data	no data
BRICK CLAY 1988	24.17	1.56	no data	no data	no data	no data
BRISTOL 1980	11.19	0.74	-1	0	0	1
BRISTOL 1981	12.85	0.97	0	0	1	1
BRISTOL 1982	7.16	0.22	-1	-2	0	1
BRISTOL 1983	8.07	0.13	-1	-2	0	1
BRISTOL 1984	21.94	0.82	-1	0	0	1
BRISTOL 1985	13.07	0.35	-1	-1	1	1
BRISTOL 1986	9.59	0.30	0	-1	0	1
BRISTOL 1987	8.50	0.40	-1	-1	1	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	-0.42	1.67	2.10	0	0	1	0	0
BIDVEST 1981	-0.22	2.80	3.87	0	0	1	0	0
BIDVEST 1982	-0.65	0.38	0.09	-1	1	1	0	0
BIDVEST 1983	-0.84	-0.69	-1.59	-1	1	1	0	0
BIDVEST 1984	-0.90	-1.04	-2.14	-2	1	1	0	0
BIDVEST 1985	-0.98	-1.48	-2.82	-2	0	1	0	1
BIDVEST 1986	-0.86	-0.82	-1.78	-1	0	1	0	1
BIDVEST 1987	-1.71	-5.59	-9.25	-2	0	1	-2	0
BIDVEST 1988	-0.70	0.09	-0.36	-1	0	1	0	1
BIDVEST 1989	0.41	6.36	9.44	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	-0.75	-0.19	-0.80	-1	0	1	0	0
BRICK CLAY 1983	-2.26	-8.70	-14.12	-2	0	1	-2	0
BRICK CLAY 1984	-1.10	-2.18	-3.92	-2	0	1	0	1
BRICK CLAY 1985	-2.41	-9.54	-15.44	-2	0	1	-2	0
BRICK CLAY 1986	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1987	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1988	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1980	-0.49	1.31	1.54	0	0	1	0	0
BRISTOL 1981	-0.29	2.42	3.28	0	1	1	0	1
BRISTOL 1982	-0.95	-1.30	-2.53	-2	0	1	0	0
BRISTOL 1983	-1.03	-1.73	-3.22	-2	0	1	0	0
BRISTOL 1984	-0.42	1.68	2.12	0	0	1	0	0
BRISTOL 1985	-0.84	-0.66	-1.54	-1	1	1	0	0
BRISTOL 1986	-0.87	-0.87	-1.86	-1	0	1	0	1
BRISTOL 1987	-0.79	-0.38	-1.10	-1	1	1	0	0

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BIDVEST 1980	1
BIDVEST 1981	1
BIDVEST 1982	1
BIDVEST 1983	1
BIDVEST 1984	1
BIDVEST 1985	1
BIDVEST 1986	1
BIDVEST 1987	1
BIDVEST 1988	1
BIDVEST 1989	1
BRICK CLAY 1980	no data
BRICK CLAY 1981	no data
BRICK CLAY 1982	1
BRICK CLAY 1983	1
BRICK CLAY 1984	1
BRICK CLAY 1985	1
BRICK CLAY 1986	no data
BRICK CLAY 1987	no data
BRICK CLAY 1988	no data
BRISTOL 1980	1
BRISTOL 1981	1
BRISTOL 1982	1
BRISTOL 1983	1
BRISTOL 1984	1
BRISTOL 1985	1
BRISTOL 1986	1
BRISTOL 1987	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
BRISTOL 1988	9.77	0.57	-1	-1	1	1
BRISTOL 1989	18.31	0.95	-1	0	0	1
DRG 1980	16.92	1.12	no data	no data	no data	no data
DRG 1981	8.40	0.34	no data	no data	no data	no data
DRG 1982	6.45	-0.01	no data	no data	no data	no data
H PARKER 1980	11.20	0.41	no data	no data	no data	no data
H PARKER 1981	12.58	0.67	no data	no data	no data	no data
H PARKER 1982	10.93	0.14	no data	no data	no data	no data
IL BACK 1980	-6.77	-1.04	no data	no data	no data	no data
IL BACK 1981	-8.59	-1.18	no data	no data	no data	no data
IL BACK 1982	-7.29	-0.76	no data	no data	no data	no data
KTL 1980	20.23	1.76	0	0	1	1
KTL 1981	16.16	0.94	-1	0	0	1
KTL 1982	19.44	0.61	-1	-1	1	1
KTL 1983	17.73	0.76	-1	0	0	1
KTL 1984	15.11	0.52	-1	-1	1	1
KTL 1985	10.50	0.25	0	-1	0	1
KTL 1986	6.49	0.17	0	-2	0	1
KTL 1987	12.80	0.74	0	0	1	1
KTL 1988	17.00	0.66	-1	-1	1	1
KTL 1989	16.42	0.55	-1	-1	1	1
OMNIA 1980	8.67	0.60	0	-1	0	1
OMNIA 1981	21.28	1.29	-2	0	0	1
OMNIA 1982	9.60	0.42	-1	-1	1	1
OMNIA 1983	4.45	0.18	-1	-2	0	1
OMNIA 1984	8.72	-0.01	0	-2	0	1
OMNIA 1985	10.60	0.05	0	-2	0	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	-0.63	0.47	0.23	-1	1	1	0	0
BRISTOL 1989	-0.30	2.36	3.18	0	0	1	0	0
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1980	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1981	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1982	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1980	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1981	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1982	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1980	0.41	6.39	9.50	0	1	1	0	1
KTL 1981	-0.31	2.29	3.07	0	0	1	0	0
KTL 1982	-0.60	0.66	0.53	-1	1	1	0	0
KTL 1983	-0.47	1.42	1.72	0	0	1	0	0
KTL 1984	-0.68	0.20	-0.19	-1	1	1	0	0
KTL 1985	-0.92	-1.13	-2.28	-2	0	1	0	1
KTL 1986	-0.99	-1.53	-2.90	-2	0	1	-2	0
KTL 1987	-0.49	1.29	1.51	0	1	1	0	1
KTL 1988	-0.56	0.88	0.87	-1	1	1	0	0
KTL 1989	-0.65	0.38	0.08	-1	1	1	0	0
OMNIA 1980	-0.61	0.63	0.48	-1	0	1	0	1
OMNIA 1981	0.00	4.03	5.80	0	0	1	0	0
OMNIA 1982	-0.77	-0.27	-0.93	-1	1	1	0	0
OMNIA 1983	-0.98	-1.47	-2.80	-2	0	1	-2	0
OMNIA 1984	-1.15	-2.41	-4.28	-2	0	1	0	1
OMNIA 1985	-1.09	-2.12	-3.82	-2	0	1	0	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BRISTOL 1988	1
BRISTOL 1989	1
DRG 1980	no data
DRG 1981	no data
DRG 1982	no data
H PARKER 1980	no data
H PARKER 1981	no data
H PARKER 1982	no data
IL BACK 1980	no data
IL BACK 1981	no data
IL BACK 1982	no data
KTL 1980	1
KTL 1981	1
KTL 1982	1
KTL 1983	1
KTL 1984	1
KTL 1985	1
KTL 1986	1
KTL 1987	1
KTL 1988	1
KTL 1989	1
OMNIA 1980	1
OMNIA 1981	1
OMNIA 1982	1
OMNIA 1983	1
OMNIA 1984	1
OMNIA 1985	1

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
OMNIA 1986	8.89	0.13	0	-2	0	1
OMNIA 1987	8.89	0.38	0	-1	0	1
OMNIA 1988	14.55	0.55	0	-1	0	1
OMNIA 1989	19.77	0.59	-1	-1	1	1
ROMATEX 1980	19.74	1.30	-1	0	0	1
ROMATEX 1981	25.80	1.70	-1	0	0	1
ROMATEX 1982	21.63	0.99	-1	0	0	1
ROMATEX 1983	15.08	0.45	-1	-1	1	1
ROMATEX 1984	15.14	0.56	-1	-1	1	1
ROMATEX 1985	6.87	0.05	0	-2	0	1
ROMATEX 1986	10.44	0.29	0	-1	0	1
ROMATEX 1987	15.84	0.63	-1	-1	1	1
ROMATEX 1988	19.87	0.90	-1	0	0	1
ROMATEX 1989	17.72	0.70	-1	-1	1	1
TRIOMF 1980	15.53	1.29	-2	0	0	1
TRIOMF 1981	13.82	0.70	no data	no data	no data	no data
TRIOMF 1982	6.34	0.01	-2	-2	1	1
TRIOMF 1983	1.66	-0.03	-2	-2	1	1
TRIOMF 1984	no data	no data	-2	no data	no data	no data
TRIOMF 1985	0.81	-0.21	no data	no data	no data	no data
TRIOMF 1986	-7.07	-2.01	no data	no data	no data	no data
TRIOMF 1987	13.22	-0.02	no data	no data	no data	no data
TUCKERS 1980	4.35	0.39	no data	no data	no data	no data
TUCKERS 1981	6.67	0.40	no data	no data	no data	no data
TUCKERS 1982	11.60	0.48	no data	no data	no data	no data
Sub-Total 1980s					21	57
Predictive Accuracy					36.8%	

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1986	-1.02	-1.71	-3.18	-2	0	1	0	1
OMNIA 1987	-0.80	-0.48	-1.25	-1	0	1	0	1
OMNIA 1988	-0.66	0.35	0.05	-1	0	1	0	1
OMNIA 1989	-0.62	0.57	0.39	-1	1	1	0	0
ROMATEX 1980	0.00	4.06	5.85	0	0	1	0	0
ROMATEX 1981	0.36	6.09	9.02	0	0	1	0	0
ROMATEX 1982	-0.27	2.52	3.44	0	0	1	0	0
ROMATEX 1983	-0.74	-0.12	-0.70	-1	1	1	0	0
ROMATEX 1984	-0.65	0.39	0.11	-1	1	1	0	0
ROMATEX 1985	-1.10	-2.14	-3.85	-2	0	1	0	1
ROMATEX 1986	-0.88	-0.91	-1.93	-2	0	1	0	1
ROMATEX 1987	-0.58	0.76	0.69	-1	1	1	0	0
ROMATEX 1988	-0.34	2.11	2.79	0	0	1	0	0
ROMATEX 1989	-0.53	1.08	1.18	0	0	1	0	0
TRIOMF 1980	0.00	4.06	5.84	0	0	1	0	0
TRIOMF 1981	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1982	-1.13	-2.33	-4.15	-2	1	1	-2	1
TRIOMF 1983	-1.17	-2.53	-4.46	-2	1	1	-2	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1986	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1987	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1980	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1981	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1982	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1980s					21	57		20
Predictive Accuracy					36.8%			35.1%

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
OMNIA 1986	1
OMNIA 1987	1
OMNIA 1988	1
OMNIA 1989	1
ROMATEX 1980	1
ROMATEX 1981	1
ROMATEX 1982	1
ROMATEX 1983	1
ROMATEX 1984	1
ROMATEX 1985	1
ROMATEX 1986	1
ROMATEX 1987	1
ROMATEX 1988	1
ROMATEX 1989	1
TRIOMF 1980	1
TRIOMF 1981	no data
TRIOMF 1982	1
TRIOMF 1983	1
TRIOMF 1984	no data
TRIOMF 1985	no data
TRIOMF 1986	no data
TRIOMF 1987	no data
TUCKERS 1980	no data
TUCKERS 1981	no data
TUCKERS 1982	no data

Sub-Total 1980s 57

Predictive Accuracy

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
BIDVEST 1990	29.26	0.65	0	-1	0	1
BIDVEST 1991	13.72	0.32	0	-1	0	1
BIDVEST 1992	18.50	0.51	0	-1	0	1
BIDVEST 1993	11.13	0.38	0	-1	0	1
BIDVEST 1994	15.91	0.62	0	-1	0	1
BIDVEST 1995	17.36	0.61	0	-1	0	1
BIDVEST 1996	16.77	0.58	no data	no data	no data	no data
BIDVEST 1997	11.23	0.37	no data	no data	no data	no data
BIDVEST 1998	14.65	0.50	no data	no data	no data	no data
BRISTOL 1990	11.01	0.29	-1	-1	1	1
BRISTOL 1991	13.33	0.31	-1	-1	1	1
BRISTOL 1992	11.06	0.36	no data	no data	no data	no data
BRISTOL 1993	10.18	0.33	no data	no data	no data	no data
BRISTOL 1994	7.85	0.32	no data	no data	no data	no data
KTL 1990	19.05	0.39	-1	-1	1	1
KTL 1991	11.12	0.20	0	-2	0	1
KTL 1992	6.54	0.01	0	-2	0	1
KTL 1993	9.67	0.36	0	-1	0	1
KTL 1994	14.29	0.65	-1	-1	1	1
KTL 1995	13.01	0.50	-1	-1	1	1
KTL 1996	19.47	0.85	-1	0	0	1
KTL 1997	10.34	0.34	no data	no data	no data	no data
KTL 1998	37.46	1.49	no data	no data	no data	no data
KTL 1999	48.82	2.55	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1990	-0.57	0.86	0.84	-1	0	1	0	1
BIDVEST 1991	-0.86	-0.79	-1.74	-1	0	1	0	1
BIDVEST 1992	-0.69	0.14	-0.29	-1	0	1	0	1
BIDVEST 1993	-0.80	-0.46	-1.23	-1	0	1	0	1
BIDVEST 1994	-0.59	0.72	0.62	-1	0	1	0	1
BIDVEST 1995	-0.60	0.65	0.52	-1	0	1	0	1
BIDVEST 1996	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1997	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1998	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1990	-0.89	-0.95	-1.99	-2	0	1	0	0
BRISTOL 1991	-0.87	-0.83	-1.80	-1	1	1	0	0
BRISTOL 1992	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1993	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1994	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1990	-0.80	-0.45	-1.21	-1	1	1	0	0
KTL 1991	-0.96	-1.38	-2.67	-2	0	1	0	1
KTL 1992	-1.13	-2.34	-4.16	-2	0	1	-2	0
KTL 1993	-0.82	-0.58	-1.42	-1	0	1	0	1
KTL 1994	-0.57	0.84	0.80	-1	1	1	0	0
KTL 1995	-0.70	0.09	-0.37	-1	1	1	0	0
KTL 1996	-0.39	1.86	2.41	0	0	1	0	0
KTL 1997	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1998	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1999	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
BIDVEST 1990	1
BIDVEST 1991	1
BIDVEST 1992	1
BIDVEST 1993	1
BIDVEST 1994	1
BIDVEST 1995	1
BIDVEST 1996	no data
BIDVEST 1997	no data
BIDVEST 1998	no data
BRISTOL 1990	1
BRISTOL 1991	1
BRISTOL 1992	no data
BRISTOL 1993	no data
BRISTOL 1994	no data
KTL 1990	1
KTL 1991	1
KTL 1992	1
KTL 1993	1
KTL 1994	1
KTL 1995	1
KTL 1996	1
KTL 1997	no data
KTL 1998	no data
KTL 1999	no data

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point 6.65 0.7
 Lower Cut-off point 6.65 0.25

Data				Yn-3 Naive Model		
Company & year	EBIT/TA	SVA	5Year n-3	Pred State	# Correct	Sample Size
OMNIA 1990	17.63	0.45	0	-1	0	1
OMNIA 1991	17.23	0.39	-1	-1	1	1
OMNIA 1992	14.72	0.24	-1	-2	0	1
OMNIA 1993	19.98	0.60	0	-1	0	1
OMNIA 1994	14.94	0.54	0	-1	0	1
OMNIA 1995	13.71	0.39	0	-1	0	1
OMNIA 1996	17.17	0.47	no data	no data	no data	no data
OMNIA 1997	21.00	0.57	no data	no data	no data	no data
OMNIA 1998	15.36	0.35	no data	no data	no data	no data
ROMATEX 1990	12.44	0.38	-1	-1	1	1
ROMATEX 1991	5.68	0.01	-1	-2	0	1
ROMATEX 1992	8.59	0.13	-1	-2	0	1
ROMATEX 1993	10.69	0.38	-1	-1	1	1
ROMATEX 1994	12.86	0.49	-2	-1	0	1
ROMATEX 1995	9.64	0.44	-1	-1	1	1
ROMATEX 1996	0.75	0.01	no data	no data	no data	no data
ROMATEX 1997	-10.10	-0.53	no data	no data	no data	no data
ROMATEX 1998	2.06	0.08	no data	no data	no data	no data
Sub-Total 1990s					9	27
Predictive Accuracy					33.3%	
Grand Total					69	186
Predictive Accuracy					37.1%	

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

Company & year	Yn-3 Fisher Discriminant Analysis						Yn-3 CHAID Model	
	F-2	F-1	F0	Pred State	# Correct	Sample Size	Pred State	# Correct
OMNIA 1990	-0.74	-0.14	-0.72	-1	0	1	0	1
OMNIA 1991	-0.80	-0.43	-1.18	-1	1	1	0	0
OMNIA 1992	-0.93	-1.19	-2.36	-2	0	1	0	0
OMNIA 1993	-0.61	0.61	0.45	-1	0	1	0	1
OMNIA 1994	-0.66	0.32	0.00	-1	0	1	0	1
OMNIA 1995	-0.80	-0.44	-1.19	-1	0	1	0	1
OMNIA 1996	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1997	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1998	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1990	-0.81	-0.51	-1.30	-1	1	1	0	0
ROMATEX 1991	-1.13	-2.30	-4.11	-2	0	1	-2	0
ROMATEX 1992	-1.03	-1.74	-3.22	-2	0	1	0	0
ROMATEX 1993	-0.80	-0.47	-1.24	-1	1	1	0	0
ROMATEX 1994	-0.71	0.06	-0.41	-1	0	1	0	0
ROMATEX 1995	-0.75	-0.18	-0.78	-1	1	1	0	0
ROMATEX 1996	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1997	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1998	no data	no data	no data	no data	no data	no data	no data	no data
Sub-Total 1990s					8	27		12
Predictive Accuracy					29.6%			44.4%
Grand Total					65	186		68
Predictive Accuracy					34.9%			36.6%

APPENDIX J2 : 5 Year n-3 Models (Holdout Sample)

Upper Cut-off point
Lower Cut-off point

iel	
Company & year	Sample Size
OMNIA 1990	1
OMNIA 1991	1
OMNIA 1992	1
OMNIA 1993	1
OMNIA 1994	1
OMNIA 1995	1
OMNIA 1996	no data
OMNIA 1997	no data
OMNIA 1998	no data
ROMATEX 1990	1
ROMATEX 1991	1
ROMATEX 1992	1
ROMATEX 1993	1
ROMATEX 1994	1
ROMATEX 1995	1
ROMATEX 1996	no data
ROMATEX 1997	no data
ROMATEX 1998	no data

Sub-Total 1990s 27

Predictive Accuracy

Grand Total 186

Predictive Accuracy

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
BACKCLOTHING 1970	Hold	-0.13	7.07	0.34	no data
BACKCLOTHING 1971	Hold	-0.68	-2.89	-0.11	-2
BACKCLOTHING 1972	Hold	-1.89	-45.83	-1.11	-2
BACKCLOTHING 1973	Hold	-2.10	-88.85	-1.35	-2
BACKCLOTHING 1974	Hold	-2.82	-380.70	-1.39	-2
BIDVEST 1970	Hold	0.21	19.14	0.91	no data
BIDVEST 1971	Hold	-0.16	10.89	0.50	no data
BIDVEST 1972	Hold	-0.02	11.67	0.57	no data
BIDVEST 1973	Hold	0.20	9.79	0.67	no data
BIDVEST 1974	Hold	0.23	10.89	0.58	no data
BIDVEST 1975	Hold	0.33	12.81	0.58	0
BIDVEST 1976	Hold	0.33	13.09	0.56	0
BIDVEST 1977	Hold	0.04	8.07	0.35	-1
BIDVEST 1978	Hold	0.35	10.92	0.54	-1
BIDVEST 1979	Hold	0.22	8.17	0.48	-1
BRICK CLAY 1970	Hold	0.21	8.01	0.57	no data
BRICK CLAY 1971	Hold	-1.45	-13.06	-0.67	-2
BRICK CLAY 1972	Hold	-0.32	0.45	0.02	no data
BRICK CLAY 1973	Hold	0.47	14.69	0.83	no data
BRICK CLAY 1974	Hold	0.00	8.59	0.41	no data
BRICK CLAY 1975	Hold	0.55	18.22	0.69	0
BRICK CLAY 1976	Hold	0.42	17.79	0.65	0
BRICK CLAY 1977	Hold	-0.02	11.21	0.40	-1
BRICK CLAY 1978	Hold	-0.26	8.02	0.25	-1
BRICK CLAY 1979	Hold	-0.11	10.93	0.43	-1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BACKCLOTHING 1970	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971	-2	1	1	-2	1	1	-2	1
BACKCLOTHING 1972	-2	1	1	-2	1	1	-2	1
BACKCLOTHING 1973	-2	1	1	-2	1	1	-2	1
BACKCLOTHING 1974	-2	1	1	-2	1	1	-2	1
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1975	0	1	1	0	1	1	0	1
BIDVEST 1976	0	1	1	0	1	1	0	1
BIDVEST 1977	-1	1	1	-1	1	1	unknown	0
BIDVEST 1978	0	1	1	-1	1	1	0	1
BIDVEST 1979	-1	1	1	-1	1	1	0	1
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	-2	1	1	-2	1	1	-2	1
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1975	0	1	1	0	1	1	0	1
BRICK CLAY 1976	0	1	1	0	1	1	0	1
BRICK CLAY 1977	-1	1	1	-1	1	1	unknown	0
BRICK CLAY 1978	-1	1	1	-1	1	1	-2	1
BRICK CLAY 1979	-1	1	1	-1	1	1	unknown	0

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BACKCLOTHING 1970	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971	1	-2	1	1	-2	1	1	-2
BACKCLOTHING 1972	1	-2	1	1	-2	1	1	-2
BACKCLOTHING 1973	1	-2	1	1	-2	1	1	-2
BACKCLOTHING 1974	1	-2	1	1	-2	1	1	-2
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1975	1	0	1	1	0	1	1	0
BIDVEST 1976	1	0	1	1	0	1	1	0
BIDVEST 1977	1	-1	1	1	-1	1	1	unknown
BIDVEST 1978	1	0	0	1	-1	1	1	0
BIDVEST 1979	1	-1	1	1	-1	1	1	0
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	1	-2	1	1	-2	1	1	-2
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1975	1	0	1	1	0	1	1	0
BRICK CLAY 1976	1	0	1	1	0	1	1	0
BRICK CLAY 1977	1	-1	1	1	-1	1	1	unknown
BRICK CLAY 1978	1	-1	1	1	-1	1	1	-2
BRICK CLAY 1979	1	-1	1	1	-1	1	1	unknown

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	no data	no data	no data	no data	no data	no data	no data	no data
BACKCLOTHING 1971	1	1	-2	1	1	-2	1	1
BACKCLOTHING 1972	1	1	-2	1	1	-2	1	1
BACKCLOTHING 1973	1	1	-2	1	1	-2	1	1
BACKCLOTHING 1974	1	1	-2	1	1	-2	1	1
BIDVEST 1970	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1971	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1972	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1973	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1974	no data	no data	no data	no data	no data	no data	no data	no data
BIDVEST 1975	1	1	0	1	1	0	1	1
BIDVEST 1976	1	1	0	1	1	0	1	1
BIDVEST 1977	0	1	-1	1	1	-1	1	1
BIDVEST 1978	0	1	0	1	1	-1	1	1
BIDVEST 1979	0	1	-1	1	1	-1	1	1
BRICK CLAY 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1971	1	1	-2	1	1	-2	1	1
BRICK CLAY 1972	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1975	1	1	0	1	1	0	1	1
BRICK CLAY 1976	1	1	0	1	1	0	1	1
BRICK CLAY 1977	0	1	-1	1	1	-1	1	1
BRICK CLAY 1978	1	1	-1	1	1	-1	1	1
BRICK CLAY 1979	0	1	-1	1	1	-1	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BACKCLOTHING 1970	no data	no data	no data
BACKCLOTHING 1971	-2	1	1
BACKCLOTHING 1972	-2	1	1
BACKCLOTHING 1973	-2	1	1
BACKCLOTHING 1974	-2	1	1
BIDVEST 1970	no data	no data	no data
BIDVEST 1971	no data	no data	no data
BIDVEST 1972	no data	no data	no data
BIDVEST 1973	no data	no data	no data
BIDVEST 1974	no data	no data	no data
BIDVEST 1975	0	1	1
BIDVEST 1976	0	1	1
BIDVEST 1977	unknown	0	1
BIDVEST 1978	0	1	1
BIDVEST 1979	0	1	1
BRICK CLAY 1970	no data	no data	no data
BRICK CLAY 1971	-2	1	1
BRICK CLAY 1972	no data	no data	no data
BRICK CLAY 1973	no data	no data	no data
BRICK CLAY 1974	no data	no data	no data
BRICK CLAY 1975	0	1	1
BRICK CLAY 1976	0	1	1
BRICK CLAY 1977	unknown	0	1
BRICK CLAY 1978	-2	0	1
BRICK CLAY 1979	unknown	0	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
BRISTOL 1970	Hold	-0.21	9.27	0.60	no data
BRISTOL 1971	Hold	-0.30	7.22	0.48	no data
BRISTOL 1972	Hold	-1.32	-6.85	-0.25	-2
BRISTOL 1973	Hold	-0.79	5.94	0.24	no data
BRISTOL 1974	Hold	-0.57	7.28	0.41	no data
BRISTOL 1975	Hold	-0.53	6.09	0.29	-1
BRISTOL 1976	Hold	-0.43	5.44	0.25	0
BRISTOL 1977	Hold	-0.47	4.54	0.20	0
BRISTOL 1978	Hold	-0.34	6.20	0.27	-1
BRISTOL 1979	Hold	-0.49	4.49	0.20	-1
BURHOSE 1970	Hold	1.47	22.20	1.61	no data
BURHOSE 1971	Hold	1.86	24.73	1.81	no data
BURHOSE 1972	Hold	0.88	13.86	0.96	no data
BURHOSE 1973	Hold	-0.08	0.37	0.03	no data
BURHOSE 1974	Hold	0.56	8.47	0.52	no data
BURHOSE 1975	Hold	1.61	26.25	1.30	0
BURHOSE 1976	Hold	0.85	12.65	0.66	-1
BURHOSE 1977	Hold	no data	no data	no data	no data
BURHOSE 1978	Hold	-0.20	5.48	0.20	no data
BURHOSE 1979	Hold	0.49	27.36	0.98	no data
CONJERS 1970	Hold	0.48	19.44	0.87	no data
CONJERS 1971	Hold	0.58	19.78	0.95	no data
CONJERS 1972	Hold	0.58	17.30	0.89	no data
CONJERS 1973	Hold	-0.58	-2.30	-0.12	-2
CONJERS 1974	Hold	0.48	13.42	0.68	no data
CONJERS 1975	Hold	-1.63	-24.08	-1.02	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	-2	1	1	-2	1	1	-2	1
BRISTOL 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1975	-1	1	1	-1	1	1	-2	1
BRISTOL 1976	-1	1	1	-1	1	1	-2	0
BRISTOL 1977	-1	1	1	-1	1	1	-2	0
BRISTOL 1978	-1	1	1	-1	1	1	-2	1
BRISTOL 1979	-1	1	1	-1	1	1	-2	1
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1974	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1975	0	1	1	0	1	1	0	1
BURHOSE 1976	0	1	1	0	1	1	0	1
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	-2	1	1	-2	1	1	-2	1
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	-2	1	1	-2	1	1	-2	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	1	-2	1	1	-2	1	1	-2
BRISTOL 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1975	1	-1	1	1	-1	1	1	-2
BRISTOL 1976	1	-1	0	1	-1	0	1	-2
BRISTOL 1977	1	-1	0	1	-1	0	1	-2
BRISTOL 1978	1	-1	1	1	-1	1	1	-2
BRISTOL 1979	1	-1	1	1	-1	1	1	-2
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1974	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1975	1	0	1	1	0	1	1	0
BURHOSE 1976	1	0	0	1	0	0	1	0
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	1	-2	1	1	-2	1	1	-2
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	1	-2	1	1	-2	1	1	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BRISTOL 1970	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1971	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1972	1	1	-2	1	1	-2	1	1
BRISTOL 1973	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1974	no data	no data	no data	no data	no data	no data	no data	no data
BRISTOL 1975	1	1	-1	1	1	-1	1	1
BRISTOL 1976	0	1	-1	1	1	-1	1	1
BRISTOL 1977	0	1	-1	1	1	-1	1	1
BRISTOL 1978	1	1	-1	1	1	-1	1	1
BRISTOL 1979	1	1	-1	1	1	-1	1	1
BURHOSE 1970	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1971	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1972	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1973	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1974	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1975	1	1	0	1	1	0	1	1
BURHOSE 1976	0	1	0	1	1	0	1	1
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1979	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1973	1	1	-2	1	1	-2	1	1
CONJERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
CONJERS 1975	1	1	-2	1	1	-2	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BRISTOL 1970	no data	no data	no data
BRISTOL 1971	no data	no data	no data
BRISTOL 1972	-2	1	1
BRISTOL 1973	no data	no data	no data
BRISTOL 1974	no data	no data	no data
BRISTOL 1975	-2	0	1
BRISTOL 1976	-2	0	1
BRISTOL 1977	-2	0	1
BRISTOL 1978	-2	0	1
BRISTOL 1979	-2	0	1
BURHOSE 1970	no data	no data	no data
BURHOSE 1971	no data	no data	no data
BURHOSE 1972	no data	no data	no data
BURHOSE 1973	no data	no data	no data
BURHOSE 1974	no data	no data	no data
BURHOSE 1975	0	1	1
BURHOSE 1976	0	1	1
BURHOSE 1977	no data	no data	no data
BURHOSE 1978	no data	no data	no data
BURHOSE 1979	no data	no data	no data
CONJERS 1970	no data	no data	no data
CONJERS 1971	no data	no data	no data
CONJERS 1972	no data	no data	no data
CONJERS 1973	-2	1	1
CONJERS 1974	no data	no data	no data
CONJERS 1975	-2	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
DRG 1978	Hold	1.32	24.22	1.07	no data
DRG 1979	Hold	1.18	21.11	1.08	no data
FAIRWEATHER 1970	Hold	0.71	24.54	1.11	no data
FAIRWEATHER 1971	Hold	0.40	14.73	0.68	no data
FAIRWEATHER 1972	Hold	-1.11	-19.22	-0.20	-2
FAIRWEATHER 1973	Hold	-0.04	14.35	0.57	no data
FAIRWEATHER 1974	Hold	-0.79	-10.82	-0.33	-2
FAIRWEATHER 1975	Hold	0.21	12.83	0.42	0
FAIRWEATHER 1976	Hold	-1.62	-31.93	-0.79	-2
H PARKER 1970	Hold	-0.22	50.08	0.58	no data
H PARKER 1971	Hold	-0.72	8.27	0.11	no data
H PARKER 1972	Hold	-1.66	-77.15	-0.87	-2
H PARKER 1973	Hold	-1.51	-60.06	-1.52	-2
H PARKER 1974	Hold	0.77	38.41	1.47	no data
H PARKER 1975	Hold	0.45	22.99	0.73	0
H PARKER 1976	Hold	-0.79	3.52	0.06	0
H PARKER 1977	Hold	-0.17	22.12	0.47	0
H PARKER 1978	Hold	-0.59	7.61	0.14	-1
H PARKER 1979	Hold	0.39	42.16	0.87	0
IL BACK 1970	Hold	0.15	10.58	0.49	no data
IL BACK 1971	Hold	-0.06	1.02	0.06	no data
IL BACK 1972	Hold	-1.34	-22.79	-0.95	-2
IL BACK 1973	Hold	-0.97	-15.36	-0.59	-2
IL BACK 1974	Hold	-2.04	-52.17	-1.44	-2
IL BACK 1975	Hold	-0.14	12.83	0.37	0
IL BACK 1976	Hold	no data	no data	no data	no data
IL BACK 1977	Hold	-1.88	-56.88	-0.77	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	-2	1	1	-2	1	1	-2	1
FAIRWEATHER 1973	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1974	-2	1	1	-2	1	1	-2	1
FAIRWEATHER 1975	-1	1	1	0	1	1	0	1
FAIRWEATHER 1976	-2	1	1	-2	1	1	-2	1
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	-2	1	1	-2	1	1	-2	1
H PARKER 1973	-2	1	1	-2	1	1	-2	1
H PARKER 1974	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1975	0	1	1	0	1	1	0	1
H PARKER 1976	-1	1	1	-1	1	1	-2	0
H PARKER 1977	-1	1	1	0	1	1	unknown	0
H PARKER 1978	-1	1	1	-1	1	1	-2	1
H PARKER 1979	0	1	1	0	1	1	0	1
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972	-2	1	1	-2	1	1	-2	1
IL BACK 1973	-2	1	1	-2	1	1	-2	1
IL BACK 1974	-2	1	1	-2	1	1	-2	1
IL BACK 1975	-1	1	1	0	1	1	unknown	0
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	-2	1	1	-2	1	1	-2	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	1	-2	1	1	-2	1	1	-2
FAIRWEATHER 1973	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1974	1	-2	1	1	-2	1	1	-2
FAIRWEATHER 1975	1	-1	0	1	0	1	1	0
FAIRWEATHER 1976	1	-2	1	1	-2	1	1	-2
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	1	-2	1	1	-2	1	1	-2
H PARKER 1973	1	-2	1	1	-2	1	1	-2
H PARKER 1974	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1975	1	0	1	1	0	1	1	0
H PARKER 1976	1	-1	0	1	-1	0	1	-2
H PARKER 1977	1	-1	0	1	0	1	1	unknown
H PARKER 1978	1	-1	1	1	-1	1	1	-2
H PARKER 1979	1	0	1	1	0	1	1	0
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972	1	-2	1	1	-2	1	1	-2
IL BACK 1973	1	-2	1	1	-2	1	1	-2
IL BACK 1974	1	-2	1	1	-2	1	1	-2
IL BACK 1975	1	-1	0	1	0	1	1	unknown
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	1	-2	1	1	-2	1	1	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
DRG 1978	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1979	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1972	1	1	-2	1	1	-2	1	1
FAIRWEATHER 1973	no data	no data	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1974	1	1	-2	1	1	-2	1	1
FAIRWEATHER 1975	1	1	-1	1	1	0	1	1
FAIRWEATHER 1976	1	1	-2	1	1	-2	1	1
H PARKER 1970	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1971	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1972	1	1	-2	1	1	-2	1	1
H PARKER 1973	1	1	-2	1	1	-2	1	1
H PARKER 1974	no data	no data	no data	no data	no data	no data	no data	no data
H PARKER 1975	1	1	0	1	1	0	1	1
H PARKER 1976	0	1	-1	1	1	-1	1	1
H PARKER 1977	0	1	-1	1	1	0	1	1
H PARKER 1978	1	1	-1	1	1	-1	1	1
H PARKER 1979	1	1	0	1	1	0	1	1
IL BACK 1970	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1971	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1972	1	1	-2	1	1	-2	1	1
IL BACK 1973	1	1	-2	1	1	-2	1	1
IL BACK 1974	1	1	-2	1	1	-2	1	1
IL BACK 1975	0	1	-1	1	1	0	1	1
IL BACK 1976	no data	no data	no data	no data	no data	no data	no data	no data
IL BACK 1977	1	1	-2	1	1	-2	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
DRG 1978	no data	no data	no data
DRG 1979	no data	no data	no data
FAIRWEATHER 1970	no data	no data	no data
FAIRWEATHER 1971	no data	no data	no data
FAIRWEATHER 1972	-2	1	1
FAIRWEATHER 1973	no data	no data	no data
FAIRWEATHER 1974	-2	1	1
FAIRWEATHER 1975	0	1	1
FAIRWEATHER 1976	-2	1	1
H PARKER 1970	no data	no data	no data
H PARKER 1971	no data	no data	no data
H PARKER 1972	-2	1	1
H PARKER 1973	-2	1	1
H PARKER 1974	no data	no data	no data
H PARKER 1975	0	1	1
H PARKER 1976	-2	0	1
H PARKER 1977	unknown	0	1
H PARKER 1978	-2	0	1
H PARKER 1979	0	1	1
IL BACK 1970	no data	no data	no data
IL BACK 1971	no data	no data	no data
IL BACK 1972	-2	1	1
IL BACK 1973	-2	1	1
IL BACK 1974	-2	1	1
IL BACK 1975	unknown	0	1
IL BACK 1976	no data	no data	no data
IL BACK 1977	-2	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
IL BACK 1978	Hold	-3.59	-139.85	-1.95	-2
IL BACK 1979	Hold	-1.95	-59.04	-0.78	-2
KTL 1970	Hold	0.56	19.28	0.84	no data
KTL 1971	Hold	0.28	18.98	0.67	no data
KTL 1972	Hold	0.70	24.69	1.17	no data
KTL 1973	Hold	1.57	35.92	2.08	no data
KTL 1974	Hold	2.11	42.70	1.88	no data
KTL 1975	Hold	1.62	36.40	1.37	0
KTL 1976	Hold	1.22	27.56	1.07	0
KTL 1977	Hold	0.87	18.78	0.81	-1
KTL 1978	Hold	1.03	21.10	0.92	-1
KTL 1979	Hold	0.90	24.18	1.03	-1
OMNIA 1970	Hold	1.33	19.42	1.34	no data
OMNIA 1971	Hold	1.20	17.14	1.12	no data
OMNIA 1972	Hold	1.28	16.88	1.17	no data
OMNIA 1973	Hold	1.15	15.32	1.16	no data
OMNIA 1974	Hold	1.01	17.08	0.90	no data
OMNIA 1975	Hold	1.03	29.16	0.88	0
OMNIA 1976	Hold	-0.74	-7.01	-0.18	-2
OMNIA 1977	Hold	-2.49	-93.18	-0.91	-2
OMNIA 1978	Hold	-1.58	-73.54	-0.61	-2
OMNIA 1979	Hold	6.56	-0.40	-0.04	-2
PAN 1970	Hold	1.03	15.43	1.18	no data
PAN 1971	Hold	0.68	14.37	0.96	no data
PAN 1972	Hold	-0.49	1.32	0.07	no data
PAN 1973	Hold	-1.47	-38.03	-0.99	-2
PAN 1974	Hold	-0.87	-17.75	-0.38	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
IL BACK 1978	-2	1	1	-2	1	1	-2	1
IL BACK 1979	-2	1	1	-2	1	1	-2	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1974	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1975	0	1	1	0	1	1	0	1
KTL 1976	0	1	1	0	1	1	0	1
KTL 1977	0	1	1	0	1	1	0	1
KTL 1978	0	1	1	0	1	1	0	1
KTL 1979	0	1	1	0	1	1	0	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1974	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1975	0	1	1	0	1	1	0	1
OMNIA 1976	-2	1	1	-2	1	1	-2	1
OMNIA 1977	-2	1	1	-2	1	1	-2	1
OMNIA 1978	-2	1	1	-2	1	1	-2	1
OMNIA 1979	-2	1	1	-2	1	1	0	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	-2	1	1	-2	1	1	-2	1
PAN 1974	-2	1	1	-2	1	1	-2	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
IL BACK 1978	1	-2	1	1	-2	1	1	-2
IL BACK 1979	1	-2	1	1	-2	1	1	-2
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1974	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1975	1	0	1	1	0	1	1	0
KTL 1976	1	0	1	1	0	1	1	0
KTL 1977	1	0	0	1	0	0	1	0
KTL 1978	1	0	0	1	0	0	1	0
KTL 1979	1	0	0	1	0	0	1	0
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1974	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1975	1	0	1	1	0	1	1	0
OMNIA 1976	1	-2	1	1	-2	1	1	-2
OMNIA 1977	1	-2	1	1	-2	1	1	-2
OMNIA 1978	1	-2	1	1	-2	1	1	-2
OMNIA 1979	1	-2	1	1	-2	1	1	0
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	1	-2	1	1	-2	1	1	-2
PAN 1974	1	-2	1	1	-2	1	1	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
IL BACK 1978	1	1	-2	1	1	-2	1	1
IL BACK 1979	1	1	-2	1	1	-2	1	1
KTL 1970	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1971	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1972	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1973	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1974	no data	no data	no data	no data	no data	no data	no data	no data
KTL 1975	1	1	0	1	1	0	1	1
KTL 1976	1	1	0	1	1	0	1	1
KTL 1977	0	1	0	1	1	0	1	1
KTL 1978	0	1	0	1	1	0	1	1
KTL 1979	0	1	0	1	1	0	1	1
OMNIA 1970	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1971	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1972	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1973	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1974	no data	no data	no data	no data	no data	no data	no data	no data
OMNIA 1975	1	1	0	1	1	0	1	1
OMNIA 1976	1	1	-2	1	1	-2	1	1
OMNIA 1977	1	1	-2	1	1	-2	1	1
OMNIA 1978	1	1	-2	1	1	-2	1	1
OMNIA 1979	0	1	-2	1	1	-2	1	1
PAN 1970	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1971	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1972	no data	no data	no data	no data	no data	no data	no data	no data
PAN 1973	1	1	-2	1	1	-2	1	1
PAN 1974	1	1	-2	1	1	-2	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
IL BACK 1978	-2	1	1
IL BACK 1979	-2	1	1
KTL 1970	no data	no data	no data
KTL 1971	no data	no data	no data
KTL 1972	no data	no data	no data
KTL 1973	no data	no data	no data
KTL 1974	no data	no data	no data
KTL 1975	0	1	1
KTL 1976	0	1	1
KTL 1977	0	1	1
KTL 1978	0	1	1
KTL 1979	0	1	1
OMNIA 1970	no data	no data	no data
OMNIA 1971	no data	no data	no data
OMNIA 1972	no data	no data	no data
OMNIA 1973	no data	no data	no data
OMNIA 1974	no data	no data	no data
OMNIA 1975	0	1	1
OMNIA 1976	-2	1	1
OMNIA 1977	-2	1	1
OMNIA 1978	-2	1	1
OMNIA 1979	0	0	1
PAN 1970	no data	no data	no data
PAN 1971	no data	no data	no data
PAN 1972	no data	no data	no data
PAN 1973	-2	1	1
PAN 1974	-2	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
PIONEER H 1973	Hold	-0.29	7.13	0.48	no data
PIONEER H 1974	Hold	0.10	7.88	0.51	no data
PIONEER H 1975	Hold	0.31	9.92	0.58	no data
PIONEER H 1976	Hold	0.04	6.50	0.37	no data
PIONEER H 1977	Hold	0.13	6.59	0.39	no data
PIONEER H 1978	Hold	0.21	7.12	0.44	-1
PIONEER H 1979	Hold	0.42	9.52	0.71	-1
ROMATEX 1970	Hold	0.05	3.36	0.25	no data
ROMATEX 1971	Hold	0.05	4.83	0.33	no data
ROMATEX 1972	Hold	0.05	5.04	0.31	no data
ROMATEX 1973	Hold	0.07	7.02	0.42	no data
ROMATEX 1974	Hold	0.67	14.95	0.94	no data
ROMATEX 1975	Hold	-1.45	-20.30	-0.94	-2
ROMATEX 1976	Hold	0.68	11.43	0.52	0
ROMATEX 1977	Hold	0.58	12.29	0.60	0
ROMATEX 1978	Hold	0.86	13.66	0.73	0
ROMATEX 1979	Hold	1.06	14.92	0.85	0
SCHACHAT 1970	Hold	-0.37	20.48	0.64	no data
SCHACHAT 1971	Hold	-0.23	22.70	0.74	no data
SCHACHAT 1972	Hold	0.00	25.15	0.94	no data
SCHACHAT 1973	Hold	-0.16	22.27	0.78	no data
SCHACHAT 1974	Hold	-0.37	14.85	0.47	no data
SCHACHAT 1975	Hold	-0.27	14.22	0.44	-1
SCHACHAT 1976	Hold	-0.02	18.18	0.55	-1
SCHACHAT 1977	Hold	-0.36	9.79	0.32	-1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1977	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1978	-1	1	1	-1	1	1	0	1
PIONEER H 1979	0	1	1	-1	1	1	0	1
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1974	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1975	-2	1	1	-2	1	1	-2	1
ROMATEX 1976	0	1	1	-1	1	1	0	1
ROMATEX 1977	0	1	1	-1	1	1	0	1
ROMATEX 1978	0	1	1	0	1	1	0	1
ROMATEX 1979	0	1	1	0	1	1	0	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1974	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1975	-1	1	1	0	1	1	-2	1
SCHACHAT 1976	0	1	1	0	1	1	unknown	0
SCHACHAT 1977	-1	1	1	-1	1	1	-2	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1977	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1978	1	-1	1	1	-1	1	1	0
PIONEER H 1979	1	0	0	1	-1	1	1	0
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1974	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1975	1	-2	1	1	-2	1	1	-2
ROMATEX 1976	1	0	1	1	-1	0	1	0
ROMATEX 1977	1	0	1	1	-1	0	1	0
ROMATEX 1978	1	0	1	1	0	1	1	0
ROMATEX 1979	1	0	1	1	0	1	1	0
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1974	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1975	1	-1	1	1	0	0	1	-2
SCHACHAT 1976	1	0	0	1	0	0	1	unknown
SCHACHAT 1977	1	-1	1	1	-1	1	1	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
PIONEER H 1973	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1974	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1975	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1976	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1977	no data	no data	no data	no data	no data	no data	no data	no data
PIONEER H 1978	0	1	-1	1	1	-1	1	1
PIONEER H 1979	0	1	0	1	1	-1	1	1
ROMATEX 1970	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1971	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1972	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1973	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1974	no data	no data	no data	no data	no data	no data	no data	no data
ROMATEX 1975	1	1	-2	1	1	-2	1	1
ROMATEX 1976	1	1	0	1	1	-1	1	1
ROMATEX 1977	1	1	0	1	1	-1	1	1
ROMATEX 1978	1	1	0	1	1	0	1	1
ROMATEX 1979	1	1	0	1	1	0	1	1
SCHACHAT 1970	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1971	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1972	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1973	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1974	no data	no data	no data	no data	no data	no data	no data	no data
SCHACHAT 1975	1	1	-1	1	1	0	1	1
SCHACHAT 1976	0	1	0	1	1	0	1	1
SCHACHAT 1977	1	1	-1	1	1	-1	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
PIONEER H 1973	no data	no data	no data
PIONEER H 1974	no data	no data	no data
PIONEER H 1975	no data	no data	no data
PIONEER H 1976	no data	no data	no data
PIONEER H 1977	no data	no data	no data
PIONEER H 1978	0	1	1
PIONEER H 1979	0	1	1
ROMATEX 1970	no data	no data	no data
ROMATEX 1971	no data	no data	no data
ROMATEX 1972	no data	no data	no data
ROMATEX 1973	no data	no data	no data
ROMATEX 1974	no data	no data	no data
ROMATEX 1975	-2	1	1
ROMATEX 1976	0	1	1
ROMATEX 1977	0	1	1
ROMATEX 1978	0	1	1
ROMATEX 1979	0	1	1
SCHACHAT 1970	no data	no data	no data
SCHACHAT 1971	no data	no data	no data
SCHACHAT 1972	no data	no data	no data
SCHACHAT 1973	no data	no data	no data
SCHACHAT 1974	no data	no data	no data
SCHACHAT 1975	-2	0	1
SCHACHAT 1976	unknown	0	1
SCHACHAT 1977	-2	0	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
SPECTRO 1970	Hold	0.47	5.70	0.50	no data
SPECTRO 1971	Hold	1.03	13.09	1.10	no data
SPECTRO 1972	Hold	0.82	11.01	0.94	no data
SPECTRO 1973	Hold	1.30	21.93	1.43	no data
SPECTRO 1974	Hold	0.23	18.04	0.78	no data
SPECTRO 1975	Hold	-1.10	-11.67	-0.38	-2
STUTTAFORDS 1970	Hold	0.82	10.15	0.93	no data
STUTTAFORDS 1971	Hold	1.71	14.69	1.51	no data
STUTTAFORDS 1972	Hold	0.36	4.24	0.40	no data
STUTTAFORDS 1973	Hold	1.05	13.64	1.18	no data
STUTTAFORDS 1974	Hold	0.35	5.70	0.54	no data
STUTTAFORDS 1975	Hold	0.33	5.94	0.43	-1
STUTTAFORDS 1976	Hold	0.23	5.13	0.32	-1
STUTTAFORDS 1977	Hold	0.23	5.44	0.32	-1
STUTTAFORDS 1978	Hold	0.09	4.45	0.25	-1
TAPSA 1970	Hold	0.82	23.95	1.17	no data
TAPSA 1971	Hold	0.32	20.06	0.81	no data
TAPSA 1972	Hold	-0.17	10.78	0.41	no data
TAPSA 1973	Hold	-0.35	12.47	0.40	no data
TAPSA 1974	Hold	-1.56	-35.05	-0.98	-2
TAPSA 1975	Hold	-5.10	-344.15	-3.81	-2
TIGERIND 1970	Hold	-0.87	4.17	0.11	no data
TIGERIND 1971	Hold	-1.69	-26.54	-0.69	-2
TIGERIND 1972	Hold	-2.42	-61.58	-2.64	-2
TIGERIND 1973	Hold	-0.98	0.87	0.02	no data

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point Lower Cut-off point		APPROACH 1: Testing for State 0 & State -2 only							
		Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
Company & year	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data	
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data	
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data	
SPECTRO 1973	no data	no data	no data	no data	no data	no data	no data	no data	
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data	
SPECTRO 1975	-2	1	1	-2	1	1	-2	1	
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data	
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data	
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data	
STUTTAFORDS 1973	no data	no data	no data	no data	no data	no data	no data	no data	
STUTTAFORDS 1974	no data	no data	no data	no data	no data	no data	no data	no data	
STUTTAFORDS 1975	-1	1	1	-1	1	1	0	1	
STUTTAFORDS 1976	-1	1	1	-1	1	1	0	1	
STUTTAFORDS 1977	-1	1	1	-1	1	1	0	1	
STUTTAFORDS 1978	-1	1	1	-1	1	1	unknown	0	
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data	
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data	
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data	
TAPSA 1973	no data	no data	no data	no data	no data	no data	no data	no data	
TAPSA 1974	-2	1	1	-2	1	1	-2	1	
TAPSA 1975	-2	1	1	-2	1	1	-2	1	
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data	
TIGERIND 1971	-2	1	1	-2	1	1	-2	1	
TIGERIND 1972	-2	1	1	-2	1	1	-2	1	
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1975	1	-2	1	1	-2	1	1	-2
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1974	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1975	1	-1	1	1	-1	1	1	0
STUTTAFORDS 1976	1	-1	1	1	-1	1	1	0
STUTTAFORDS 1977	1	-1	1	1	-1	1	1	0
STUTTAFORDS 1978	1	-1	1	1	-1	1	1	unknown
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1974	1	-2	1	1	-2	1	1	-2
TAPSA 1975	1	-2	1	1	-2	1	1	-2
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	1	-2	1	1	-2	1	1	-2
TIGERIND 1972	1	-2	1	1	-2	1	1	-2
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
SPECTRO 1970	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1971	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1972	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1973	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1974	no data	no data	no data	no data	no data	no data	no data	no data
SPECTRO 1975	1	1	-2	1	1	-2	1	1
STUTTAFORDS 1970	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1973	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1974	no data	no data	no data	no data	no data	no data	no data	no data
STUTTAFORDS 1975	0	1	-1	1	1	-1	1	1
STUTTAFORDS 1976	0	1	-1	1	1	-1	1	1
STUTTAFORDS 1977	0	1	-1	1	1	-1	1	1
STUTTAFORDS 1978	0	1	-1	1	1	-1	1	1
TAPSA 1970	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1971	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1972	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1973	no data	no data	no data	no data	no data	no data	no data	no data
TAPSA 1974	1	1	-2	1	1	-2	1	1
TAPSA 1975	1	1	-2	1	1	-2	1	1
TIGERIND 1970	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1971	1	1	-2	1	1	-2	1	1
TIGERIND 1972	1	1	-2	1	1	-2	1	1
TIGERIND 1973	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
SPECTRO 1970	no data	no data	no data
SPECTRO 1971	no data	no data	no data
SPECTRO 1972	no data	no data	no data
SPECTRO 1973	no data	no data	no data
SPECTRO 1974	no data	no data	no data
SPECTRO 1975	-2	1	1
STUTTAFORDS 1970	no data	no data	no data
STUTTAFORDS 1971	no data	no data	no data
STUTTAFORDS 1972	no data	no data	no data
STUTTAFORDS 1973	no data	no data	no data
STUTTAFORDS 1974	no data	no data	no data
STUTTAFORDS 1975	0	1	1
STUTTAFORDS 1976	0	1	1
STUTTAFORDS 1977	0	1	1
STUTTAFORDS 1978	unknown	0	1
TAPSA 1970	no data	no data	no data
TAPSA 1971	no data	no data	no data
TAPSA 1972	no data	no data	no data
TAPSA 1973	no data	no data	no data
TAPSA 1974	-2	1	1
TAPSA 1975	-2	1	1
TIGERIND 1970	no data	no data	no data
TIGERIND 1971	-2	1	1
TIGERIND 1972	-2	1	1
TIGERIND 1973	no data	no data	no data

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
TRIOMF 1970	Hold	-0.23	11.53	0.59	no data
TRIOMF 1971	Hold	0.02	22.50	0.67	no data
TRIOMF 1972	Hold	0.71	45.44	1.46	no data
TRIOMF 1973	Hold	0.83	44.97	1.54	no data
TRIOMF 1974	Hold	0.65	48.34	1.14	no data
TRIOMF 1975	Hold	0.04	54.27	0.62	0
TRIOMF 1976	Hold	-0.88	36.54	0.23	-1
TRIOMF 1977	Hold	-1.75	-38.33	-0.39	-2
TRIOMF 1978	Hold	-0.94	12.00	0.12	-1
TRIOMF 1979	Hold	0.36	61.54	1.10	0
TUCKERS 1970	Hold	1.31	24.59	1.80	no data
TUCKERS 1971	Hold	0.78	17.61	1.21	no data
TUCKERS 1972	Hold	0.89	15.27	1.19	no data
TUCKERS 1973	Hold	1.42	18.78	1.77	no data
TUCKERS 1974	Hold	1.41	17.72	1.34	no data
TUCKERS 1975	Hold	0.75	6.34	0.46	-1
TUCKERS 1976	Hold	0.56	3.61	0.26	-1
TUCKERS 1977	Hold	0.71	10.02	0.62	-1
TUCKERS 1978	Hold	-0.60	-5.32	-0.34	-2
TUCKERS 1979	Hold	0.52	4.46	0.37	-1

Sub-Total 1970s
Predictive Accuracy

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point Lower Cut-off point		APPROACH 1: Testing for State 0 & State -2 only							
		Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
Company & year	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data	
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data	
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data	
TRIOMF 1973	no data	no data	no data	no data	no data	no data	no data	no data	
TRIOMF 1974	no data	no data	no data	no data	no data	no data	no data	no data	
TRIOMF 1975	0	1	1	0	1	1	unknown	0	
TRIOMF 1976	-1	1	1	0	1	1	-2	1	
TRIOMF 1977	-2	1	1	-2	1	1	-2	1	
TRIOMF 1978	-1	1	1	-1	1	1	-2	1	
TRIOMF 1979	0	1	1	0	1	1	0	1	
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data	
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data	
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data	
TUCKERS 1973	no data	no data	no data	no data	no data	no data	no data	no data	
TUCKERS 1974	no data	no data	no data	no data	no data	no data	no data	no data	
TUCKERS 1975	-1	1	1	-1	1	1	0	1	
TUCKERS 1976	-1	1	1	-1	1	1	0	1	
TUCKERS 1977	0	1	1	-1	1	1	0	1	
TUCKERS 1978	-2	1	1	-2	1	1	-2	1	
TUCKERS 1979	-1	1	1	-1	1	1	0	1	
Sub-Total 1970s		84	84		84	84		72	
Predictive Accuracy		100.0%			100.0%			85.7%	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1974	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1975	1	0	1	1	0	1	1	unknown
TRIOMF 1976	1	-1	1	1	0	0	1	-2
TRIOMF 1977	1	-2	1	1	-2	1	1	-2
TRIOMF 1978	1	-1	1	1	-1	1	1	-2
TRIOMF 1979	1	0	1	1	0	1	1	0
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1975	1	-1	1	1	-1	1	1	0
TUCKERS 1976	1	-1	1	1	-1	1	1	0
TUCKERS 1977	1	0	0	1	-1	1	1	0
TUCKERS 1978	1	-2	1	1	-2	1	1	-2
TUCKERS 1979	1	-1	1	1	-1	1	1	0
Sub-Total 1970s	84		70	84		72	84	
Predictive Accuracy			83.3%			85.7%		

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
TRIOMF 1970	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1971	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1972	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1973	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1974	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1975	0	1	0	1	1	0	1	1
TRIOMF 1976	1	1	-1	1	1	0	1	1
TRIOMF 1977	1	1	-2	1	1	-2	1	1
TRIOMF 1978	1	1	-1	1	1	-1	1	1
TRIOMF 1979	1	1	0	1	1	0	1	1
TUCKERS 1970	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1971	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1972	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1973	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1974	no data	no data	no data	no data	no data	no data	no data	no data
TUCKERS 1975	0	1	-1	1	1	-1	1	1
TUCKERS 1976	0	1	-1	1	1	-1	1	1
TUCKERS 1977	0	1	0	1	1	-1	1	1
TUCKERS 1978	1	1	-2	1	1	-2	1	1
TUCKERS 1979	0	1	-1	1	1	-1	1	1
Sub-Total 1970s	57	84		84	84		84	84
Predictive Accuracy	67.9%			100.0%			100.0%	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
TRIOMF 1970	no data	no data	no data
TRIOMF 1971	no data	no data	no data
TRIOMF 1972	no data	no data	no data
TRIOMF 1973	no data	no data	no data
TRIOMF 1974	no data	no data	no data
TRIOMF 1975	unknown	0	1
TRIOMF 1976	-2	0	1
TRIOMF 1977	-2	1	1
TRIOMF 1978	-2	0	1
TRIOMF 1979	0	1	1
TUCKERS 1970	no data	no data	no data
TUCKERS 1971	no data	no data	no data
TUCKERS 1972	no data	no data	no data
TUCKERS 1973	no data	no data	no data
TUCKERS 1974	no data	no data	no data
TUCKERS 1975	0	1	1
TUCKERS 1976	0	1	1
TUCKERS 1977	0	1	1
TUCKERS 1978	-2	1	1
TUCKERS 1979	0	1	1
Sub-Total 1970s		63	84
Predictive Accuracy		75.0%	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
BIDVEST 1980	Hold	0.60	12.29	0.81	-1
BIDVEST 1981	Hold	1.50	24.03	1.04	0
BIDVEST 1982	Hold	0.99	17.76	0.55	0
BIDVEST 1983	Hold	0.40	9.02	0.34	-1
BIDVEST 1984	Hold	0.48	9.58	0.27	-1
BIDVEST 1985	Hold	0.24	5.27	0.18	-1
BIDVEST 1986	Hold	0.35	5.99	0.31	-1
BIDVEST 1987	Hold	-0.76	-11.30	-0.65	-2
BIDVEST 1988	Hold	0.66	12.45	0.50	0
BIDVEST 1989	Hold	3.83	39.63	1.76	0
BRICK CLAY 1980	Hold	no data	no data	no data	no data
BRICK CLAY 1981	Hold	0.29	17.65	0.48	no data
BRICK CLAY 1982	Hold	0.37	69.34	0.44	no data
BRICK CLAY 1983	Hold	-3.35	-416.08	-1.27	-2
BRICK CLAY 1984	Hold	-1.18	14.67	0.04	no data
BRICK CLAY 1985	Hold	-4.88	-82.01	-1.44	-2
BRICK CLAY 1986	Hold	-0.79	26.96	0.75	0
BRICK CLAY 1987	Hold	1.18	103.67	1.83	0
BRICK CLAY 1988	Hold	1.59	445.84	1.56	0
BRISTOL 1980	Hold	0.26	11.00	0.74	0
BRISTOL 1981	Hold	0.61	12.82	0.97	0
BRISTOL 1982	Hold	-0.33	6.28	0.22	-1
BRISTOL 1983	Hold	-0.39	4.11	0.13	-1
BRISTOL 1984	Hold	1.48	16.82	0.82	0
BRISTOL 1985	Hold	0.79	9.40	0.35	-1
BRISTOL 1986	Hold	0.94	6.90	0.30	-1
BRISTOL 1987	Hold	1.17	5.97	0.40	-1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BIDVEST 1980	0	1	1	-1	1	1	0	1
BIDVEST 1981	0	1	1	0	1	1	0	1
BIDVEST 1982	0	1	1	0	1	1	0	1
BIDVEST 1983	-1	1	1	-1	1	1	0	1
BIDVEST 1984	-1	1	1	-1	1	1	0	1
BIDVEST 1985	-1	1	1	-1	1	1	0	1
BIDVEST 1986	-1	1	1	-1	1	1	0	1
BIDVEST 1987	-2	1	1	-2	1	1	-2	1
BIDVEST 1988	0	1	1	0	1	1	0	1
BIDVEST 1989	0	1	1	0	1	1	0	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	-2	1	1	-2	1	1	-2	1
BRICK CLAY 1984	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1985	-2	1	1	-2	1	1	-2	1
BRICK CLAY 1986	0	1	1	0	1	1	-2	0
BRICK CLAY 1987	0	1	1	0	1	1	0	1
BRICK CLAY 1988	0	1	1	0	1	1	0	1
BRISTOL 1980	0	1	1	-1	1	1	0	1
BRISTOL 1981	0	1	1	0	1	1	0	1
BRISTOL 1982	-1	1	1	-1	1	1	-2	1
BRISTOL 1983	-1	1	1	-1	1	1	-2	1
BRISTOL 1984	0	1	1	0	1	1	0	1
BRISTOL 1985	-1	1	1	-1	1	1	0	1
BRISTOL 1986	-1	1	1	-1	1	1	0	1
BRISTOL 1987	-1	1	1	-1	1	1	0	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BIDVEST 1980	1	0	0	1	-1	1	1	0
BIDVEST 1981	1	0	1	1	0	1	1	0
BIDVEST 1982	1	0	1	1	0	1	1	0
BIDVEST 1983	1	-1	1	1	-1	1	1	0
BIDVEST 1984	1	-1	1	1	-1	1	1	0
BIDVEST 1985	1	-1	1	1	-1	1	1	0
BIDVEST 1986	1	-1	1	1	-1	1	1	0
BIDVEST 1987	1	-2	1	1	-2	1	1	-2
BIDVEST 1988	1	0	1	1	0	1	1	0
BIDVEST 1989	1	0	1	1	0	1	1	0
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	1	-2	1	1	-2	1	1	-2
BRICK CLAY 1984	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1985	1	-2	1	1	-2	1	1	-2
BRICK CLAY 1986	1	0	1	1	0	1	1	-2
BRICK CLAY 1987	1	0	1	1	0	1	1	0
BRICK CLAY 1988	1	0	1	1	0	1	1	0
BRISTOL 1980	1	0	1	1	-1	0	1	0
BRISTOL 1981	1	0	1	1	0	1	1	0
BRISTOL 1982	1	-1	1	1	-1	1	1	-2
BRISTOL 1983	1	-1	1	1	-1	1	1	-2
BRISTOL 1984	1	0	1	1	0	1	1	0
BRISTOL 1985	1	-1	1	1	-1	1	1	0
BRISTOL 1986	1	-1	1	1	-1	1	1	0
BRISTOL 1987	1	-1	1	1	-1	1	1	0

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BIDVEST 1980	0	1	0	1	1	-1	1	1
BIDVEST 1981	1	1	0	1	1	0	1	1
BIDVEST 1982	1	1	0	1	1	0	1	1
BIDVEST 1983	0	1	-1	1	1	-1	1	1
BIDVEST 1984	0	1	-1	1	1	-1	1	1
BIDVEST 1985	0	1	-1	1	1	-1	1	1
BIDVEST 1986	0	1	-1	1	1	-1	1	1
BIDVEST 1987	1	1	-2	1	1	-2	1	1
BIDVEST 1988	1	1	0	1	1	0	1	1
BIDVEST 1989	1	1	0	1	1	0	1	1
BRICK CLAY 1980	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1983	1	1	-2	1	1	-2	1	1
BRICK CLAY 1984	no data	no data	no data	no data	no data	no data	no data	no data
BRICK CLAY 1985	1	1	-2	1	1	-2	1	1
BRICK CLAY 1986	0	1	0	1	1	0	1	1
BRICK CLAY 1987	1	1	0	1	1	0	1	1
BRICK CLAY 1988	1	1	0	1	1	0	1	1
BRISTOL 1980	1	1	0	1	1	-1	1	1
BRISTOL 1981	1	1	0	1	1	0	1	1
BRISTOL 1982	1	1	-1	1	1	-1	1	1
BRISTOL 1983	1	1	-1	1	1	-1	1	1
BRISTOL 1984	1	1	0	1	1	0	1	1
BRISTOL 1985	0	1	-1	1	1	-1	1	1
BRISTOL 1986	0	1	-1	1	1	-1	1	1
BRISTOL 1987	0	1	-1	1	1	-1	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BIDVEST 1980	0	1	1
BIDVEST 1981	0	1	1
BIDVEST 1982	0	1	1
BIDVEST 1983	0	1	1
BIDVEST 1984	0	1	1
BIDVEST 1985	0	1	1
BIDVEST 1986	0	1	1
BIDVEST 1987	-2	1	1
BIDVEST 1988	0	1	1
BIDVEST 1989	0	1	1
BRICK CLAY 1980	no data	no data	no data
BRICK CLAY 1981	no data	no data	no data
BRICK CLAY 1982	no data	no data	no data
BRICK CLAY 1983	-2	1	1
BRICK CLAY 1984	no data	no data	no data
BRICK CLAY 1985	-2	1	1
BRICK CLAY 1986	-2	0	1
BRICK CLAY 1987	0	1	1
BRICK CLAY 1988	0	1	1
BRISTOL 1980	0	1	1
BRISTOL 1981	0	1	1
BRISTOL 1982	-2	0	1
BRISTOL 1983	-2	0	1
BRISTOL 1984	0	1	1
BRISTOL 1985	0	1	1
BRISTOL 1986	0	1	1
BRISTOL 1987	0	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
BRISTOL 1988	Hold	1.43	7.37	0.57	-1
BRISTOL 1989	Hold	1.83	16.89	0.95	0
DRG 1980	Hold	0.92	21.62	1.12	no data
DRG 1981	Hold	0.26	9.52	0.34	no data
DRG 1982	Hold	-0.40	-0.49	-0.01	-2
H PARKER 1980	Hold	-0.27	14.73	0.41	-1
H PARKER 1981	Hold	0.23	17.42	0.67	0
H PARKER 1982	Hold	-0.29	4.95	0.14	-1
IL BACK 1980	Hold	-1.56	-23.81	-1.04	-2
IL BACK 1981	Hold	-2.25	-58.76	-1.18	-2
IL BACK 1982	Hold	1.28	-11.88	-0.76	-2
KTL 1980	Hold	1.70	34.53	1.76	0
KTL 1981	Hold	1.54	30.55	0.94	0
KTL 1982	Hold	1.06	27.79	0.61	0
KTL 1983	Hold	1.08	29.17	0.76	0
KTL 1984	Hold	1.11	20.62	0.52	-1
KTL 1985	Hold	0.29	10.94	0.25	-1
KTL 1986	Hold	-0.14	5.07	0.17	-1
KTL 1987	Hold	0.64	17.89	0.74	-1
KTL 1988	Hold	1.06	28.49	0.66	0
KTL 1989	Hold	0.81	35.98	0.55	0
OMNIA 1980	Hold	0.40	26.23	0.60	0
OMNIA 1981	Hold	1.64	71.07	1.29	0
OMNIA 1982	Hold	0.73	36.47	0.42	0
OMNIA 1983	Hold	-0.49	21.36	0.18	0
OMNIA 1984	Hold	-0.85	-1.32	-0.01	-2
OMNIA 1985	Hold	-0.73	5.50	0.05	-1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	APPROACH 1: Testing for State 0 & State -2 only							
	Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct
BRISTOL 1988	0	1	1	-1	1	1	0	1
BRISTOL 1989	0	1	1	0	1	1	0	1
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	-2	1	1	-2	1	1	-2	1
H PARKER 1980	-1	1	1	0	1	1	-2	1
H PARKER 1981	0	1	1	0	1	1	0	1
H PARKER 1982	-1	1	1	-1	1	1	-2	1
IL BACK 1980	-2	1	1	-2	1	1	-2	1
IL BACK 1981	-2	1	1	-2	1	1	-2	1
IL BACK 1982	-2	1	1	-2	1	1	0	0
KTL 1980	0	1	1	0	1	1	0	1
KTL 1981	0	1	1	0	1	1	0	1
KTL 1982	0	1	1	0	1	1	0	1
KTL 1983	0	1	1	0	1	1	0	1
KTL 1984	0	1	1	0	1	1	0	1
KTL 1985	-1	1	1	-1	1	1	0	1
KTL 1986	-1	1	1	-1	1	1	unknown	0
KTL 1987	0	1	1	0	1	1	0	1
KTL 1988	0	1	1	0	1	1	0	1
KTL 1989	0	1	1	0	1	1	0	1
OMNIA 1980	0	1	1	0	1	1	0	1
OMNIA 1981	0	1	1	0	1	1	0	1
OMNIA 1982	-1	1	1	0	1	1	0	1
OMNIA 1983	-1	1	1	0	1	1	-2	0
OMNIA 1984	-2	1	1	-2	1	1	-2	1
OMNIA 1985	-1	1	1	-1	1	1	-2	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
BRISTOL 1988	1	0	0	1	-1	1	1	0
BRISTOL 1989	1	0	1	1	0	1	1	0
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	1	-2	1	1	-2	1	1	-2
H PARKER 1980	1	-1	1	1	0	0	1	-2
H PARKER 1981	1	0	1	1	0	1	1	0
H PARKER 1982	1	-1	1	1	-1	1	1	-2
IL BACK 1980	1	-2	1	1	-2	1	1	-2
IL BACK 1981	1	-2	1	1	-2	1	1	-2
IL BACK 1982	1	-2	1	1	-2	1	1	0
KTL 1980	1	0	1	1	0	1	1	0
KTL 1981	1	0	1	1	0	1	1	0
KTL 1982	1	0	1	1	0	1	1	0
KTL 1983	1	0	1	1	0	1	1	0
KTL 1984	1	0	0	1	0	0	1	0
KTL 1985	1	-1	1	1	-1	1	1	0
KTL 1986	1	-1	1	1	-1	1	1	unknown
KTL 1987	1	0	0	1	0	0	1	0
KTL 1988	1	0	1	1	0	1	1	0
KTL 1989	1	0	1	1	0	1	1	0
OMNIA 1980	1	0	1	1	0	1	1	0
OMNIA 1981	1	0	1	1	0	1	1	0
OMNIA 1982	1	-1	0	1	0	1	1	0
OMNIA 1983	1	-1	0	1	0	1	1	-2
OMNIA 1984	1	-2	1	1	-2	1	1	-2
OMNIA 1985	1	-1	1	1	-1	1	1	-2

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
BRISTOL 1988	0	1	0	1	1	-1	1	1
BRISTOL 1989	1	1	0	1	1	0	1	1
DRG 1980	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1981	no data	no data	no data	no data	no data	no data	no data	no data
DRG 1982	1	1	-2	1	1	-2	1	1
H PARKER 1980	1	1	-1	1	1	0	1	1
H PARKER 1981	1	1	0	1	1	0	1	1
H PARKER 1982	1	1	-1	1	1	-1	1	1
IL BACK 1980	1	1	-2	1	1	-2	1	1
IL BACK 1981	1	1	-2	1	1	-2	1	1
IL BACK 1982	0	1	-2	1	1	-2	1	1
KTL 1980	1	1	0	1	1	0	1	1
KTL 1981	1	1	0	1	1	0	1	1
KTL 1982	1	1	0	1	1	0	1	1
KTL 1983	1	1	0	1	1	0	1	1
KTL 1984	0	1	0	1	1	0	1	1
KTL 1985	0	1	-1	1	1	-1	1	1
KTL 1986	0	1	-1	1	1	-1	1	1
KTL 1987	0	1	0	1	1	0	1	1
KTL 1988	1	1	0	1	1	0	1	1
KTL 1989	1	1	0	1	1	0	1	1
OMNIA 1980	1	1	0	1	1	0	1	1
OMNIA 1981	1	1	0	1	1	0	1	1
OMNIA 1982	1	1	-1	1	1	0	1	1
OMNIA 1983	0	1	-1	1	1	0	1	1
OMNIA 1984	1	1	-2	1	1	-2	1	1
OMNIA 1985	1	1	-1	1	1	-1	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
BRISTOL 1988	0	1	1
BRISTOL 1989	0	1	1
DRG 1980	no data	no data	no data
DRG 1981	no data	no data	no data
DRG 1982	-2	1	1
H PARKER 1980	-2	0	1
H PARKER 1981	0	1	1
H PARKER 1982	-2	0	1
IL BACK 1980	-2	1	1
IL BACK 1981	-2	1	1
IL BACK 1982	0	0	1
KTL 1980	0	1	1
KTL 1981	0	1	1
KTL 1982	0	1	1
KTL 1983	0	1	1
KTL 1984	0	1	1
KTL 1985	0	1	1
KTL 1986	unknown	0	1
KTL 1987	0	1	1
KTL 1988	0	1	1
KTL 1989	0	1	1
OMNIA 1980	0	1	1
OMNIA 1981	0	1	1
OMNIA 1982	0	1	1
OMNIA 1983	-2	0	1
OMNIA 1984	-2	1	1
OMNIA 1985	-2	0	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
OMNIA 1986	Hold	-0.64	6.63	0.13	-1
OMNIA 1987	Hold	-0.42	21.21	0.38	0
OMNIA 1988	Hold	0.01	25.91	0.55	0
OMNIA 1989	Hold	0.62	33.59	0.59	0
ROMATEX 1980	Hold	1.25	22.63	1.30	0
ROMATEX 1981	Hold	1.65	27.33	1.70	0
ROMATEX 1982	Hold	1.36	20.64	0.99	0
ROMATEX 1983	Hold	0.83	12.91	0.45	-1
ROMATEX 1984	Hold	1.01	14.51	0.56	-1
ROMATEX 1985	Hold	-0.09	1.71	0.05	-1
ROMATEX 1986	Hold	0.47	9.99	0.29	-1
ROMATEX 1987	Hold	0.83	13.97	0.63	-1
ROMATEX 1988	Hold	1.09	18.00	0.90	0
ROMATEX 1989	Hold	1.00	17.12	0.70	0
TRIOMF 1980	Hold	1.13	41.44	1.29	0
TRIOMF 1981	Hold	-0.11	15.27	0.70	-1
TRIOMF 1982	Hold	-0.32	0.23	0.01	-1
TRIOMF 1983	Hold	-0.14	-0.76	-0.03	-2
TRIOMF 1984	Hold	no data	no data	no data	no data
TRIOMF 1985	Hold	-1.92	-40.43	-0.21	-2
TRIOMF 1986	Hold	-2.79	-39.92	-2.01	-2
TRIOMF 1987	Hold	1.43	-0.36	-0.02	-2
TUCKERS 1980	Hold	0.52	4.36	0.39	-1
TUCKERS 1981	Hold	0.18	7.91	0.40	-1
TUCKERS 1982	Hold	0.42	18.54	0.48	0

Sub-Total 1980s

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point Lower Cut-off point		APPROACH 1: Testing for State 0 & State -2 only							
		Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
Company & year	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	
OMNIA 1986	-1	1	1	-1	1	1	-2	1	
OMNIA 1987	-1	1	1	0	1	1	-2	0	
OMNIA 1988	0	1	1	0	1	1	unknown	0	
OMNIA 1989	0	1	1	0	1	1	0	1	
ROMATEX 1980	0	1	1	0	1	1	0	1	
ROMATEX 1981	0	1	1	0	1	1	0	1	
ROMATEX 1982	0	1	1	0	1	1	0	1	
ROMATEX 1983	-1	1	1	0	1	1	0	1	
ROMATEX 1984	0	1	1	0	1	1	0	1	
ROMATEX 1985	-1	1	1	-1	1	1	unknown	0	
ROMATEX 1986	-1	1	1	-1	1	1	0	1	
ROMATEX 1987	0	1	1	0	1	1	0	1	
ROMATEX 1988	0	1	1	0	1	1	0	1	
ROMATEX 1989	0	1	1	0	1	1	0	1	
TRIOMF 1980	0	1	1	0	1	1	0	1	
TRIOMF 1981	0	1	1	0	1	1	unknown	0	
TRIOMF 1982	-1	1	1	-2	1	1	-2	1	
TRIOMF 1983	-2	1	1	-2	1	1	unknown	0	
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data	
TRIOMF 1985	-2	1	1	-2	1	1	-2	1	
TRIOMF 1986	-2	1	1	-2	1	1	-2	1	
TRIOMF 1987	-2	1	1	-2	1	1	0	0	
TUCKERS 1980	-1	1	1	-1	1	1	0	1	
TUCKERS 1981	-1	1	1	-1	1	1	unknown	0	
TUCKERS 1982	-1	1	1	0	1	1	0	1	
Sub-Total 1980s		72	72		72	72		61	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
OMNIA 1986	1	-1	1	1	-1	1	1	-2
OMNIA 1987	1	-1	0	1	0	1	1	-2
OMNIA 1988	1	0	1	1	0	1	1	unknown
OMNIA 1989	1	0	1	1	0	1	1	0
ROMATEX 1980	1	0	1	1	0	1	1	0
ROMATEX 1981	1	0	1	1	0	1	1	0
ROMATEX 1982	1	0	1	1	0	1	1	0
ROMATEX 1983	1	-1	1	1	0	0	1	0
ROMATEX 1984	1	0	0	1	0	0	1	0
ROMATEX 1985	1	-1	1	1	-1	1	1	unknown
ROMATEX 1986	1	-1	1	1	-1	1	1	0
ROMATEX 1987	1	0	0	1	0	0	1	0
ROMATEX 1988	1	0	1	1	0	1	1	0
ROMATEX 1989	1	0	1	1	0	1	1	0
TRIOMF 1980	1	0	1	1	0	1	1	0
TRIOMF 1981	1	0	0	1	0	0	1	unknown
TRIOMF 1982	1	-1	1	1	-2	1	1	-2
TRIOMF 1983	1	-2	1	1	-2	1	1	unknown
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	1	-2	1	1	-2	1	1	-2
TRIOMF 1986	1	-2	1	1	-2	1	1	-2
TRIOMF 1987	1	-2	1	1	-2	1	1	0
TUCKERS 1980	1	-1	1	1	-1	1	1	0
TUCKERS 1981	1	-1	1	1	-1	1	1	unknown
TUCKERS 1982	1	-1	0	1	0	1	1	0
Sub-Total 1980s	72		61	72		64	72	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
OMNIA 1986	1	1	-1	1	1	-1	1	1
OMNIA 1987	0	1	-1	1	1	0	1	1
OMNIA 1988	0	1	0	1	1	0	1	1
OMNIA 1989	1	1	0	1	1	0	1	1
ROMATEX 1980	1	1	0	1	1	0	1	1
ROMATEX 1981	1	1	0	1	1	0	1	1
ROMATEX 1982	1	1	0	1	1	0	1	1
ROMATEX 1983	0	1	-1	1	1	0	1	1
ROMATEX 1984	0	1	0	1	1	0	1	1
ROMATEX 1985	0	1	-1	1	1	-1	1	1
ROMATEX 1986	0	1	-1	1	1	-1	1	1
ROMATEX 1987	0	1	0	1	1	0	1	1
ROMATEX 1988	1	1	0	1	1	0	1	1
ROMATEX 1989	1	1	0	1	1	0	1	1
TRIOMF 1980	1	1	0	1	1	0	1	1
TRIOMF 1981	0	1	0	1	1	0	1	1
TRIOMF 1982	1	1	-1	1	1	-2	0	1
TRIOMF 1983	0	1	-2	1	1	-2	1	1
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	1	1	-2	1	1	-2	1	1
TRIOMF 1986	1	1	-2	1	1	-2	1	1
TRIOMF 1987	0	1	-2	1	1	-2	1	1
TUCKERS 1980	0	1	-1	1	1	-1	1	1
TUCKERS 1981	0	1	-1	1	1	-1	1	1
TUCKERS 1982	1	1	-1	1	1	0	1	1
Sub-Total 1980s	44	72		72	72		71	72

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
OMNIA 1986	-2	0	1
OMNIA 1987	-2	0	1
OMNIA 1988	unknown	0	1
OMNIA 1989	0	1	1
ROMATEX 1980	0	1	1
ROMATEX 1981	0	1	1
ROMATEX 1982	0	1	1
ROMATEX 1983	0	1	1
ROMATEX 1984	0	1	1
ROMATEX 1985	unknown	0	1
ROMATEX 1986	0	1	1
ROMATEX 1987	0	1	1
ROMATEX 1988	0	1	1
ROMATEX 1989	0	1	1
TRIOMF 1980	0	1	1
TRIOMF 1981	unknown	0	1
TRIOMF 1982	-2	0	1
TRIOMF 1983	unknown	0	1
TRIOMF 1984	no data	no data	no data
TRIOMF 1985	-2	1	1
TRIOMF 1986	-2	1	1
TRIOMF 1987	0	0	1
TUCKERS 1980	0	1	1
TUCKERS 1981	unknown	0	1
TUCKERS 1982	0	1	1
Sub-Total 1980s		54	72

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
Predictive Accuracy					
BIDVEST 1990	Hold	2.04	33.80	0.65	0
BIDVEST 1991	Hold	0.34	36.49	0.32	0
BIDVEST 1992	Hold	0.45	49.16	0.51	0
BIDVEST 1993	Hold	0.25	15.33	0.38	0
BIDVEST 1994	Hold	0.54	25.60	0.62	0
BIDVEST 1995	Hold	0.68	28.20	0.61	0
BIDVEST 1996	Hold	0.88	27.57	0.58	0
BIDVEST 1997	Hold	0.66	14.68	0.37	0
BIDVEST 1998	Hold	1.24	16.30	0.50	0
BRISTOL 1990	Hold	0.75	6.41	0.29	-1
BRISTOL 1991	Hold	0.88	7.41	0.31	-1
BRISTOL 1992	Hold	1.12	7.85	0.36	-1
BRISTOL 1993	Hold	1.30	6.51	0.33	-1
BRISTOL 1994	Hold	0.82	5.61	0.32	-1
KTL 1990	Hold	0.65	94.62	0.39	0
KTL 1991	Hold	-0.09	15.79	0.20	-1
KTL 1992	Hold	-0.59	0.70	0.01	-1
KTL 1993	Hold	-0.01	28.72	0.36	-1
KTL 1994	Hold	0.56	47.63	0.65	0
KTL 1995	Hold	0.47	39.09	0.50	0
KTL 1996	Hold	1.43	69.07	0.85	0
KTL 1997	Hold	0.16	41.19	0.34	-1
KTL 1998	Hold	1.70	36.23	1.49	-1
KTL 1999	Hold	5.32	52.54	2.55	-1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point Lower Cut-off point		APPROACH 1: Testing for State 0 & State -2 only							
		Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
Company & year	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	
Predictive Accuracy		100.0%			100.0%			84.7%	
BIDVEST 1990	0	1	1	0	1	1	0	1	
BIDVEST 1991	-1	1	1	0	1	1	0	1	
BIDVEST 1992	0	1	1	0	1	1	0	1	
BIDVEST 1993	-1	1	1	0	1	1	0	1	
BIDVEST 1994	0	1	1	0	1	1	0	1	
BIDVEST 1995	0	1	1	0	1	1	0	1	
BIDVEST 1996	0	1	1	0	1	1	0	1	
BIDVEST 1997	-1	1	1	0	1	1	0	1	
BIDVEST 1998	0	1	1	0	1	1	0	1	
BRISTOL 1990	-1	1	1	-1	1	1	0	1	
BRISTOL 1991	-1	1	1	-1	1	1	0	1	
BRISTOL 1992	-1	1	1	-1	1	1	0	1	
BRISTOL 1993	-1	1	1	-1	1	1	0	1	
BRISTOL 1994	-1	1	1	-1	1	1	0	1	
KTL 1990	-1	1	1	0	1	1	0	1	
KTL 1991	-1	1	1	0	1	1	unknown	0	
KTL 1992	-1	1	1	-2	1	1	-2	1	
KTL 1993	-1	1	1	0	1	1	unknown	0	
KTL 1994	0	1	1	0	1	1	0	1	
KTL 1995	0	1	1	0	1	1	0	1	
KTL 1996	0	1	1	0	1	1	0	1	
KTL 1997	-1	1	1	0	1	1	unknown	0	
KTL 1998	0	1	1	0	1	1	0	1	
KTL 1999	0	1	1	0	1	1	0	1	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2							
Model		Yn Naive Model			Yn CHAID Model			Yn	
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	
Predictive Accuracy			84.7%				88.9%		
BIDVEST 1990	1	0	1	1	0	1	1	0	
BIDVEST 1991	1	-1	0	1	0	1	1	0	
BIDVEST 1992	1	0	1	1	0	1	1	0	
BIDVEST 1993	1	-1	0	1	0	1	1	0	
BIDVEST 1994	1	0	1	1	0	1	1	0	
BIDVEST 1995	1	0	1	1	0	1	1	0	
BIDVEST 1996	1	0	1	1	0	1	1	0	
BIDVEST 1997	1	-1	0	1	0	1	1	0	
BIDVEST 1998	1	0	1	1	0	1	1	0	
BRISTOL 1990	1	-1	1	1	-1	1	1	0	
BRISTOL 1991	1	-1	1	1	-1	1	1	0	
BRISTOL 1992	1	-1	1	1	-1	1	1	0	
BRISTOL 1993	1	-1	1	1	-1	1	1	0	
BRISTOL 1994	1	-1	1	1	-1	1	1	0	
KTL 1990	1	-1	0	1	0	1	1	0	
KTL 1991	1	-1	1	1	0	0	1	unknown	
KTL 1992	1	-1	1	1	-2	1	1	-2	
KTL 1993	1	-1	1	1	0	0	1	unknown	
KTL 1994	1	0	1	1	0	1	1	0	
KTL 1995	1	0	1	1	0	1	1	0	
KTL 1996	1	0	1	1	0	1	1	0	
KTL 1997	1	-1	1	1	0	0	1	unknown	
KTL 1998	1	0	0	1	0	0	1	0	
KTL 1999	1	0	0	1	0	0	1	0	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 3: States 0 & -1 vs State -2						
De La Rey Model		Yn Naive Model			Yn CHAID Model			
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
Predictive Accuracy	61.1%		100.0%			98.6%		
BIDVEST 1990	1	1	0	1	1	0	1	1
BIDVEST 1991	1	1	-1	1	1	0	1	1
BIDVEST 1992	1	1	0	1	1	0	1	1
BIDVEST 1993	1	1	-1	1	1	0	1	1
BIDVEST 1994	1	1	0	1	1	0	1	1
BIDVEST 1995	1	1	0	1	1	0	1	1
BIDVEST 1996	1	1	0	1	1	0	1	1
BIDVEST 1997	1	1	-1	1	1	0	1	1
BIDVEST 1998	1	1	0	1	1	0	1	1
BRISTOL 1990	0	1	-1	1	1	-1	1	1
BRISTOL 1991	0	1	-1	1	1	-1	1	1
BRISTOL 1992	0	1	-1	1	1	-1	1	1
BRISTOL 1993	0	1	-1	1	1	-1	1	1
BRISTOL 1994	0	1	-1	1	1	-1	1	1
KTL 1990	1	1	-1	1	1	0	1	1
KTL 1991	0	1	-1	1	1	0	1	1
KTL 1992	1	1	-1	1	1	-2	0	1
KTL 1993	0	1	-1	1	1	0	1	1
KTL 1994	1	1	0	1	1	0	1	1
KTL 1995	1	1	0	1	1	0	1	1
KTL 1996	1	1	0	1	1	0	1	1
KTL 1997	0	1	-1	1	1	0	1	1
KTL 1998	0	1	0	1	1	0	1	1
KTL 1999	0	1	0	1	1	0	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

	Yn De La Rey Model		
Company & year	Pred State	# Correct	Sample Size
Predictive Accuracy	75.0%		
BIDVEST 1990	0	1	1
BIDVEST 1991	0	1	1
BIDVEST 1992	0	1	1
BIDVEST 1993	0	1	1
BIDVEST 1994	0	1	1
BIDVEST 1995	0	1	1
BIDVEST 1996	0	1	1
BIDVEST 1997	0	1	1
BIDVEST 1998	0	1	1
BRISTOL 1990	0	1	1
BRISTOL 1991	0	1	1
BRISTOL 1992	0	1	1
BRISTOL 1993	0	1	1
BRISTOL 1994	0	1	1
KTL 1990	0	1	1
KTL 1991	unknown	0	1
KTL 1992	-2	0	1
KTL 1993	unknown	0	1
KTL 1994	0	1	1
KTL 1995	0	1	1
KTL 1996	0	1	1
KTL 1997	unknown	0	1
KTL 1998	0	1	1
KTL 1999	0	1	1

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point	0.20	12.31	0.49
Lower Cut-off point	-0.19	1.59	0.00

Data					
Company & year	Test/Hold	De La Rey	PAT/SHE	SVA	5Year n
OMNIA 1990	Hold	0.39	24.90	0.45	0
OMNIA 1991	Hold	0.21	21.66	0.39	0
OMNIA 1992	Hold	-0.23	13.51	0.24	-1
OMNIA 1993	Hold	0.41	25.46	0.60	0
OMNIA 1994	Hold	0.32	23.75	0.54	-1
OMNIA 1995	Hold	0.07	22.34	0.39	-1
OMNIA 1996	Hold	0.38	29.14	0.47	0
OMNIA 1997	Hold	0.73	28.50	0.57	0
OMNIA 1998	Hold	0.24	21.21	0.35	0
ROMATEX 1990	Hold	0.49	12.30	0.38	-1
ROMATEX 1991	Hold	-0.26	0.51	0.01	-1
ROMATEX 1992	Hold	0.03	4.12	0.13	-1
ROMATEX 1993	Hold	0.56	10.76	0.38	-1
ROMATEX 1994	Hold	0.69	11.62	0.49	-1
ROMATEX 1995	Hold	0.52	9.71	0.44	-1
ROMATEX 1996	Hold	-0.02	0.36	0.01	-1
ROMATEX 1997	Hold	-1.18	-14.73	-0.53	-2
ROMATEX 1998	Hold	0.17	2.10	0.08	-1

Sub-Total 1990s
 Predictive Accuracy

Grand Total
 Predictive Accuracy

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point Lower Cut-off point		APPROACH 1: Testing for State 0 & State -2 only							
		Yn Naive Model			Yn CHAID Model			Yn De La Rey Mo	
Company & year	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	
OMNIA 1990	-1	1	1	0	1	1	0	1	
OMNIA 1991	-1	1	1	0	1	1	0	1	
OMNIA 1992	-1	1	1	0	1	1	-2	1	
OMNIA 1993	0	1	1	0	1	1	0	1	
OMNIA 1994	0	1	1	0	1	1	0	1	
OMNIA 1995	-1	1	1	0	1	1	unknown	0	
OMNIA 1996	-1	1	1	0	1	1	0	1	
OMNIA 1997	0	1	1	0	1	1	0	1	
OMNIA 1998	-1	1	1	0	1	1	0	1	
ROMATEX 1990	-1	1	1	-1	1	1	0	1	
ROMATEX 1991	-1	1	1	-2	1	1	-2	1	
ROMATEX 1992	-1	1	1	-1	1	1	unknown	0	
ROMATEX 1993	-1	1	1	-1	1	1	0	1	
ROMATEX 1994	0	1	1	-1	1	1	0	1	
ROMATEX 1995	-1	1	1	-1	1	1	0	1	
ROMATEX 1996	-1	1	1	-2	1	1	unknown	0	
ROMATEX 1997	-2	1	1	-2	1	1	-2	1	
ROMATEX 1998	-1	1	1	-1	1	1	unknown	0	
Sub-Total 1990s		42	42		42	42		35	
Predictive Accuracy		100.0%			100.0%			83.3%	
Grand Total		198	198		198	198		168	
Predictive Accuracy		100.0%			100.0%			84.8%	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

		APPROACH 2: State 0 vs States -1 & -2						
Model		Yn Naive Model			Yn CHAID Model			Yn
Company & year	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State
OMNIA 1990	1	-1	0	1	0	1	1	0
OMNIA 1991	1	-1	0	1	0	1	1	0
OMNIA 1992	1	-1	1	1	0	0	1	-2
OMNIA 1993	1	0	1	1	0	1	1	0
OMNIA 1994	1	0	0	1	0	0	1	0
OMNIA 1995	1	-1	1	1	0	0	1	unknown
OMNIA 1996	1	-1	0	1	0	1	1	0
OMNIA 1997	1	0	1	1	0	1	1	0
OMNIA 1998	1	-1	0	1	0	1	1	0
ROMATEX 1990	1	-1	1	1	-1	1	1	0
ROMATEX 1991	1	-1	1	1	-2	1	1	-2
ROMATEX 1992	1	-1	1	1	-1	1	1	unknown
ROMATEX 1993	1	-1	1	1	-1	1	1	0
ROMATEX 1994	1	0	0	1	-1	1	1	0
ROMATEX 1995	1	-1	1	1	-1	1	1	0
ROMATEX 1996	1	-1	1	1	-2	1	1	unknown
ROMATEX 1997	1	-2	1	1	-2	1	1	-2
ROMATEX 1998	1	-1	1	1	-1	1	1	unknown
Sub-Total 1990s	42		30	42		34	42	
Predictive Accuracy			71.4%			81.0%		
Grand Total	198		161	198		170	198	
Predictive Accuracy			81.3%			85.9%		

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

			APPROACH 3: States 0 & -1 vs State -2					
De La Rey Model			Yn Naive Model			Yn CHAID Model		
Company & year	# Correct	Sample Size	Pred State	# Correct	Sample Size	Pred State	# Correct	Sample Size
OMNIA 1990	1	1	-1	1	1	0	1	1
OMNIA 1991	1	1	-1	1	1	0	1	1
OMNIA 1992	1	1	-1	1	1	0	1	1
OMNIA 1993	1	1	0	1	1	0	1	1
OMNIA 1994	0	1	0	1	1	0	1	1
OMNIA 1995	0	1	-1	1	1	0	1	1
OMNIA 1996	1	1	-1	1	1	0	1	1
OMNIA 1997	1	1	0	1	1	0	1	1
OMNIA 1998	1	1	-1	1	1	0	1	1
ROMATEX 1990	0	1	-1	1	1	-1	1	1
ROMATEX 1991	1	1	-1	1	1	-2	0	1
ROMATEX 1992	0	1	-1	1	1	-1	1	1
ROMATEX 1993	0	1	-1	1	1	-1	1	1
ROMATEX 1994	0	1	0	1	1	-1	1	1
ROMATEX 1995	0	1	-1	1	1	-1	1	1
ROMATEX 1996	0	1	-1	1	1	-2	0	1
ROMATEX 1997	1	1	-2	1	1	-2	1	1
ROMATEX 1998	0	1	-1	1	1	-1	1	1
Sub-Total 1990s	23	42		42	42		39	42
Predictive Accuracy	54.8%			100.0%			92.9%	
Grand Total	124	198		198	198		194	198
Predictive Accuracy	62.6%			100.0%			98.0%	

APPENDIX K : 5 Year n De La Rey Comparisons

Upper Cut-off point
Lower Cut-off point

Company & year	Yn De La Rey Model		
	Pred State	# Correct	Sample Size
OMNIA 1990	0	1	1
OMNIA 1991	0	1	1
OMNIA 1992	-2	0	1
OMNIA 1993	0	1	1
OMNIA 1994	0	1	1
OMNIA 1995	unknown	0	1
OMNIA 1996	0	1	1
OMNIA 1997	0	1	1
OMNIA 1998	0	1	1
ROMATEX 1990	0	1	1
ROMATEX 1991	-2	0	1
ROMATEX 1992	unknown	0	1
ROMATEX 1993	0	1	1
ROMATEX 1994	0	1	1
ROMATEX 1995	0	1	1
ROMATEX 1996	unknown	0	1
ROMATEX 1997	-2	1	1
ROMATEX 1998	unknown	0	1
Sub-Total 1990s		32	42
Predictive Accuracy		76.2%	
Grand Total		149	198
Predictive Accuracy		75.3%	

APPENDIX L1 : Financial Risk Analysis Model (Test Sample)

Company & year	RSG	REG	GM%	EBIT/SALES	AIR/SALES	PAT/SALES	NWC/Sales	INV Days	REC Days
A&P 1978	18.45	-69%	no data	2.62	0.00	0.67	10.34	57.77	32.40
AVBAK 1979	1.80	21%	no data	6.93	-0.05	4.35	9.64	37.80	30.64
BERZACK 1978	no data	134%	no data	no data	no data	no data	no data	no data	no data
BROMAIN 1977	1.62	-5%	no data	6.96	-0.16	1.42	16.35	102.44	115.15
BTR 1979	21.39	22%	no data	13.82	0.08	8.27	12.92	101.33	69.45
CHEMSERVE 1979	12.40	70%	no data	11.41	-0.05	5.86	17.76	112.56	74.67
COATES 1976	4.52	35%	no data	15.85	-0.01	8.29	25.11	103.08	81.25
DESIREE 1977	1.08	80%	no data	8.75	-0.12	4.05	14.64	73.43	64.64
DUBIN 1976	66.12	135%	no data	11.74	-0.05	5.96	14.45	73.31	98.65
FINTECH 1977	no data	19%	no data	no data	no data	no data	no data	no data	no data
FOWLER 1979	no data	-1276%	no data	no data	no data	no data	no data	no data	no data
FRASERS 1977	11.55	41%	no data	9.95	0.02	5.54	16.56	97.92	54.61
GLEN ANIL 1976	no data	-90%	no data	no data	no data	no data	no data	no data	no data
HANHILL 1976	1.36	-3%	no data	5.61	0.00	1.28	16.00	42.38	73.31
HEPWORTHS 1979	no data	-159%	no data	0.75	-0.22	-3.40	23.14	84.43	98.47
LAWSON 1976	-31.34	-6644%	no data	-38.83	-36.95	-45.60	-8.50	84.76	43.29
LTA 1977	-0.86	42%	no data	3.57	0.40	2.71	1.56	22.20	54.57
LUCYS 1975	-82.37	-2453%	no data	-53.48	-43.21	-55.03	-38.92	31.04	50.47
MARSHALL 1977	-10.13	-74%	no data	4.14	0.00	0.80	10.83	66.47	63.44
SIMBA 1973	no data	no data	no data	no data	no data	no data	no data	no data	no data

APPENDIX L1 : Financial Risk Analysis Model (Test Sample)

Company & year	PAY Days	SALES/TA	PAT/SHE2	TL/TA	CA/CL	Mod Yn	Naïve	De La Rey	CHAID
A&P 1978	30.14	2.88	4.18	0.54	1.69	I	-1	-0.09	-1
AVBAK 1979	14.95	2.29	13.56	0.24	2.04	H	0	1.05	0
BERZACK 1978	no data	no data	29.81	0.46	2.04	H	0	1.49	0
BROMAIN 1977	78.18	1.28	6.84	0.69	1.37	I	-1	-0.46	-1
BTR 1979	86.24	1.59	29.50	0.55	1.38	H	0	1.16	0
CHEMSERVE 1979	83.98	1.23	21.75	0.61	1.47	H	0	0.42	0
COATES 1976	60.15	1.34	20.09	0.45	1.86	H	0	1.14	0
DESIREE 1977	65.72	1.58	18.54	0.65	1.52	H	0	0.13	0
DUBIN 1976	70.03	1.61	40.39	0.70	1.41	H	0	0.69	0
FINTECH 1977	no data	no data	16.80	0.54	1.11	H	0	0.56	0
FOWLER 1979	no data	no data	-46.03	0.64	1.41	D	-2	-1.71	-2
FRASERS 1977	38.34	1.88	20.83	0.50	1.64	H	0	1.09	0
GLEN ANIL 1976	no data	no data	1.59	0.58	3.35	I	-1	-0.72	-2
HANHILL 1976	35.25	2.89	12.31	0.70	1.95	I	-1	-0.18	0
HEPWORTHS 1979	18.74	1.45	-11.27	0.48	1.84	D	-2	-0.85	-2
LAWSON 1976	209.33	1.76	-ve SHE	1.07	0.85	SD	-2	-6.37	-2
LTA 1977	65.34	2.70	20.42	0.62	1.07	H	0	0.11	0
LUCYS 1975	38.52	2.40	-ve SHE	1.49	0.37	SD	-2	-9.01	-2
MARSHALL 1977	52.82	1.50	2.77	0.50	1.42	I	-1	-0.33	-1
SIMBA 1973	no data	no data	-23.16	0.65	1.28	D	-2	-1.55	-2

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Status	RSG	REG	GM%	EBIT/SALES	AIR/SALES	PAT/SALES
BACKCLOTHING 1970	Failed	no data	no data	no data	7.41	0.00	2.30
BACKCLOTHING 1971		-3.50	no data	no data	3.86	-0.42	-0.88
BACKCLOTHING 1972		-1.31	no data	no data	-4.85	-7.20	-8.60
BACKCLOTHING 1973		-10.78	no data	no data	-5.82	-4.12	-10.10
BACKCLOTHING 1974		13.73	no data	no data	-5.77	-1.75	-12.51
BIDVEST 1994	Non-Failed	221.45	1.75	no data	5.73	0.02	3.49
BIDVEST 1995		25.34	1.58	no data	5.76	0.02	3.62
BIDVEST 1996		14.00	1.34	0.17	6.18	0.21	4.18
BIDVEST 1997		13.11	1.06	0.18	6.86	0.22	4.54
BIDVEST 1998		39.75	1.77	0.23	7.86	0.13	5.86
BRICK CLAY 1984	Non-Failed	-9.76	no data	no data	5.16	-0.86	0.46
BRICK CLAY 1985		-48.08	no data	no data	-9.68	-8.17	-18.16
BRICK CLAY 1986		-29.20	1.91	no data	10.00	-0.85	5.96
BRICK CLAY 1987		-6.51	3.09	no data	15.05	0.02	14.64
BRICK CLAY 1988		1.75	3.13	no data	16.67	0.02	16.50
BRISTOL 1990	Non-Failed	22.34	-0.39	no data	42.85	0.88	22.12
BRISTOL 1991		24.05	-0.25	no data	40.83	0.31	20.02
BRISTOL 1992		4.05	-0.11	no data	33.96	1.66	22.15
BRISTOL 1993		-48.92	-0.33	no data	49.35	11.57	30.35
BRISTOL 1994		-4.87	-0.38	no data	43.46	0.08	28.87
BURHOSE 1975	Non-Failed	no data	0.79	no data	no data	no data	no data
BURHOSE 1976		no data	-0.19	no data	no data	no data	no data
BURHOSE 1977		no data	no data	no data	no data	no data	no data
BURHOSE 1978		no data	no data	no data	3.43	-0.07	1.35
BURHOSE 1979		1.04	no data	no data	7.98	0.28	5.95

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	NWC/Sales	INV Days	REC Days	PAY Days	SALES/TA	PAT/SHE2	TL/TA	CA/CL
BACKCLOTHING 1970	20.06	115.18	139.37	44.47	1.20	7.07	0.61	1.40
BACKCLOTHING 1971	18.17	126.82	145.45	57.13	1.12	-2.89	0.66	1.31
BACKCLOTHING 1972	7.51	137.54	139.57	65.96	1.13	-45.83	0.79	1.11
BACKCLOTHING 1973	32.08	168.01	140.63	89.84	1.07	-88.85	0.88	1.61
BACKCLOTHING 1974	18.11	162.42	137.09	94.86	1.13	-ve SHE	1.04	1.28
BIDVEST 1994	12.40	22.98	45.56	52.93	2.78	25.60	0.62	1.75
BIDVEST 1995	11.39	22.30	44.66	48.73	3.02	28.20	0.61	1.74
BIDVEST 1996	12.94	24.57	43.01	51.34	2.72	27.57	0.55	1.80
BIDVEST 1997	22.36	46.25	68.16	74.59	1.64	14.68	0.46	1.92
BIDVEST 1998	25.92	35.39	47.28	48.56	1.86	16.30	0.30	2.68
BRICK CLAY 1984	8.54	55.35	58.64	45.16	1.87	-ve SHE	1.05	1.37
BRICK CLAY 1985	-22.68	52.12	55.16	51.41	1.71	-ve SHE	1.37	0.57
BRICK CLAY 1986	14.19	48.42	52.94	56.56	1.79	-ve SHE	1.39	1.85
BRICK CLAY 1987	25.48	48.18	55.17	64.15	1.56	-ve SHE	1.21	2.42
BRICK CLAY 1988	26.30	58.02	55.34	60.43	1.45	445.84	0.94	2.56
BRISTOL 1990	123.67	no data	152.86	38.45	0.26	6.41	0.11	4.97
BRISTOL 1991	109.66	no data	107.53	31.27	0.33	7.41	0.12	5.15
BRISTOL 1992	87.24	no data	128.86	36.22	0.33	7.85	0.08	6.13
BRISTOL 1993	163.37	no data	62.24	37.97	0.21	6.51	0.04	9.78
BRISTOL 1994	139.83	no data	33.33	48.33	0.18	5.61	0.07	4.56
BURHOSE 1975	no data	no data	no data	no data	no data	26.25	0.42	1.82
BURHOSE 1976	no data	no data	no data	no data	no data	12.65	0.36	2.15
BURHOSE 1977	no data	no data	no data	no data	no data	no data	no data	no data
BURHOSE 1978	19.05	65.44	74.82	39.05	1.79	5.48	0.56	1.98
BURHOSE 1979	16.05	63.62	75.65	55.91	1.65	27.36	0.64	1.54

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Year n	Mod Yn	Naïve	De La Rey	CHAID
BACKCLOTHING 1970	no data	no data	-1	-0.13	-1
BACKCLOTHING 1971	-2	D	-2	-0.68	-2
BACKCLOTHING 1972	-2	D	-2	-1.89	-2
BACKCLOTHING 1973	-2	D	-2	-2.10	-2
BACKCLOTHING 1974	-2	SD	-2	-2.82	-2
BIDVEST 1994	0	H	0	0.54	0
BIDVEST 1995	0	H	0	0.68	0
BIDVEST 1996	0	H	0	0.88	0
BIDVEST 1997	0	H	-1	0.66	0
BIDVEST 1998	0	H	0	1.24	0
BRICK CLAY 1984	no data	no data	-1	-1.18	0
BRICK CLAY 1985	-2	SD	-2	-4.88	-2
BRICK CLAY 1986	0	H	0	-0.79	0
BRICK CLAY 1987	0	H	0	1.18	0
BRICK CLAY 1988	0	H	0	1.59	0
BRISTOL 1990	-1	I	-1	0.75	-1
BRISTOL 1991	-1	I	-1	0.88	-1
BRISTOL 1992	-1	I	-1	1.12	-1
BRISTOL 1993	-1	I	-1	1.30	-1
BRISTOL 1994	-1	I	-1	0.82	-1
BURHOSE 1975	0	H	0	1.61	0
BURHOSE 1976	-1	I	0	0.85	0
BURHOSE 1977	no data	no data	no data	no data	no data
BURHOSE 1978	no data	no data	-1	-0.20	-1
BURHOSE 1979	no data	no data	0	0.49	0

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Status	RSG	REG	GM%	EBIT/SALES	AIR/SALES	PAT/SALES
CONJERS 1971	Failed	no data	no data	no data	no data	no data	no data
CONJERS 1972		no data	no data	no data	no data	no data	no data
CONJERS 1973		no data	no data	no data	2.06	-5.35	-1.02
CONJERS 1974		0.96	no data	no data	10.89	-0.39	6.06
CONJERS 1975		-50.37	-2.19	no data	-8.96	0.04	-13.90
DRG 1978	Failed	no data	no data	no data	12.17	0.00	7.84
DRG 1979		12.65	no data	no data	11.20	0.00	7.95
DRG 1980		25.29	no data	no data	10.20	0.64	6.40
DRG 1981		2.02	no data	no data	5.91	0.03	3.33
DRG 1982		-7.82	no data	no data	4.25	0.68	-0.15
FAIRWEATHER 1972	Failed	no data	no data	no data	no data	no data	no data
FAIRWEATHER 1973		no data	no data	no data	10.80	-0.02	4.06
FAIRWEATHER 1974		-7.27	no data	no data	3.34	-4.09	-2.64
FAIRWEATHER 1975		6.50	0.26	no data	8.33	-0.01	3.01
FAIRWEATHER 1976		-11.80	-4.45	no data	-1.67	-5.14	-5.58
H PARKER 1978	Failed	-46.86	-0.44	no data	5.47	-2.16	1.16
H PARKER 1979		-1.13	0.86	no data	12.51	7.13	7.42
H PARKER 1980		-13.48	-0.40	no data	7.38	0.19	2.68
H PARKER 1981		6.24	0.31	no data	8.98	0.38	4.52
H PARKER 1982		11.86	-0.63	no data	7.99	0.13	1.41
IL BACK 1978	Failed	no data	no data	no data	no data	no data	no data
IL BACK 1979		no data	no data	no data	no data	no data	no data
IL BACK 1980		no data	no data	no data	no data	no data	no data
IL BACK 1981		no data	no data	no data	no data	no data	no data
IL BACK 1982		no data	0.78	no data	no data	no data	no data
KTL 1993	Non-Failed	-4.33	-0.19	no data	3.91	-0.10	2.36
KTL 1994		13.30	0.75	no data	5.79	1.11	4.08
KTL 1995		26.43	0.82	no data	5.00	0.37	3.40
KTL 1996		2.81	2.88	0.15	8.62	4.29	7.37
KTL 1997		-52.35	-0.43	0.19	5.28	-0.01	3.44

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	NWC/Sales	INV Days	REC Days	PAY Days	SALES/TA	PAT/SHE2	TL/TA	CA/CL
CONJERS 1971	no data	no data	no data	no data	no data	19.78	0.58	1.46
CONJERS 1972	no data	no data	no data	no data	no data	17.30	0.55	1.52
CONJERS 1973	14.96	164.86	82.58	90.00	0.92	-2.30	0.59	1.27
CONJERS 1974	24.93	117.08	102.26	43.23	1.15	13.42	0.48	1.71
CONJERS 1975	23.33	153.95	106.30	81.21	0.87	-24.08	0.50	1.48
DRG 1978	27.57	62.21	67.76	30.52	1.65	24.22	0.36	3.05
DRG 1979	29.36	96.75	82.31	48.87	1.36	21.11	0.41	2.27
DRG 1980	19.26	70.64	78.15	40.13	1.66	21.62	0.43	1.81
DRG 1981	19.05	65.69	80.88	50.10	1.42	9.52	0.42	1.87
DRG 1982	18.00	46.32	80.04	44.23	1.52	-0.49	0.44	2.04
FAIRWEATHER 1972	no data	no data	no data	no data	no data	-19.22	0.91	1.27
FAIRWEATHER 1973	29.93	165.02	108.78	58.75	1.12	14.35	0.68	1.60
FAIRWEATHER 1974	26.58	166.06	88.36	63.36	1.26	-10.82	0.69	1.59
FAIRWEATHER 1975	26.99	114.64	84.78	44.25	1.65	12.83	0.61	1.92
FAIRWEATHER 1976	19.94	100.17	80.26	63.83	1.74	-31.93	0.70	1.64
H PARKER 1978	2.95	82.08	44.72	80.29	1.53	7.61	0.77	1.07
H PARKER 1979	0.61	87.95	62.66	101.70	1.43	42.16	0.75	1.01
H PARKER 1980	0.75	89.86	43.25	79.18	1.52	14.73	0.72	1.02
H PARKER 1981	7.15	93.88	41.77	75.02	1.40	17.42	0.64	1.24
H PARKER 1982	2.89	89.76	49.71	98.18	1.37	4.95	0.61	1.08
IL BACK 1978	no data	no data	no data	no data	no data	-139.85	0.79	1.32
IL BACK 1979	no data	no data	no data	no data	no data	-59.04	0.81	1.16
IL BACK 1980	no data	no data	no data	no data	no data	-23.81	0.53	1.78
IL BACK 1981	no data	no data	no data	no data	no data	-58.76	0.78	1.22
IL BACK 1982	no data	no data	no data	no data	no data	-11.88	0.03	33.00
KTL 1993	5.64	45.87	53.17	80.81	2.47	28.72	0.64	1.22
KTL 1994	8.47	41.02	60.07	75.08	2.47	47.63	0.61	1.35
KTL 1995	7.12	41.13	49.98	67.57	2.60	39.09	0.60	1.33
KTL 1996	8.57	37.48	48.74	76.66	2.26	69.07	0.54	1.37
KTL 1997	15.84	42.70	72.80	66.02	1.96	41.19	0.45	1.75

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Year n	Mod Yn	Naïve	De La Rey	CHAID
CONJERS 1971	no data	no data	0	0.58	0
CONJERS 1972	no data	no data	0	0.58	0
CONJERS 1973	-2	D	-2	-0.58	-2
CONJERS 1974	no data	no data	0	0.48	0
CONJERS 1975	-2	D	-2	-1.63	-2
DRG 1978	no data	no data	0	1.32	0
DRG 1979	no data	no data	0	1.18	0
DRG 1980	no data	no data	0	0.92	0
DRG 1981	no data	no data	-1	0.26	-1
DRG 1982	-2	D	-2	-0.40	-2
FAIRWEATHER 1972	-2	D	-2	-1.11	-2
FAIRWEATHER 1973	no data	no data	0	-0.04	0
FAIRWEATHER 1974	-2	D	-2	-0.79	-2
FAIRWEATHER 1975	0	H	-1	0.21	0
FAIRWEATHER 1976	-2	D	-2	-1.62	-2
H PARKER 1978	-1	I	-1	-0.59	-1
H PARKER 1979	0	H	0	0.39	0
H PARKER 1980	-1	I	-1	-0.27	0
H PARKER 1981	0	H	0	0.23	0
H PARKER 1982	-1	I	-1	-0.29	-1
IL BACK 1978	-2	D	-2	-3.59	-2
IL BACK 1979	-2	D	-2	-1.95	-2
IL BACK 1980	-2	D	-2	-1.56	-2
IL BACK 1981	-2	D	-2	-2.25	-2
IL BACK 1982	-2	D	-2	1.28	-2
KTL 1993	-1	I	-1	-0.01	0
KTL 1994	0	H	0	0.56	0
KTL 1995	0	H	0	0.47	0
KTL 1996	0	H	0	1.43	0
KTL 1997	-1	I	-1	0.16	0

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Status	RSG	REG	GM%	EBIT/SALES	AIR/SALES	PAT/SALES
OMNIA 1994	Non-Failed	1.89	-0.06	no data	9.10	0.02	5.15
OMNIA 1995		13.38	0.00	no data	8.68	0.09	4.42
OMNIA 1996		20.03	0.60	0.30	10.74	0.43	5.71
OMNIA 1997		-8.26	0.62	0.35	12.52	1.71	6.85
OMNIA 1998		1.47	0.08	0.34	11.17	-0.01	5.47
PAN 1970	Failed	no data	no data	no data	no data	no data	no data
PAN 1971		no data	no data	no data	no data	no data	no data
PAN 1972		no data	no data	no data	5.49	-0.40	1.01
PAN 1973		102.38	no data	no data	-1.70	-2.18	-4.77
PAN 1974		-46.33	no data	no data	0.68	-1.03	-3.10
PIONEER H 1975	Non-Failed	no data	no data	no data	no data	no data	no data
PIONEER H 1976		no data	no data	no data	no data	no data	no data
PIONEER H 1977		no data	no data	no data	no data	no data	no data
PIONEER H 1978		no data	-0.20	no data	85.11	-0.19	42.64
PIONEER H 1979		0.67	-0.01	no data	94.45	9.45	52.36
ROMATEX 1994	Non-Failed	-2.98	-0.03	no data	9.31	-0.40	5.73
ROMATEX 1995		-40.32	-0.33	0.23	6.64	-0.17	4.75
ROMATEX 1996		-11.11	-0.97	0.19	0.51	0.18	0.18
ROMATEX 1997		-33.78	-2.04	0.13	-8.64	-3.36	-8.85
ROMATEX 1998		23.72	-0.79	0.15	1.32	0.06	0.98
SCHACHAT 1973	Non-Failed	no data	no data	no data	no data	no data	no data
SCHACHAT 1974		no data	no data	no data	no data	no data	no data
SCHACHAT 1975		no data	-0.10	no data	no data	no data	no data
SCHACHAT 1976		no data	-0.09	no data	no data	no data	no data
SCHACHAT 1977		no data	-0.55	no data	no data	no data	no data
SPECTRO 1971	Failed	no data	no data	no data	no data	no data	no data
SPECTRO 1972		no data	no data	no data	no data	no data	no data
SPECTRO 1973		no data	no data	no data	no data	no data	no data
SPECTRO 1974		no data	no data	no data	no data	no data	no data
SPECTRO 1975		no data	-1.60	no data	no data	no data	no data

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	NWC/Sales	INV Days	REC Days	PAY Days	SALES/TA	PAT/SHE2	TL/TA	CA/CL
OMNIA 1994	4.74	64.93	74.19	81.34	1.64	23.75	0.64	1.13
OMNIA 1995	6.17	55.84	98.29	93.95	1.58	22.34	0.68	1.16
OMNIA 1996	6.94	60.21	91.51	86.82	1.60	29.14	0.68	1.18
OMNIA 1997	7.75	67.35	70.45	92.25	1.68	28.50	0.59	1.24
OMNIA 1998	6.83	64.74	86.61	101.31	1.38	21.21	0.64	1.18
PAN 1970	no data	no data	no data	no data	no data	15.43	0.37	2.04
PAN 1971	no data	no data	no data	no data	no data	14.37	0.41	1.64
PAN 1972	21.21	131.73	83.83	86.68	0.64	1.32	0.50	1.52
PAN 1973	8.15	64.74	46.12	50.28	1.66	-38.03	0.59	1.36
PAN 1974	35.84	89.60	61.41	47.56	1.25	-17.75	0.55	3.75
PIONEER H 1975	no data	no data	no data	no data	no data	9.92	0.31	0.40
PIONEER H 1976	no data	no data	no data	no data	no data	6.50	0.30	0.25
PIONEER H 1977	no data	no data	no data	no data	no data	6.59	0.26	0.27
PIONEER H 1978	-52.91	no data	13.06	27.71	0.12	7.12	0.26	0.26
PIONEER H 1979	-49.10	no data	14.86	13.76	0.13	9.52	0.26	0.37
ROMATEX 1994	18.18	51.90	80.51	68.04	1.38	11.62	0.32	1.79
ROMATEX 1995	23.27	69.15	82.33	63.37	1.45	9.71	0.29	2.16
ROMATEX 1996	25.37	67.47	76.71	66.74	1.46	0.36	0.27	2.39
ROMATEX 1997	30.22	94.39	99.49	91.45	1.17	-14.73	0.30	2.19
ROMATEX 1998	25.75	75.43	74.69	64.08	1.56	2.10	0.28	2.44
SCHACHAT 1973	no data	no data	no data	no data	no data	22.27	0.71	1.24
SCHACHAT 1974	no data	no data	no data	no data	no data	14.85	0.67	1.27
SCHACHAT 1975	no data	no data	no data	no data	no data	14.22	0.63	1.71
SCHACHAT 1976	no data	no data	no data	no data	no data	18.18	0.62	1.47
SCHACHAT 1977	no data	no data	no data	no data	no data	9.79	0.58	1.35
SPECTRO 1971	no data	no data	no data	no data	no data	13.09	0.26	3.52
SPECTRO 1972	no data	no data	no data	no data	no data	11.01	0.24	3.38
SPECTRO 1973	no data	no data	no data	no data	no data	21.93	0.45	4.97
SPECTRO 1974	no data	no data	no data	no data	no data	18.04	0.54	2.39
SPECTRO 1975	no data	no data	no data	no data	no data	-11.67	0.58	4.50

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Year n	Mod Yn	Naïve	De La Rey	CHAID
OMNIA 1994	-1	I	0	0.32	0
OMNIA 1995	-1	I	-1	0.07	0
OMNIA 1996	0	H	-1	0.38	0
OMNIA 1997	0	H	0	0.73	0
OMNIA 1998	0	H	-1	0.24	0
PAN 1970	no data	no data	0	1.03	0
PAN 1971	no data	no data	0	0.68	0
PAN 1972	no data	no data	-1	-0.49	-2
PAN 1973	-2	D	-2	-1.47	-2
PAN 1974	-2	D	-2	-0.87	-2
PIONEER H 1975	no data	no data	0	0.31	-1
PIONEER H 1976	no data	no data	-1	0.04	-1
PIONEER H 1977	no data	no data	-1	0.13	-1
PIONEER H 1978	-1	I	-1	0.21	-1
PIONEER H 1979	-1	I	0	0.42	-1
ROMATEX 1994	-1	I	0	0.69	-1
ROMATEX 1995	-1	I	-1	0.52	-1
ROMATEX 1996	-1	I	-1	-0.02	-2
ROMATEX 1997	-2	D	-2	-1.18	-2
ROMATEX 1998	-1	I	-1	0.17	-1
SCHACHAT 1973	no data	no data	0	-0.16	0
SCHACHAT 1974	no data	no data	-1	-0.37	0
SCHACHAT 1975	-1	I	-1	-0.27	0
SCHACHAT 1976	-1	I	0	-0.02	0
SCHACHAT 1977	-1	I	-1	-0.36	-1
SPECTRO 1971	no data	no data	0	1.03	0
SPECTRO 1972	no data	no data	0	0.82	-1
SPECTRO 1973	no data	no data	0	1.30	0
SPECTRO 1974	no data	no data	0	0.23	0
SPECTRO 1975	-2	D	-2	-1.10	-2

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Status	RSG	REG	GM%	EBIT/SALES	AIR/SALES	PAT/SALES
STUTTAFORDS 1974	Non-Failed	2.45	no data	no data	9.06	1.49	5.42
STUTTAFORDS 1975		2.24	-0.46	no data	9.77	0.03	5.10
STUTTAFORDS 1976		-6.55	-0.57	no data	8.36	0.05	4.21
STUTTAFORDS 1977		-2.32	-0.40	no data	8.72	0.10	4.23
STUTTAFORDS 1978		-3.07	-0.54	no data	6.64	0.06	3.25
TAPSA 1971	Failed	no data	no data	no data	no data	no data	no data
TAPSA 1972		no data	no data	no data	no data	no data	no data
TAPSA 1973		no data	no data	no data	no data	no data	no data
TAPSA 1974		no data	no data	no data	no data	no data	no data
TAPSA 1975		no data	-8.26	no data	no data	no data	no data
TIGERIND 1969	Failed	no data	no data	no data	no data	no data	no data
TIGERIND 1970		no data	no data	no data	no data	no data	no data
TIGERIND 1971		no data	no data	no data	no data	no data	no data
TIGERIND 1972		no data	no data	no data	no data	no data	no data
TIGERIND 1973		no data	no data	no data	no data	no data	no data
TRIOMF 1983	Failed	no data	-1.02	no data	no data	no data	no data
TRIOMF 1984		no data	no data	no data	no data	no data	no data
TRIOMF 1985		no data	no data	no data	0.98	-0.08	-5.54
TRIOMF 1986		-71.95	no data	no data	-4.72	-0.73	-19.23
TRIOMF 1987		-50.38	no data	no data	6.61	6.18	-0.11
TUCKERS 1978	Non-Failed	no data	-1.29	no data	no data	no data	no data
TUCKERS 1979		no data	-0.61	no data	no data	no data	no data
TUCKERS 1980		no data	-0.39	no data	no data	no data	no data
TUCKERS 1981		no data	-0.33	no data	no data	no data	no data
TUCKERS 1982		no data	0.59	no data	no data	no data	no data

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	NWC/Sales	INV Days	REC Days	PAY Days	SALES/TA	PAT/SHE2	TL/TA	CA/CL
STUTTAFORDS 1974	14.65	51.08	72.03	43.73	0.80	5.70	0.21	1.74
STUTTAFORDS 1975	11.30	53.77	66.16	43.93	0.85	5.94	0.24	1.50
STUTTAFORDS 1976	9.95	48.72	61.71	48.56	0.89	5.13	0.24	1.48
STUTTAFORDS 1977	8.96	51.53	59.67	49.84	0.92	5.44	0.25	1.41
STUTTAFORDS 1978	8.04	54.89	61.72	50.93	0.94	4.45	0.28	1.33
TAPSA 1971	no data	no data	no data	no data	no data	20.06	0.64	1.76
TAPSA 1972	no data	no data	no data	no data	no data	10.78	0.65	1.82
TAPSA 1973	no data	no data	no data	no data	no data	12.47	0.71	1.57
TAPSA 1974	no data	no data	no data	no data	no data	-35.05	0.77	1.37
TAPSA 1975	no data	no data	no data	no data	no data	-ve SHE	1.11	0.79
TIGERIND 1969	no data	no data	no data	no data	no data	no data	no data	no data
TIGERIND 1970	no data	no data	no data	no data	no data	4.17	0.71	1.17
TIGERIND 1971	no data	no data	no data	no data	no data	-26.54	0.68	1.18
TIGERIND 1972	no data	no data	no data	no data	no data	-61.58	0.41	0.42
TIGERIND 1973	no data	no data	no data	no data	no data	0.87	0.69	0.63
TRIOMF 1983	no data	no data	no data	no data	no data	-0.76	0.08	1.31
TRIOMF 1984	no data	no data	no data	no data	no data	no data	no data	no data
TRIOMF 1985	0.94	71.05	48.29	48.42	0.83	-40.43	0.82	1.03
TRIOMF 1986	12.86	66.97	64.47	23.65	1.50	-ve SHE	0.96	1.54
TRIOMF 1987	48.05	no data	20.73	3.24	2.00	-ve SHE	0.04	25.64
TUCKERS 1978	no data	no data	no data	no data	no data	-5.32	0.22	5.01
TUCKERS 1979	no data	no data	no data	no data	no data	4.46	0.16	7.66
TUCKERS 1980	no data	no data	no data	no data	no data	4.36	0.16	8.02
TUCKERS 1981	no data	no data	no data	no data	no data	7.91	0.29	4.13
TUCKERS 1982	no data	no data	no data	no data	no data	18.54	0.50	1.32

APPENDIX L2 : Financial Risk Analysis Model (Hold Sample)

Company & year	Year n	Mod Yn	Naïve	De La Rey	CHAID
STUTTAFORDS 1974	no data	no data	0	0.35	-1
STUTTAFORDS 1975	-1	I	-1	0.33	-1
STUTTAFORDS 1976	-1	I	-1	0.23	-1
STUTTAFORDS 1977	-1	I	-1	0.23	-1
STUTTAFORDS 1978	-1	I	-1	0.09	-1
TAPSA 1971	no data	no data	0	0.32	0
TAPSA 1972	no data	no data	-1	-0.17	-1
TAPSA 1973	no data	no data	-1	-0.35	0
TAPSA 1974	-2	D	-2	-1.56	-2
TAPSA 1975	-2	SD	-2	-5.10	-2
TIGERIND 1969	no data	no data	no data	no data	no data
TIGERIND 1970	no data	no data	-1	-0.87	-1
TIGERIND 1971	-2	D	-2	-1.69	-2
TIGERIND 1972	-2	D	-2	-2.42	-2
TIGERIND 1973	no data	no data	-1	-0.98	-2
TRIOMF 1983	-2	D	-2	-0.14	-2
TRIOMF 1984	no data	no data	no data	no data	no data
TRIOMF 1985	-2	D	-2	-1.92	-2
TRIOMF 1986	-2	SD	-2	-2.79	-2
TRIOMF 1987	-2	SD	-2	1.43	-2
TUCKERS 1978	-2	D	-2	-0.60	-2
TUCKERS 1979	-1	I	-1	0.52	-1
TUCKERS 1980	-1	I	-1	0.52	-1
TUCKERS 1981	-1	I	-1	0.18	-1
TUCKERS 1982	0	H	-1	0.42	0

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

Naïve Classification												
Company & year	Year n	Naïve	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
BACKCLOTHING 1970	no data	-1										1
BACKCLOTHING 1971	-2	-2									1	
BACKCLOTHING 1972	-2	-2									1	
BACKCLOTHING 1973	-2	-2									1	
BACKCLOTHING 1974	-2	-2									1	
BIDVEST 1994	0	0	1									
BIDVEST 1995	0	0	1									
BIDVEST 1996	0	0	1									
BIDVEST 1997	0	-1		1								
BIDVEST 1998	0	0	1									
BRICK CLAY 1984	no data	-1										1
BRICK CLAY 1985	-2	-2									1	
BRICK CLAY 1986	0	0	1									
BRICK CLAY 1987	0	0	1									
BRICK CLAY 1988	0	0	1									
BRISTOL 1990	-1	-1					1					
BRISTOL 1991	-1	-1					1					
BRISTOL 1992	-1	-1					1					
BRISTOL 1993	-1	-1					1					
BRISTOL 1994	-1	-1					1					
BURHOSE 1975	0	0	1									
BURHOSE 1976	-1	0				1						
BURHOSE 1977	no data	no data										1
BURHOSE 1978	no data	-1										1
BURHOSE 1979	no data	0										1

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

CHAID Classification												
Company & year	Year n	CHAID	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
BACKCLOTHING 1970	no data	-1										1
BACKCLOTHING 1971	-2	-2									1	
BACKCLOTHING 1972	-2	-2									1	
BACKCLOTHING 1973	-2	-2									1	
BACKCLOTHING 1974	-2	-2									1	
BIDVEST 1994	0	0	1									
BIDVEST 1995	0	0	1									
BIDVEST 1996	0	0	1									
BIDVEST 1997	0	0	1									
BIDVEST 1998	0	0	1									
BRICK CLAY 1984	no data	0										1
BRICK CLAY 1985	-2	-2									1	
BRICK CLAY 1986	0	0	1									
BRICK CLAY 1987	0	0	1									
BRICK CLAY 1988	0	0	1									
BRISTOL 1990	-1	-1					1					
BRISTOL 1991	-1	-1					1					
BRISTOL 1992	-1	-1					1					
BRISTOL 1993	-1	-1					1					
BRISTOL 1994	-1	-1					1					
BURHOSE 1975	0	0	1									
BURHOSE 1976	-1	0				1						
BURHOSE 1977	no data	no data										1
BURHOSE 1978	no data	-1										1
BURHOSE 1979	no data	0										1

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

De La Rey Classification													
Company & year	Year n	De La Rey State	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	Year n & unknown	no data
BACKCLOTHING 1970	no data	unknown											1
BACKCLOTHING 1971	-2	-2									1		
BACKCLOTHING 1972	-2	-2									1		
BACKCLOTHING 1973	-2	-2									1		
BACKCLOTHING 1974	-2	-2									1		
BIDVEST 1994	0	0	1										
BIDVEST 1995	0	0	1										
BIDVEST 1996	0	0	1										
BIDVEST 1997	0	0	1										
BIDVEST 1998	0	0	1										
BRICK CLAY 1984	no data	-2											1
BRICK CLAY 1985	-2	-2									1		
BRICK CLAY 1986	0	-2			1								
BRICK CLAY 1987	0	0	1										
BRICK CLAY 1988	0	0	1										
BRISTOL 1990	-1	0				1							
BRISTOL 1991	-1	0				1							
BRISTOL 1992	-1	0				1							
BRISTOL 1993	-1	0				1							
BRISTOL 1994	-1	0				1							
BURHOSE 1975	0	0	1										
BURHOSE 1976	-1	0				1							
BURHOSE 1977	no data	no data											1
BURHOSE 1978	no data	-2											1
BURHOSE 1979	no data	0											1

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

Naïve Classification												
Company & year	Year n	Naïve	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
CONJERS 1971	no data	0										1
CONJERS 1972	no data	0										1
CONJERS 1973	-2	-2									1	
CONJERS 1974	no data	0										1
CONJERS 1975	-2	-2									1	
DRG 1978	no data	0										1
DRG 1979	no data	0										1
DRG 1980	no data	0										1
DRG 1981	no data	-1										1
DRG 1982	-2	-2									1	
FAIRWEATHER 1972	-2	-2									1	
FAIRWEATHER 1973	no data	0										1
FAIRWEATHER 1974	-2	-2									1	
FAIRWEATHER 1975	0	-1		1								
FAIRWEATHER 1976	-2	-2									1	
H PARKER 1978	-1	-1					1					
H PARKER 1979	0	0	1									
H PARKER 1980	-1	-1					1					
H PARKER 1981	0	0	1									
H PARKER 1982	-1	-1					1					
IL BACK 1978	-2	-2									1	
IL BACK 1979	-2	-2									1	
IL BACK 1980	-2	-2									1	
IL BACK 1981	-2	-2									1	
IL BACK 1982	-2	-2									1	

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

CHAID Classification												
Company & year	Year n	CHAID	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
CONJERS 1971	no data	0										1
CONJERS 1972	no data	0										1
CONJERS 1973	-2	-2									1	
CONJERS 1974	no data	0										1
CONJERS 1975	-2	-2									1	
DRG 1978	no data	0										1
DRG 1979	no data	0										1
DRG 1980	no data	0										1
DRG 1981	no data	-1										1
DRG 1982	-2	-2									1	
FAIRWEATHER 1972	-2	-2									1	
FAIRWEATHER 1973	no data	0										1
FAIRWEATHER 1974	-2	-2									1	
FAIRWEATHER 1975	0	0	1									
FAIRWEATHER 1976	-2	-2									1	
H PARKER 1978	-1	-1					1					
H PARKER 1979	0	0	1									
H PARKER 1980	-1	0				1						
H PARKER 1981	0	0	1									
H PARKER 1982	-1	-1					1					
IL BACK 1978	-2	-2									1	
IL BACK 1979	-2	-2									1	
IL BACK 1980	-2	-2									1	
IL BACK 1981	-2	-2									1	
IL BACK 1982	-2	-2									1	

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

De La Rey Classification													
Company & year	Year n	De La Rey State	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	Year n & unknown	no data
CONJERS 1971	no data	0											1
CONJERS 1972	no data	0											1
CONJERS 1973	-2	-2									1		
CONJERS 1974	no data	0											1
CONJERS 1975	-2	-2									1		
DRG 1978	no data	0											1
DRG 1979	no data	0											1
DRG 1980	no data	0											1
DRG 1981	no data	0											1
DRG 1982	-2	-2									1		
FAIRWEATHER 1972	-2	-2									1		
FAIRWEATHER 1973	no data	unknown											1
FAIRWEATHER 1974	-2	-2									1		
FAIRWEATHER 1975	0	0	1										
FAIRWEATHER 1976	-2	-2									1		
H PARKER 1978	-1	-2						1					
H PARKER 1979	0	0	1										
H PARKER 1980	-1	-2						1					
H PARKER 1981	0	0	1										
H PARKER 1982	-1	-2						1					
IL BACK 1978	-2	-2									1		
IL BACK 1979	-2	-2									1		
IL BACK 1980	-2	-2									1		
IL BACK 1981	-2	-2									1		
IL BACK 1982	-2	0							1				

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

Naïve Classification												
Company & year	Year n	Naïve	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
KTL 1993	-1	-1					1					
KTL 1994	0	0	1									
KTL 1995	0	0	1									
KTL 1996	0	0	1									
KTL 1997	-1	-1					1					
OMNIA 1994	-1	0				1						
OMNIA 1995	-1	-1					1					
OMNIA 1996	0	-1		1								
OMNIA 1997	0	0	1									
OMNIA 1998	0	-1		1								
PAN 1970	no data	0										1
PAN 1971	no data	0										1
PAN 1972	no data	-1										1
PAN 1973	-2	-2									1	
PAN 1974	-2	-2									1	
PIONEER H 1975	no data	0										1
PIONEER H 1976	no data	-1										1
PIONEER H 1977	no data	-1										1
PIONEER H 1978	-1	-1					1					
PIONEER H 1979	-1	0				1						
ROMATEX 1994	-1	0				1						
ROMATEX 1995	-1	-1					1					
ROMATEX 1996	-1	-1					1					
ROMATEX 1997	-2	-2									1	
ROMATEX 1998	-1	-1					1					

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

CHAID Classification												
Company & year	Year n	CHAID	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
KTL 1993	-1	0				1						
KTL 1994	0	0	1									
KTL 1995	0	0	1									
KTL 1996	0	0	1									
KTL 1997	-1	0				1						
OMNIA 1994	-1	0				1						
OMNIA 1995	-1	0				1						
OMNIA 1996	0	0	1									
OMNIA 1997	0	0	1									
OMNIA 1998	0	0	1									
PAN 1970	no data	0										1
PAN 1971	no data	0										1
PAN 1972	no data	-2										1
PAN 1973	-2	-2									1	
PAN 1974	-2	-2									1	
PIONEER H 1975	no data	-1										1
PIONEER H 1976	no data	-1										1
PIONEER H 1977	no data	-1										1
PIONEER H 1978	-1	-1					1					
PIONEER H 1979	-1	-1					1					
ROMATEX 1994	-1	-1					1					
ROMATEX 1995	-1	-1					1					
ROMATEX 1996	-1	-2						1				
ROMATEX 1997	-2	-2									1	
ROMATEX 1998	-1	-1					1					

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

De La Rey Classification													
Company & year	Year n	De La Rey State	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	Year n & unknown	no data
KTL 1993	-1	unknown										1	
KTL 1994	0	0	1										
KTL 1995	0	0	1										
KTL 1996	0	0	1										
KTL 1997	-1	unknown										1	
OMNIA 1994	-1	0				1							
OMNIA 1995	-1	unknown										1	
OMNIA 1996	0	0	1										
OMNIA 1997	0	0	1										
OMNIA 1998	0	0	1										
PAN 1970	no data	0											1
PAN 1971	no data	0											1
PAN 1972	no data	-2											1
PAN 1973	-2	-2										1	
PAN 1974	-2	-2										1	
PIONEER H 1975	no data	0											1
PIONEER H 1976	no data	unknown											1
PIONEER H 1977	no data	unknown											1
PIONEER H 1978	-1	0				1							
PIONEER H 1979	-1	0				1							
ROMATEX 1994	-1	0				1							
ROMATEX 1995	-1	0				1							
ROMATEX 1996	-1	unknown										1	
ROMATEX 1997	-2	-2										1	
ROMATEX 1998	-1	unknown										1	

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

Naïve Classification												
Company & year	Year n	Naïve	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
SCHACHAT 1973	no data	0										1
SCHACHAT 1974	no data	-1										1
SCHACHAT 1975	-1	-1					1					
SCHACHAT 1976	-1	0				1						
SCHACHAT 1977	-1	-1					1					
SPECTRO 1971	no data	0										1
SPECTRO 1972	no data	0										1
SPECTRO 1973	no data	0										1
SPECTRO 1974	no data	0										1
SPECTRO 1975	-2	-2									1	
STUTTAFORDS 1974	no data	0										1
STUTTAFORDS 1975	-1	-1					1					
STUTTAFORDS 1976	-1	-1					1					
STUTTAFORDS 1977	-1	-1					1					
STUTTAFORDS 1978	-1	-1					1					
TAPSA 1971	no data	0										1
TAPSA 1972	no data	-1										1
TAPSA 1973	no data	-1										1
TAPSA 1974	-2	-2									1	
TAPSA 1975	-2	-2									1	
TIGERIND 1969	no data	no data										1
TIGERIND 1970	no data	-1										1
TIGERIND 1971	-2	-2									1	
TIGERIND 1972	-2	-2									1	
TIGERIND 1973	no data	-1										1

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

CHAID Classification												
Company & year	Year n	CHAID	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
SCHACHAT 1973	no data	0										1
SCHACHAT 1974	no data	0										1
SCHACHAT 1975	-1	0				1						
SCHACHAT 1976	-1	0				1						
SCHACHAT 1977	-1	-1					1					
SPECTRO 1971	no data	0										1
SPECTRO 1972	no data	-1										1
SPECTRO 1973	no data	0										1
SPECTRO 1974	no data	0										1
SPECTRO 1975	-2	-2									1	
STUTTAFORDS 1974	no data	-1										1
STUTTAFORDS 1975	-1	-1					1					
STUTTAFORDS 1976	-1	-1					1					
STUTTAFORDS 1977	-1	-1					1					
STUTTAFORDS 1978	-1	-1					1					
TAPSA 1971	no data	0										1
TAPSA 1972	no data	-1										1
TAPSA 1973	no data	0										1
TAPSA 1974	-2	-2									1	
TAPSA 1975	-2	-2									1	
TIGERIND 1969	no data	no data										1
TIGERIND 1970	no data	-1										1
TIGERIND 1971	-2	-2									1	
TIGERIND 1972	-2	-2									1	
TIGERIND 1973	no data	-2										1

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

De La Rey Classification													
Company & year	Year n	De La Rey State	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	Year n & unknown	no data
SCHACHAT 1973	no data	unknown											1
SCHACHAT 1974	no data	-2											1
SCHACHAT 1975	-1	-2						1					
SCHACHAT 1976	-1	unknown										1	
SCHACHAT 1977	-1	-2						1					
SPECTRO 1971	no data	0											1
SPECTRO 1972	no data	0											1
SPECTRO 1973	no data	0											1
SPECTRO 1974	no data	0											1
SPECTRO 1975	-2	-2									1		
STUTTAFORDS 1974	no data	0											1
STUTTAFORDS 1975	-1	0				1							
STUTTAFORDS 1976	-1	0				1							
STUTTAFORDS 1977	-1	0				1							
STUTTAFORDS 1978	-1	unknown										1	
TAPSA 1971	no data	0											1
TAPSA 1972	no data	unknown											1
TAPSA 1973	no data	-2											1
TAPSA 1974	-2	-2									1		
TAPSA 1975	-2	-2									1		
TIGERIND 1969	no data	no data											1
TIGERIND 1970	no data	-2											1
TIGERIND 1971	-2	-2									1		
TIGERIND 1972	-2	-2									1		
TIGERIND 1973	no data	-2											1

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

Naïve Classification												
Company & year	Year n	Naïve	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
TRIOMF 1983	-2	-2									1	
TRIOMF 1984	no data	no data										1
TRIOMF 1985	-2	-2									1	
TRIOMF 1986	-2	-2									1	
TRIOMF 1987	-2	-2									1	
TUCKERS 1978	-2	-2									1	
TUCKERS 1979	-1	-1					1					
TUCKERS 1980	-1	-1					1					
TUCKERS 1981	-1	-1					1					
TUCKERS 1982	0	-1		1								
Totals			14	5	0	5	24	0	0	0	29	
Missing Data Years												33
Available Data Years												77
Predictive Accuracy												87.0%

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

CHAID Classification												
Company & year	Year n	CHAID	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	no data
TRIOMF 1983	-2	-2									1	
TRIOMF 1984	no data	no data										1
TRIOMF 1985	-2	-2									1	
TRIOMF 1986	-2	-2									1	
TRIOMF 1987	-2	-2									1	
TUCKERS 1978	-2	-2									1	
TUCKERS 1979	-1	-1					1					
TUCKERS 1980	-1	-1					1					
TUCKERS 1981	-1	-1					1					
TUCKERS 1982	0	0	1									
Totals			19	0	0	8	20	1	0	0	29	
Missing Data Years												33
Available Data Years												77
Predictive Accuracy												88.3%

APPENDIX M : Financial Risk Analysis Model (Statistical Classification of the First Stage Models)

De La Rey Classification													
Company & year	Year n	De La Rey State	A0 & P0	A0 & P-1	A0 & P-2	A-1 & P0	A-1 & P-1	A-1 & P-2	A-2 & P0	A-2 & P-1	A-2 & P-2	Year n & unknown	no data
TRIOMF 1983	-2	unknown										1	
TRIOMF 1984	no data	no data											1
TRIOMF 1985	-2	-2									1		
TRIOMF 1986	-2	-2									1		
TRIOMF 1987	-2	0							1				
TUCKERS 1978	-2	-2									1		
TUCKERS 1979	-1	0				1							
TUCKERS 1980	-1	0				1							
TUCKERS 1981	-1	unknown										1	
TUCKERS 1982	0	0	1										
Totals			18	0	1	16	0	5	2	0	26	9	
Missing Data Years													33
Available Data Years													77
Predictive Accuracy													57.1%