The Impacts of Corporate Governance, Audit System to Business Failure of Going-concern Firms

Yunsheng Hsu

National Chung Hsing University

Taiwan, Province of China

Chi-Chen Wang

National Defense University

Taiwan, Province of China

Tzeu-Chen Han

National Penghu University

Taiwan, Province of China

Abstract

This study examines the companies in which auditors have first issued going concern suspect, focusing specifically on impact factors influential to the company's survival period as well as analyzing when these companies will most likely be delisted. Empirical results imply that the first five years is the critical period for delisting after the going concern suspect. The paper also indicates that the mechanism of corporate governance and audit system are also decisive factors to companies with going concern suspicion whether they will be able to continue.

Keywords: Corporate governance, Audit system, Going concern suspect, Business failure, Survival analysis

1. Introduction

The purpose of the paper is to investigate the relation between auditor report with going concern suspect and business failure[1], and the impacts of corporate governance and audit system. When the company has been expressed auditor reports with going concern suspect, it means that the auditors raise doubts of the company's ongoing ability (Casterlla, Lewis and Walker, 2001). The company is now concerned with possible business failure. The investors are anxious to find indicators to evaluate whether the company can and will survive. The literatures presented whether the function of "early warning" resides in auditors' judgement to business failure, and to investigate whether there is "self-fulfilling prophecy" after going concern suspect.

In regards to "early warning" function, the relative literatures compared the forecast ability between audit judgements and statistical forecast models on corporate failures. Koh (1991) indicates that auditors' accuracy on failure predictions were not better than statistical forecast models. Levitan and Knoblett (1985) and Koh and Killough (1990) suggested that auditor judgement should be made by utilising statistical forecast models at the same time. The literatures on early warning merely predicted corporate failure probability within the study period, but failed corporations had different time frames from when risk was first detected to the actual failure. If the same time period was chosen as comparison basis during the study, then the observed data might be censored data, thus underestimating delist risks and result in biased analytical mistakes. In addition, the forecast models did not consider the corporate survival period between first risk identified to actual failure, so this type of risk forecasting weakens the functions of risk forecast and regulation.

Studies on "self fulfilling prophecy" explored whether the possibility of business failure will rise further after going concern suspect has been issued, but the existence of self fulfilling prophecy itself created controversial literature conclusions (Louwers, 1998). Louwers, Messina and Richard (1999) state that the studies on self fulfilling prophecy only analyse the effect during the initial stage right after going concern suspect issued, the effect in the later periods have been neglected, resulting in biased outcomes. Furthermore, users of financial reports face the problem of decision making in a specific point in time. When firms have been issued with going concern suspect by auditors, besides survival probabilities, the survival lapse of time must also be considered.

To the aforementioned blind spots, the overall time period from first on going concern to delist must be examined thoroughly. This paper has also reviewed operation risk literatures and corporate governance factors and audit system that can influence corporate delist. In 1999, Taiwan announced Generally Accepted Auditing Standard No.33 as well as the modified version of No. 16 bulletin. When auditors have major going concerns, this information should be disclosed according to No. 2 and No. 16 audit standard bulletins before the modification. Even if the firm has already appropriately revealed this information in the financial reports, the accountant should still give qualified opinion and disclaimer of opinion reports. In 1999, after the adoption of No. 33 standard along with modified No. 16 bulletin,

---

[1] In this study, business failure means that the companies have been delisted by law enforcement.

the accountant should give modified unqualified opinion reports. When accountants have going concern suspect, they can change their reports to "modified unqualified opinion" from "qualified opinion". With the announcement of No. 33 bulletin, it allowed the accountants to apply more graceful standards when issuing going concern suspect reports to companies (Hsu, Wang and Liou, 2011).

This study selects observations of companies that have been issued with going concern by auditors from 1988 to 2007 as observed data. Empirical results indicate some of the reasons for higher delist risk rate are: companies only listed for a short period of time, low ratio of reserved earning to total asset, low ratio of share market price to total debt, high ratio of directors' pledge, or low percentage of share holding by internal management. At the same time, when going concern has been issued, delist risk will continue to rise, it will reach the summit in 19th quarter and then gradually descends. This indicates first 5 years is the delist high risk period for a company after first going concern. Split models' final failure rate parameter is estimated at 0.834, through verification, test results are significantly other than 1. Therefore it is clear that standard model is not appropriate to this study's sample data and does not fit the assumption of companies will fail at the very end.

This paper is structured as follows: Introduction, Literature Reviews, Analysis Model, Factors to Business Failure, Data and Sample Selection, Empirical Results and Conclusion.

2. Literature Review

This paper will take theories from previous literatures as basis and proposes the use of survival analysis model with the incorporation of time factor, because neither of these considered the time factor. Altman and Mcgough (1974) compared statistical forecast model and forecast ability of the auditors, results indicated the accuracy of auditor's forecast to corporate failure is only half of what the statistical model has forecasted. The related studies also concluded with higher accuracy on statistical models rather than the auditor's judgements (Levitan and Knoblett, 1985; Koh and Killough, 1990; Koh, 1991). These were all choice models to differentiate whether the corporate has failed, but to report users, they not only care about the probability of corporate failure, but also when this is likely to happen. From the moment auditors issue on going concern to the actual failure point, F/S users must evaluate risk in corporate failure and the probability of when this will take place at any time from that point onwards so corresponding actions can be planned. On the other hand, choice models did not signify the company's survival lapse period from point of issuance of going concern to corporate failure, thus choice models have lower prevention and management functions for failed companies.

Louwers (1998) deemed that when auditors issue on going concern, the probability of corporate failure could rise due to this action, this is called self fulfilling prophecy. Altmen (1982), Barnes and Hooi (1987) and Psaros and Zhang (1994) did not support the existence of self fulfilling prophecy. But Nogler (1995), Louwers (1998), Citron and Taffer (1992), and Wang, Lin and Hsu (2013) supported self-fulfilling prophecy. It is clear that there is no unanimity in conclusion whether self-fulfilling prophecy exists. The reason for this diversification in results is self fulfilling prophecy implies companies will fail in the

immediate years after the issuance of going concern suspect, but the actual process for a company to go from normal operations to company failure is much more complex. There are many influential factors to bankruptcy. It is not thoughtful thinking to judge audit rationality by merely looking at company failure after going concern has been issued, because the effect of this issuance is not only restricted to the immediate years following the issuance, but might also have a lag effect. Therefore one should probe further into resulting changes reflected upon the lapse of time. Besides, the measurement standard of percentage approach to evaluate self fulfilling prophecy is not quite objective, hence more objective indications should be identified. Zhang and Suzanne (1997) suggested adopting survival analysis model to measure with more confidence.

To the factors of business failure, Kesner (1987) and McConnell and Servaes (1990) indicated that equity ownership positively relates to firm performance. When accountants have going concern suspect, they can change their reports to "modified unqualified opinion" from "qualified opinion". With the announcement of No. 33 bulletin, it allowed the accountants to apply more graceful standards when issuing going concern suspect reports to companies. The rate of company failure announced after No.33 bulletin should be lower than companies that have been issued with going concern prior to the bulletin. With this influential factor in mind, a dummy variable is set. After the announcement of No.33 bulletin is 1 and before this period is 0, to control the effect of No.33 bulletin. Bandopadhyaya and Jaggia (2001) used split population duration model to investigate bankrupted companies where after restructure, the time it will take for these companies to go broke again and what are the influential factors in the 2nd bankruptcy. Their main concern was that re-bankrupt rate is not equal to 1, which matched the actual scenario, but they did not explain the process of choosing log-logistic correction model. One must note that researches on the above survival analysis model did not explain thoroughly the model selection process. If the model used in the above research is applied as direct quote, the analytical deviation errors are likely to happen due to different study purpose and objects.

3. Analysis Model

Due to most studies adopted the choice model to construct financial difficulty forecast models, it was limited in such a way that it only measured the corporation's greatest possibility to fail in a specific point in time, in other words, it is a static analysis. This type of analysis only evaluated greatest risk of delist in a certain time frame. It was not able to depict the survival duration so consequently the right timing to prevent and handle financial crisis is lost. Crucial factors such as delist time after financial alerts, delist risk and average survival periods are all decision making references which were not shown in choice model. Therefore this study adopts survival analysis to investigate what factors affect firms' delist and survival period as well as select a model to best fit study data. Due to the fact that delist might happen after the observe period, referred to as censored data, this will create incomplete information on whether the incident happened or not. If hypothesised incident did not happen in the future, then the analysis will be biased. In order to solve this analytical deviation error, this study uses survival analysis method instead of traditional choice model.

General survival analysis models assumed that companies will fail at the end, this does not coincide with the fact that most corporations have continued their operations in real life scenarios. If we chose to use the model that assumed failure at the end to set the parameters of survival analysis, then the numbers will result in over estimating final failure probability. Therefore, this study used split population duration model to estimate the influential factors of companies' delist. The annunciation of audit opinions and company failures have been linked together to create a motion process. The purpose is to investigate the influential factors and time frame from when auditors reveal their opinions to whether the companies will survive or fail at the end. Investigations also include listed companies' length of most risk to delist, the probability of delist and its influential factors.

Generally speaking, economic theories alone do not contribute to the fitness of study data distribution in survival analyses. If inappropriate literature models are used, it will lead to deviation errors on study results due to differences in study purposes and objects. The study data in this paper was attended straightforward to find the best fit study model. The log-logistic model, which is the distribution achieved from Generalized F parameter value verification, is compared to split model, with final risk rate corrected, to obtain the difference between these two estimate parameters in the model fit confirmation process. The main purpose is to show whether Split model will best fit the study data. Empirical results show the risk function is upside down U shaped on both models, this means the risk of delist from going concern will increase according to time, and will gradually descend after its peak point.

This paper also tests whether there are difference in study results by using split model as compared to standard model to a company's final delist assumption. Standard model assumes that companies will fail at the end, thus final fail rate is 1. Split model assumes that companies will continue to operate, thus final fail rate is less than 1.

This study investigates on influential factors that could affect company's normal operations or company's failure. In a parametric model, it is hypothesised that survival time T under independent variables X, will follows one parametric probability distribution[2]. Following Lancaster (1990), the linear regression can be expressed as:

$$\log T = \chi'\beta + \sigma\omega$$

In this equation, σ is standard deviation of survival time T, ω is decided by the distribution of survival time T distribution.

Use MLE to estimate β, σ and the related parameters. The survival analysis model assumes that all companies will eventually be delisted; in fact, this is not necessarily the case in real life. In order to solve this incident that the observed objects might not end in failure, this study uses Schmidt and Witte (1989)'s method, setting final delist probability value as P_i,

where $R_i = 1$ means the company will delist at the end, $R_i = 0$ means it will not delist at the

---

[2]Commonly used probability distributions in survival analysis include: Weibull, lognormal, generalized gamma, log-logistic and generalized F.

www.macrothink.org/ajfa

final stage.

Furthermore, the delist probability can be affected by some other exogenous variables which can be assumed as $\Phi(Z_i'\alpha)$. In this, Z_i is defined as the variable of final death rate, α is the coefficient of Z_i, Φ is accumulative probability density function of normal distribution, therefore log likelihood function is expressed as:

$$\log L = \sum_{\delta_i=1}^{n} \log\left[\Phi\left(Z_i^{'}\alpha\right)\frac{1}{\sigma}f\left(w_i\right)\right] + \sum_{\delta_i=0}^{n} \log\left\{\left[1 - \Phi\left(Z_i^{'}\alpha\right) + \Phi\left(Z_i^{'}\alpha\right)S\left(w_i\right)\right]\right\}$$

Where $\omega_i = (\ln t_i - X_i^{'}\beta)/\sigma$ and $f(w_i)$ is decided by $f(t_i)$.

Finally, this study uses Generalized F distribution parameters to decide on the types of survival period's distribution[3]. There are four parameters in Generalized F distribution, λ、M1、M2 and p=1/σ. Generalized F's probability density function is expressed as follows:

$$f(t) = \left(\lambda\rho\right)\left(\lambda t\right)^{(P-1)}/\beta(M1,M2)K^{M1}\cdot(1+K)^{-(M1+M2)}$$

Where $K = (M1/M2)\left(\lambda t\right)^p$, and $\beta(M1,M2) = \dfrac{\Gamma(M1)\Gamma(M2)}{\Gamma(M1+M2)}$

According to the special features of generalized F parameters, it is possible to find a distribution type more fit to survival data through statistical verification (Lancaster, 1990). Generalized F distribution's survival function and hazard function are S (t) = B $\left[\dfrac{1}{k+1}, M2, M1\right]$ and $h(t) = f(t)\Big/S(t)$, in this equation, B is beta distribution's accumulative probability density function.

4. Factors to Business Failure

The paper investigates the factors of business failure to going concern firms. Financial crisis forecast models in literatures generally adopted financial ratios as explanatory variables (Zmijewski, 1984), Cybinski and Carolyn (2005) showed statistical models based on financial ratios can reflect company operational status appropriately. This study followed Chen and Lee (1993), and differentiated the factors that will affect delist risks into corporate governance, general structure, financial structure, operation structure and also macroeconomic structure so that industry and system outlook fluctuations within the observation period can be incorporated.

The corporate governance factors indicate that the higher the ownership, the more sound in

---

[3]Although one can use the parameter values of Generalized gamma distribution to determine which family and distribution it belonged to, but comparatively to Generalized gamma, Generalized F can be determinate to be log-logistic distribution or not.

the functionality of the directing board due to better regulation and inspection of manager's behaviors and decrease managers self-profit actions (Fama and Jenson, 1983; Jensen and Meckling, 1976). Therefore Equity could affect possibilities of companies being delisted. This study uses directors' pledging ratio and director's share holding ratio to evaluate share structure. Kesner (1987) and McConnell and Servaes (1990) indicated that equity ownership positively relates to firm performance. When company's directors pledge the shares that they own to the bank, this is the same as retracting capital at an early stage but still hold entitlement to the company. The higher the directors' pledge, the more distorted the company's financial structure will be and thus higher possibility of the company being delisted. Fama and Jenson (1983) and Jensen and Meckling (1976) both indicated that the higher the ownership, the lower the agency cost, resulting in lower chances for managers to self profit. It is expected for companies with high director's ownership, there is lesser possibility of the company being delisted. The rate of company failure announced after No.33 bulletin should be lower than companies that have been issued with going concern prior to the bulletin. With this influential factor in mind, a dummy variable is set. After the announcement of No.33 bulletin is 1 and before this period is 0, to control the effect of No.33 bulletin.

The general structure including company age and size. The years ranging from setting up or start of the company until sample study period, because companies that have set up earlier might have accumulated better profitability and operational experiences, there is lower possibility of delisting (Chen and Lee, 1993). Ohlson (1980) and Chen and Lee (1993) both agreed on the fact that the larger the companies in size, the more resources will be made available, therefore lesser possibility of financial distress, and lower delist probability.

The impacts of financial structure indicate that short and long term solvency can also be used to evaluate a company's capital dispatch ability. This study adopted liquidity ratio, ratio of operation fund to total assets, and ratio of operation cash flow to total debt to evaluate the company's short term solvency. Long term solvency is evaluated by leverage. Ohlson (1980) discovered measurement of liquidity ratio has a significant effect on company failure rate. Deakin(1972) and Ohlson (1980) agreed that when the company is continuously in a loss state, operation fund could decrease, and when ratio of operation fund to total assets is lowered, the company's short term solvency will deteriorate and thus higher possibility of delist. Beaver (1966) stated that ratio of operation cash flow to total debt could evaluate the ability of company's yearly cash flow to carry on total debt. The lower the ratio, the weaker the ability of cash flow to repay total debt, thus higher possibility of delist due to debt. Ohlson (1980) indicated leverage has significant forecast ability towards corporate financial distress. If there are any problems in capital dispatch, then there is a high possibility of debt crash, thus higher delist possibility.

Using Operation Structure to evaluate asset efficiency can indicate whether assets have been effectively utilized. It not only is the key survival factor for corporations in the competitive market but also a major influential factor for companies with going concern. This study uses the ratio of retained earnings to total assets and ratio of market value to total debt for evaluation. Altman (1968) used ratio of retained earnings to total assets to evaluate the level

of company's profit accumulative ability. The lower the ratio is, the higher chances of companies being delisted. Altman (1968) regarded the ratio of market value to total debt as an evaluation to represent the decrease in company asset value. Low ratios mean company market value is relatively lower than total debt, thus there is a serious decrease in company asset value, leading to higher possibility of being delisted.

In the analysis of this study on companies which have been issued with going concern, 26.45% of them are electronics listed companies. In order to consider the possible effect of industry variance, the paper controls the factor of electronic/non electronic companies on companies being delisted. Additionally, the period of this study is 20 years. There were numerous major prosperity fluctuations within this period, for example 1990's stock crash, 1998's Asian Financial Crisis, 1999 Taiwan Financial Crisis and 2001's Internet Bubble-Bursting Crisis. Therefore there is a need for including macroeconomic structure's effect in the analysis. This study set the variable using seasonal prosperity indications released by Council for Economic Planning and Development. Quarter indicators above 23 points is 0, where 23 points is the lowest point for green light in prosperity indication. Under 22 points is 1, to regulate the effects of macroeconomics to companies' possibility of being delisted.

5. Data and Sample Selection

The observations are companies which have been issued their first going concern suspect reports after financial reports have been audited by auditor with signing of modified unqualified opinion, qualified opinion, or adverse opinion reports. Relative explanatory variables, as extracted from TEJ (Taiwan Economic Journal), are also used to construct the model to investigate company delist behaviors[4].

The time frame of this study started from 1988 to 2007, totaling 20 years or 80 quarters. Due to the fact that generally there is a lapse of time for a company to experience financial difficulty to final delist stage, so the study model considered the date upon first issuance of going concern suspect until the delist date or until the study end date (right censored data) as "survival period". All sample companies that had first issuance of going concern along with their delist dates are recorded to get the survival period of each company, using quarter as unit of measure, and the result is 155 records.

If sample company's first issuance of going concern suspect date and delist date both fell within the study period from 1988 to 2007, then this record is called "complete data" and is identified as "delisted or failure". If observations' delist date happened after the study period, it is called "incomplete data" because the company's actual survival cannot be confirmed or determined within the set date of this study. This then will be identified as "not yet delisted" (right censored data). The survival period of this data will be from first issuance of going concern suspect date to study end date.

Table 1 is the sampling process of companies with going concerns suspect, criteria are

---

[4] In 1999, before the announcement of Generally Accepted Auditing Standard No.33, besides qualified opinion or adverse opinion reports issued by accountants, disclaimer of opinion reports are also included for signature on going concern audit reports.

company which received their first issuance of going concern suspect with complete financial reports and relevant information. This will exclude banking industry which adopts significantly different set of accounting standards, and companies which do not have complete financial reports or other relative information. Finally, 155 companies met the selection standard and the data were used for this study.

Table 1. Sample Selection

Companies which have been issued with first going concern report within the period of 1988 to 2007	187
Less: companies in banking industry	5
suitable observations	182
Less: companies with incomplete financial reports or other relevant information	27
Final observations	155

Table 2 is the life table of these observations. Taking nonparametric analysis of duration data to examine, the survival rate and hazard rate can be determined. Data shows that most delisted companies' survival period are between 18.8-22.5 quarter, totaling 20 companies, with hazard rate of 0.133. For delisted companies with survival period between 22.5-26.3 quarter, their survival rate will significantly drop, averaging only 0.3607. This means, based on company survival period, 36% of national listed companies have an average survival period until 19th to 23rd quarter (approx. 5-6 years) after they received first issuance of going concern.

Table 2. The Life Table of the Sample

Survival Period after Going Concern Suspect	Enter	Right censored Companies	Risk Set	Delisted Companies	Survival Rate	Hazard Rate
0.0- 3.8	155	2	153	12	1.0000(0.000)	0.0205(0.006)
3.8- 7.5	141	16	125	20	0.9259(0.021)	0.0460(0.010)
7.5-11.3	105	12	93	13	0.7790(0.035)	0.0238(0.008)
11.3-15.0	80	7	76	2	0.7123(0.039)	0.0071(0.005)
15.0-18.8	71	7	67	9	0.6937(0.040)	0.0381(0.013)
18.8-22.5	55	10	50	20	0.6012(0.045)	0.1333(0.029)
22.5-26.3	25	0	25	8	0.3607(0.050)	0.1016(0.035)
26.3-30.0	17	0	17	5	0.2453(0.048)	0.0920(0.041)
30.0-33.8	12	0	12	6	0.1731(0.043)	0.1778(0.068)
33.8-37.5	6	2	5	0	0.0866(0.033)	0.0000(0.000)
37.5-41.3	4	0	4	0	0.0866(0.003)	0.0000(0.000)
41.3-45.0	4	0	4	0	0.0866(0.033)	0.0000(0.000)
45.0-48.8	4	0	4	1	0.0866(0.033)	0.0762(0.075)
48.8-52.5	3	0	3	0	0.0649(0.031)	0.0000(0.000)
52.5-56.3	3	0	3	0	0.0649(0.031)	0.0000(0.000)
56.3-60.0	3	0	3	0	0.0649(0.031)	0.0000(0.000)
60.0-63.8	3	0	3	0	0.0649(0.031)	0.0000(0.000)
63.8-67.5	3	0	3	0	0.0649(0.031)	0.0000(0.000)
67.5-71.3	3	1	2	0	0.0649(0.031)	0.0000(0.000)
71.3-75.0	2	2	1	0	0.0649(0.031)	0.0000(0.000)

Note: Figures in parentheses are p-values

As the descriptive statistical in Table 3, the average survival time for sampling companies is approx. 15 quarters. However, because some companies' data is censored, so the above average survival period does not have meaningful implications. The average age of sampling companies is 13 quarters with standard deviation of 9.708, this means sampling companies did not centralize within a specific time frame from set up to early dates of this study.

Table 3. Descriptive Statistics and Mean Difference Test

Variables	Mean	Median	Standard Deviation	Mean Difference
Survival Period (quarter)	14.712	13	12.044	0.752
Directors' Pledging Ratio	0.260	0.042	0.336	-16.382**
Shareholding Ratio by Insiders	0.010	0.028	0.038	-0.654
Audit System	0.202	0	0.403	-0.063*
Company Age (years)	13.190	11	9.708	-0.487
Company Size	14.780	14.731	1.187	-0.308
Liquidity Ratio	0.681	0.596	0.445	8.969
Ratio of Operation Fund to Total Assets	-0.326	-0.233	0.592	28.432*
Ratio of Operation Cash Flow to Total Debt	-0.002	0.009	0.029	-0.088
Leverage	0.899	0.828	0.443	-27.175*
Ratio of Retained Earnings to Total Assets	-0.196	-0.202	0.370	5.263
Ratio of Market Value to Total Debt	0.197	0.202	0.403	0.262**
Industry Factor	0.255	0	0.437	0.048
Economic Prosperity	0.556	1	0.499	0.106

Note: 1. ** means significant under 0.01 confidence level, * means significant under 0.05 confidence level.

2. Mean difference means the difference between delisted companies and companies still in operation in 2007.

3. Survival period is the time from first issuance of going concern report to delist. Listed Years refer to the years the companies were set up to the year of study end date. Company size is natural logarithm of total assets. Liquidity Ratio is the ration of Liquid Asset to Liquid Debt. Operation Fund is the difference between Liquid Assets and Liquid Debt, operation fund to total assets ratio is the ratio of capital fund to total assets. Capital Fund to Total Assets is the ratio of Capital Fund to Total Assets. Ratio of Cash Flow to Total Debt means the ratio of cash flow from business activities to total debt. Directors' Pledging Ratio is the ratio of pledged shares to total shares held by directors. Shareholding ratio by Insiders is the ratio of directors' shares to outside shares. Industry Factor used Electronic Industry as 1 and non Electronics as 0. Audit System used the standard of No.33 and the announcement year of 1999 where after this announcement, it is 1, and before this year it is 0. Economic Prosperity is determined by Council for Economic Planning and Development of 0 when above 23 points (lowest point in green light) and 1 for below 22 points.

The average ratio of directors' pledging is 0.260 and it is quite different for each individual company, with standard deviation of 0.336, this is greater than the average. The companies which have been delisted and companies still in operation are vastly different in ratios such as directors' pledge, leverage, market value to total debt, and capital fund to total assets. Initial

analyses indicate that insufficient liquid capital, carrying on business based on high debt, and high directors' pledge is the main factors contributing to companies being delisted.

6. Empirical Results

The study subjects include Taiwan listed companies which have been issued going concern suspect reports. The study time period is from 1988 to 2007. For companies which did not get delisted on Dec. 31, 2007, they are placed on censored data because their actual survival period cannot be determined within the study date. Analytical models include the parametric, semi-parametric and non-parametric models. Theoretically speaking, if after statistical verification the study data followed a specific type of distribution, it will then be easier to explain its economic implications. Therefore this study first uses parametric model, if it is not a fit distribution, then semi-parametric and non-parametric models will be used. The parameters of Generalized F distribution are used to test which parameter model fitted the data survival period. After distribution verification, split model is used to estimate with the addition of explanatory variables.

Since the survival period of delisted companies cannot be determined by economic theories, this study will use Generalized F distribution to test the alternative hypotheses $M_1 \neq 1$ and $M_2 \neq 1$. Test results show M_1 and M_2's estimate values are 3.534 and 60.542, Z-values are 1.245 and 0.172 respectively. It is clear that under significant confidence level $\alpha=0.05$, M_1 and M_2 equals 1 are fail to reject that it obeys log-logistic distribution. Therefore this study infers that data distribution is closer to log-logistic distribution.

Due to the fact that not all companies will be delisted after first issuance of going concern suspect, this means the probability of delist will not equal to 1. Therefore this study draws the assumption that failure rate of delist companies is less than 1. By importing split-population log-logistic model (split model in short), and also log-logistic model (standard model in short), the data are ready for comparison. To understand the risk functions faced by delisted companies, the results of the two models' estimate parameters are listed in Table 4. Standard and split models' σ value is 0.436 and 0.425 respectively, both significantly greater than 0.

Parameter $\gamma(=1/\sigma)$ are greater than 1, which means risk rate will start from first issuance of going concern suspect (t=0), then the rate will increase incrementally as time goes on, when reaches the maximum value, it will decrease gradually. Risk function is shown as upside down U shaped.

Table 4. Estimating Log-logistic Model and Split-population log-logistic Model

Variables	Movement Expectation	Log-logistic Model	Split-population log-logistic Model
Constant		0.958 (0.065)	0.908 (0.067)
Directors' Pledging Ratio	+	0.479* (0.021)	-0.379* (0.026)
Shareholding Ratio by Insiders	−	-0.152* (0.018)	-0.831** (0.005)
Audit System	−	-0.213** (0.008)	-0.226** (0.003)
Company Age (Year)	−	-0.021** (0.008)	-0.033** (0.008)
Company Size	−	-0.112 (0.072)	-0.251 (0.072)
Liquidity Ratio	−	0.012 (0.212)	0.011 (0.213)
Ratio of Operation Fund to Total Assets	−	-0.009 (0.209)	-0.009 (0.212)
Ratio of Operation Cash Flow to Total Debt	−	-1.837 (0.376)	-1.322 (0.362)
Leverage Ratio	+	0.129 (0.299)	0.104 (0.298)
Ratio of Retained Earnings to Total Assets	−	-0.368* (0.046)	-0.454* (0.045)
Ratio of Market Value to Total Debt	−	-0.615** (0.008)	-0.746** (0.007)
Industry Factor	?	0.168 (0.235)	0.192 (0.161)
Economic Prosperity	+	0.135 (0.328)	0.171 (0.211)
σ		0.436** (0.004)	0.425** (0.002)
δ			0.834** (0.007)

Note: 1. ** means significant under 0.01 confidence level, * means significant under 0.05 confidence level. P value in ().

2. Listed Years refer to the years the companies were set up to the year of study end date. Company size is natural logarithms of total assets. Liquidity Ratio is the ration of Liquid Asset to Liquid Debt. Operation Fund is the difference between Liquid Assets and Liquid Debt, operation fund to total assets ratio is the ratio of capital fund to total assets. Capital Fund to Total Assets is the ratio of Capital Fund to Total Assets. Ratio of Cash Flow to Total Debt means the ratio of cash flow from business activities to total debt. Directors' Pledging Ratio is the ratio of pledged shares to total shares held by directors. Shareholding ratio by Insiders is the ratio of directors' shares to outside shares. Industry Factor used Electronic Industry as 1 and non Electronics as 0. Audit System used the standard of No.33 and the announcement year of 1999 where after this announcement, it is 1, and before this year it is 0. Economic Prosperity is determined by Council for Economic Planning and Development of 0 when above 23 points (lowest point in green light) and 1 for below 22 points.

Standard model assumes that the companies will be delisted at the end, so the setting of delist probability is 1. On the other hand, Split model assumes that companies will continue operations, so the final delist probability is set as smaller than 1. It is clear from Table 4 that the final delist estimate value is 0.834, and after verification, the result is significantly different to 1. Therefore it is confirmed that Standard Model does not fit the assumption of companies will be delisted at the end, furthermore, the observations of this study cannot be

addressed appropriately.

In regards to hazard function of the two models, it is clear that directors' pledging ratio and the ratio of director's ownership to hazard function are both significant and negatively related. In studies on corporate governance, directors' pledging ratio and directors' ownership can both be used to evaluate company equity structure. This indicates that to financial report users, when the company's financial numbers are generally poor, one must seek other appropriate non financial indicators to evaluate whether the company can break away from operational difficulties. In so far as this study goes, when general company financial indicators are not performing, the importance of corporate governance is accentuated. On the other hand, Audit System does. The results indicate that after the release of No. 33 bulletin, accountants are more graceful to the auditee in regards to standards of identifying on going concern. Companies which have been issued going concern suspect after the release of No. 33 bulletin and have been delisted show average probability of company failure, which is lower than companies which have been issued going concern suspect before the release of No.33 bulletin.

The ages affect hazard function in a significant and negative relation. At the same time, it is easier to raise capital in the market and lesser chance of being delisted even after the issuance of going concern suspect. Generally speaking, larger companies have more resources and can survive through the crisis when there are going concerns. However, company size does not affect significantly hazard function, this means not only small size companied can be delisted after the issuance of going concern and that the chances for bigger size companies to survive through the crisis is not lower than smaller size companies. Liquidity ratio and ratio of operation capital to total assets do not have significant effect on delist hazard. Leverage ratio and ratio of cash flow to total debt coefficients are not significant as well. This may due to insufficient liquidity and unsound financial structure that are a common issue in these companies with going concern suspect.

The coefficient of market value to total debt ratio is significant and is relatively negative. This will explain the fact that after the market publicized the going concern reports on these companies, share prices will fall and company value will diminish daily, making it even harder to shoulder its debt, in turn, the possibility to be delisted will rise. Ratio of retained earnings to total assets had significant effect on hazard function and is negatively related, this means if the company improves operational performances, earnings can be accumulated thus reducing the possibility of being delisted. Furthermore, industry factor and economic prosperity cannot be confirmed to have significant effect on delist probabilities.

7. Conclusion

This study observes listed companies that have been issued going concern suspect reports to investigate the process from first issuance to final delist stage. When split-population duration model is used to evaluate average probability of observations delist, the result is 83.4%. When the company was firstly issued with going concern report, in the 19th quarter, the company is exposed to greatest risk of delist. Thus after first issuance of going concern suspect report, delist risk of companies is highest within the first 5 years, reaching to as high

as 7% in the fifth year.

In regards to the factors that affects delist, besides "the ratio of market value to total debt" and "the ratio of retained earnings to total assets", most other variables of financial and operation phases did not have significant effects. There is, however, significant effect on corporate governance and audit system to delist risk. This result indicate that, one must consider both financial and non-financial indicators to make decision on whether the company will survive after going concern has been issued.

References

Altman, E. (1968). Financial ratio, discriminate analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 6(1), 4-19.

Altman, E. (1982). Accounting implications of failure prediction models. *Journal of Accounting, Auditing and Finance*, 4-19.

Bandopadhyaya, A., & S. Jaggia (2001). An analysis of second time around bankruptcies using a split-population duration model. *Journal of Empirical Finance*, *8*, 201-218. http://dx.doi.org/10.1016/S0927-5398(01)00023-8

Barnes, P., & D. Hooi. (1987). The stranger case of the qualified success. *Accountancy*, 32-33.

Beaver, W. (1966). Financial ratios as predictors of failure. *Journal of Accounting Research*, *4*, 71-117.

Casterella, J. R., B. L. Lewis, & P. L. Walker. (2001). *The relation of audit opinion and auditor change with bankruptcy emergence.* 2001 *AAA audit section midyear meeting*.

Chen, K., & J. Lee. (1993). Financial ratios and corporate endurance: a case of the oil and gas industry. *Contemporary Accounting Research*, *9*(2), 667-694. http://dx.doi.org/10.1111/j.1911-3846.1993.tb00903.x

Citron, D. B., & R. J. Taffler. (1992). The audit report under going–concern uncertainties: an empirical analysis. *Accounting and Business Research*, *22*(4), 337-345. http://dx.doi.org/10.1080/00014788.1992.9729449

Cybinski, P., & W. Carolyn. (2005). The efficacy of auditor's going – concern opinions compared with a temporal and a temporal bankruptcy risk model: analyzing U.S trade and service industry failures 1974-1988. *Pacific Accounting Review*, 3-36.

Deakin, E. B. (1972). A discriminate analysis of predictors of business failure. *Journal of Accounting Research*, 167-179. http://dx.doi.org/10.2307/2490225

Fama, & M. Jensen. (1983). Agency problems and residual claim. *Journal of Law and Economics*, *26*, 327-349.

Hsu, Y. S., C. C. Wang, & C. H. Liou. (2011). The dynamic analysis of listed/OTC companies first facing going concern suspect. *Review of Securities and Futures Markets*, *23*(4), 27-62.

Jensen, M., & W. Meckling. (1976). Theory of the firm: Managerial behavior agency costs and ownership structure. *Journal of Financial Economics*, *3*, 305-360. http://dx.doi.org/10.1016/0304-405X(76)90026-X

Kesner, I. F. (1987). Directors stock ownership and organization performance: An investigation of Fortune 500 companies. *Journal of Business Research, 16*, 235-249.

Koh, H. C., & L. N. Killough. (1990). The use of multiple discriminate analysis in the assessment of the going-concern status of an audit client. *Journal of Business Finance and Accounting*, 178-192.

Koh, H. C. (1991). Model predictions and auditor assessments of going-concern status. *Accounting and Business Research*, *21*(4), 331-338.

Lancaster, T. (1990). *The Econometric Analysis of Transition Data*, Brown University.

Levitan, A., & J. Knoblett. (1985). Indicator of exceptions to the going concern assumption. *Auditing : a Journal of Practice & Theory*, *5*(1), 26-39.

Louwers, T. (1998). The relation between going-concern opinions and the auditor's loss function. *Journal of Accounting Research*, *36*(1), 143-155.

Louwers, T., F. Messina, & M. Richard. (1999). The auditors going concern disclosure as a self-fulfilling prophecy: A discrete time survival analysis. *Decision Sciences*, *30*(3), 805-824. http://dx.doi.org/10.1111/j.1540-5915.1999.tb00907.x

McConnell, J. J., & H. Servase. (1990). Additional evidence on equity ownership and corporate value. *Journal of Financial Economivs, 27*(2), 595-612.

Mutchler, J. F. (1984). Audiyors' perception of the going-concern opinion decision. *Auditing: A Journal of Practices & Theory*, *3,* 17-30.

Nogler, G. E. (1995). The resolution of auditor going - concern opinions. *Auditing: A Journal of Practices & Theory*, *14*(2), 54-73.

Ohlson, J. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, *18*(1), 109-131. http://dx.doi.org/10.2307/2490395

Psaros, J., & M. Zhang. (1994). The going concern audit opinion: Australian evidence. *Perspective on Contemporary Auditing*, 39-46.

Schmidt, P., & A. D. Witte (1989). Predicting criminal recidivism using split population survival time model. *Journal of Econometrics*, *40*, 141-159. http://dx.doi.org/10.1016/0304-4076(89)90034-1

Wang, C. C., Y. J. Lin, & Y. S. Hsu. (2013). The initial going-concern of delisting firms: An application of proportional hazard model. *Asian Journal of finance & Accounting, 5,* 139-158. http://dx.doi.org/10.5296/ajfa.v5i2.4336

Zhang, M. W., & H. Suzanne. (1997). Going, going …gone? Is a GCQ a self – fulfilling Prophecy. *Australian Accountant*, 22-23.

Zmijewski, M. (1984). Methodological issues related to the estimation of financial distress prediction model. *Journal of Accounting Research*, *22*(supplement), 59-82.