



UNIVERSITI PUTRA MALAYSIA

**PREDICTING CORPORATE FAILURE IN MALAYSIA DURING
FINANCIAL CRISIS USING LOGISTIC MODEL APPROACH**

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By

THAI SIEW BEE

**Thesis Submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of
Master of Science**

August 2003



DEDICATION

I would like to dedicate this work to my family member especially my father, Thai Yam Yen, my mother, Cheng Yew Moi, my brothers, sisters and sister in-law, for their caring, support, motivation and love that helped me through this arduous process. Nevertheless, a special dedication goes to my fiance, Simon Choong Vee Kian for his caring, understanding and motivation in completing this thesis.



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
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Chairman : Professor Annuar Md. Nassir, Ph.D.

Faculty : Economics and Management

Since the financial crisis of 1997, more and more companies are facing financial difficulties. As of 31 March 2003, a total of 376 companies had successfully seek protection under Section 176 (10) of the Companies' Act 1965 with restraining orders. Prior to that, the distressed firms were gazetted under Practice Note No.4 (PN4) of the KLSE listing requirement. As firms' financial health signs were transmitted prior to actual financial reporting, we addressed the following issue: Can financial distress be predicted? According to Zulkarnain (2000), corporate failure was not a sudden even and it developed gradually over many years. Some of the symptoms that lead to firms failure are declining in profits, working capital, liquidity and asset quality. In light of this, this study attempted to develop a model that can discriminate between failed firms and non- failed firms using logistic regression analysis. This study



also investigated whether cash flow ratios apart from the usual accrual ratios were more significant in predicting corporate failures compared to previous studies which were based on accrual ratios as major predictors. A total of 42 companies from 8 different sectors that were gazetted under Practice Note No.4/2001 (PN4) were included in the sample. Failed firms were matched to non – failed firms on a one to one basis for the period of analysis stretching from 1999 to 2001.

Using Pearson Correlation test, highly correlated variables were removed. In addition, the enter method in logistic regression was employed to detect any outliers. A total of 14 variables for 1 year before failure and 13 variables for 2 years and 3 years respectively before failure were entered into the analysis to find the most parsimonious model in predicting corporate failures. The result showed that the overall of correct classification for all of the 3 models were well above 90 % accurate rate with 1 year prior to failure showed a predictive accuracy of 97.62 %, 2 years prior to failure showed a 91.67 % accuracy rate and 3 years prior to failure showed a 90.48 % accuracy rate.

From the result of this study, we concluded that the prediction model with the combination of cash flow ratios as the major ratios along with accrual ratios outperformed the prediction model based solely on accrual ratios as documented in previous studies. Furthermore, this study also suggested that cash flow ratios were particularly useful in predicting bankruptcy and financial distress.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

**MERAMAL KEGAGALAN FIRMA DI MALAYSIA KETIKA KRISIS
KEWANGAN DENGAN PENDEKATAN LOGISTIK MODEL**

Oleh

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Sejak krisis kewangan tahun 1997, semakin banyak syarikat mengalami kesulitan kewangan. Sehingga 31 Mac 2003, sebanyak 376 syarikat telah berjaya memperolehi perlindungan di bawah Seksyen 176 (10) dalam Undang – Undang Syarikat 1965 dengan Perintah Penahanan (Restraining Order). Sebelum ini, syarikat–syarikat yang mengalami kesulitan akan disenaraikan di bawah Nota Amalan No. 4 (PN4) dalam syarat penyenaian BSKL. Memandangkan tanda kesihatan kewangan sesebuah syarikat dapat dikesan sebelum laporan kewangan yang sebenar, kami menajukan soalan berikut : Bolehkah kesulitan kewangan diramalkan? Merujuk kepada Zulkarnain (2000), kegagalan korporat bukanlah satu perkara yang berlaku secara tiba-tiba tetapi ia mangambil jangkamasa dalam beberapa tahun. Tanda - tanda yang menunjukkan kegagalan firma adalah kemerosotan dalam keuntungan, modal kerja, kecairan dan kualiti asset. Memandangkan keadaan ini, kajian dibuat untuk membentuk satu model yang dapat membezakan firma

yang gagal dan tidak gagal dengan menggunakan kaedah Logistic Regression. Pada masa yang sama, kajian ini akan menyelidik samada nisbah aliran tunai yang digunakan sebagai nisbah utama di samping nisbah akrual (accrual) adalah lebih berkesan dalam meramal kegagalan firma berbanding dengan kajian – kajian lepas yang menggunakan nisbah akrual sebagai petunjuk utama mereka. Sejumlah 42 firma daripada 8 sektor industri yang berbeza di bawah Nota Amalan No. 4 / 2001 (PN4) telah disampelkan. Teknik persampelan satu kepada satu digunakan untuk memadankan firma yang gagal kepada firma yang tidak gagal dari tahun 1999 hingga 2001.

Dengan menggunakan ujian Pearson Korelasi, pembolehubah yang mempunyai korelasi yang besar dengan pembolehubah yang lain akan dikeluarkan daripada analisa. Di samping itu, kaedah ‘enter’ dalam Logistic Regression akan digunakan untuk mengesan nilai data yang berada di luar taburan normal. Sebanyak 14 pembolehubah telah dikaji pada 1 tahun sebelum kegagalan dan 13 pembolehubah bagi tempoh 2 tahun dan 3 tahun masing – masing sebelum kegagalan telah dikaji untuk mencari model yang paling sesuai dalam meramalkan kegagalan firma. Keputusan menunjukkan keseluruhan klasifikasi yang betul bagi 3 model masing – masing melebihi 90 % kadar ketepatan dengan satu tahun sebelum kegagalan menunjukkan ketepatan ramalan sebanyak 97.62 %, 2 tahun sebelum kegagalan dengan 91.67 % kadar ketepatan dan 3 tahun sebelum kegagalan mencatat 90.48 % kadar ketepatan.

Daripada keputusan kajian ini, boleh disimpulkan model ramalan dengan kombinasi antara nisbah aliran tunai yang digunakan sebagai nisbah utama bersama dengan nisbah akrual menunjukkan prestasi yang lebih baik daripada model ramalan yang berdasarkan nisbah akrual sahaja dalam kajian lepas. Di samping itu, kajian ini juga mencadangkan bahawa nisbah aliran tunai adalah berguna khususnya dalam ramalan kegagalan dan kesulitan kewangan sesebuah syarikat.

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CHAPTER I

INTRODUCTION

1.1 Introduction

Corporate failure is a phenomenon that happened not only in the developing countries but also in the developed countries. According to Zulkamain (2000), corporate failure is generally defined when a firm seeks protection under section 176 of the Companies Act 1965. By mid – 1998, corporate Malaysia virtually showed sign of financial distress. Due to the financial crisis and unfavorable economic condition since July 1997, demand was contracting, asset prices were falling and interest rate rising and this brought to an increasing number of corporations facing financial difficulties (Raj, 2000). Many public listed corporations had successfully obtained Restraining Orders pursuant to Section 176 (10) of the Companies' Act, 1965, whilst they propose a scheme to restructure the companies including their debts. There were an increasing number of winding-up petitions and companies being put in receivership administration. From the table 1 below , the statistics showed that the companies under liquidation condition increased dramatically from 1997 to 2000. As of 31 March of 2003, the number of firms that have obtained Restraining Orders totaled 376 *.

* Source : Companies Commission of Malaysia



Table 1 : Statistics of Malaysian Companies Incorporated and Winding Up

Year	Incorporation	Liquidation	%*
1990	18,612	469	2.52
1991	21,102	316	1.50
1992	23,285	419	1.80
1993	30,988	392	1.27
1994	43,571	861	1.98
1995	43,238	487	1.13
1996	43,237	661	1.53
1997	40,720	2128	5.23
1998	18,825	5039	26.77
1999	27,756	6055	21.82
2000	33,208	6124	18.44
2001	31,967	4456	13.94
2002	34,810	3508	10.08
February-03	5,356	195	3.64

Note : * Percentage of liquidated over total incorporation of firms

Source : Companies Commission of Malaysia

The corporate failure in Malaysia can be mitigated with the establishment of the organization that involves in rehabilitation such as Corporate Debt Restructuring Committee (CDRC), Danaharta and Danamodal Nasional Berhad. The objective of these organizations are to assist the distressed companies in restructuring their company in terms of debt (CDRC) and non – performing loan (Danaharta) and also recapitalise the banking institution (Danamodal). Following were the explanations of the function of each organization involved.

1.2 Organization of Financial Rehabilitation

1.2.1 Introduction of Corporate Debt Restructuring Committee (CDRC)

An indirect evidence of corporate failure can be proved by the numbers of application received via CDRC for debt restructuring. To facilitate the restructuring of large corporate debts, the CDRC was formed to provide a platform for both borrowers and creditors to workout feasible debt restructuring scheme without having to resort to legal proceedings. With the setting up of the CDRC in July 1998, many companies have opted first to this friendlier arrangement to resolve their debt problems instead of going to court to defend against the creditors. CDRC allows a company to sit down together with creditors to workout arrangement acceptable to all parties concerned. The arrangement is informal. It has no legal status and can be called off by either side at any time.

It has been found that the current insolvency legislation does not provide the range of solutions required to preserve value for the stakeholders in complex, multi lender groups. For the most part, the usual receivership and liquidation administrations do not discriminate the viable businesses from the non – viable, resulting in the inevitable demise of companies (in most cases), of these affected companies.

Framework of CDRC

CDRC framework relies on co-operation, persuasion and collegiate approach to reconcile the interests of the Financial Institutions and the borrower. The four basic principles of the framework are:

- (i) Financial Institutions must be supportive and not precipitate insolvency.
- (ii) Decision- making is on the basis of sharing of reliable information amongst all parties involved in the workout.
- (iii) Financial Institutions must co – operate to reach a collective view on whether a company should be given financial support based on specified terms.
- (iv) Losses should be jointly borne in a fair manner to specified categories.

Table 2: Progress of CDRC cases

Quarter	Applications Received (Acc)	Total Debts (RM mil) (Acc)	Withdrawn/ Rejected Cases (Accumulative)		Transferred to Danaharta (Acc)		Completed Cases (Acc)		Resolved with assist of Danaharta (Accumulative)		Case Outstanding (Acc)	
			No	Amount (RM mil)	No	Amount (RM mil)	No	Amount (RM mil)	No	Amount (RM mil)	No	Amount (RM mil)
			3Q98	20	5350 2	-	-	-	-	-	-	-
4Q98	36	11028 15	-	-	-	-	2	344 5	-	-	34	10683 65
1Q99	52	26018 52	4	849 85	-	-	4	1153 3	-	-	44	24015 37
2Q99	62	33039 64	8	2053 05	-	-	10	10249 4	2	954 3	42	19782 37
3Q99	63	35024 77	14	3259 35	-	-	11	11234 89	2	954 3	36	19576 11
4Q99	66	35652 77	15	3504 35	8	2764 7	13	11778 29	2	954 3	28	16651 13
1Q00	68	36519 2	13	2760 45	10	3298 44	17	13106 84	2	954 3	26	16399 17
2Q00	71	39643 01	16	3822 63	9	1813 54	23	17392 49	2	954 3	21	15660 05
3Q00	75	45938 82	18	4072 57	9	1813 54	28	23085 17	2	954 3	18	16013 24
4Q00	75	47209 75	21	7825 89	9	1813 54	31	25476 92	2	954 3	12	11139 1
1Q01	75	47209 75	21	7825 89	9	1813 54	33	25816 82	2	954 3	10	10799 2
2Q01	75	47378 75	21	7825 89	9	1813 54	33	27576 92	2	954 3	8	9208 1

Remark. (Acc) refer to accumulative

Source . CDRC

In 2000, the Corporate Debt Restructuring Committee (CDRC), on its part, has so far restructured debts of 23 companies amounting to RM16.5 billion while another 23 companies' debts, totaling RM15 billion, were being restructured. The CDRC has opened a purely consultative avenue for debt workouts, relying on persuasive rather than legislative powers to promote a win -win outcome.

1.2.2 Introduction of Danaharta

Aside from the establishment of CDRC, Danaharta was established to tackle Non Performing Loans (NPLs). Danaharta was established in 1998 with the following objectives: -

- (1) To assist financial institutions by removing impaired assets.
- (2) To assist the business sector by dealing expeditiously with financially distressed enterprises
- (3) To promote the revitalization of the nation's economy by injecting liquidity into the financial system.

These goals are to be achieved through the acquisition, management, financing and disposition of assets and liabilities by Danaharta, which is empowered by the Act to implement its objectives for the public good promptly, efficiently, economically and effectively.

1.2.2.1 Danaharta's Special Powers

The Act confers on Danaharta two special powers:

- (1) The ability to buy assets through statutory vesting. This is essential to enable Danaharta to acquire assets with certainty of title and maximize value.

- (2) The ability to appoint Special Administrators to manage the affairs of distressed companies.

Statutory Vesting

The Danaharta Act allows Danaharta and the selling bank to affect the acquisition by way of statutory vesting. Essentially it allows Danaharta to step into the shoes of the selling bank. Danaharta is then able to take the same interest and enjoy the same priority as the selling bank, subject to registered interests and disclosed claims.

Special Administration

Where a borrower is a company, Danaharta has the right to appoint a Special Administrator over the corporate borrower or a subsidiary which is a security provider if the corporate borrower is unable to pay its debts or fulfill its obligations.

The Special Administrator will prepare a workout proposal which is then given to an Independent Advisor approved by the Oversight Committee. The Independent Advisor's role is to review the reasonableness of the proposal taking into consideration the interests of all creditors (whether secured or unsecured) and shareholders.

1.2.2.2 Management and Disposition of Non-Performing Loan (NPLs)

There are two principal components in Danaharta's approach in management and disposition of NPLs :

- (i) Loan management – where recovery on NPLs is sought by way of loan restructuring, foreclosure or disposal of assets
- (ii) Asset Management – where NPL recoveries come in the form of non – cash assets such as securities, property and businesses. There are then managed with a view to enhance their respective values and maximize recovery values when the assets are converted to cash.

1.2.2.3 Loan Management

As at 31 December 2001, Danaharta's portfolio of NPLs comprised 2,902 accounts relating to 2,588 borrowers. Danaharta has dealt with NPLs with an Loan Right Acquired (LRA) value of RM47.69 billion (and a gross value of RM50.94 billion) relating to 2,585 borrowers.

Danaharta's loan management efforts are divided into three broad categories :

- (i) Loan Restructuring
- (ii) Asset Restructuring
- (iii) Loan Disposal