BANKRUPTCY PREDICTABILITY OF JAPANESE PUBLIC FINANCIAL STATEMENTS -IS IT RELIABLE?-

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INTRODUCTION

This paper presents some results of an assessment whether public financial statements can provide reliable information to predict bankruptcy. I proposed universal Multivariate Discriminant Analysis model, named SAF model that can predict bankruptcy with more than 86% accuracy regardless of industry and size [2]. However, Multivariate Discriminant Analysis model can not discriminate bankrupt firms from non-bankrupt firms 100% accuracy. Some literatures concluded that the reason why the model miss-classified them was their window dressing settlements [1][3]. However, it is very dubious that all miss-classified firms had prepared window dressing financial statements. It is natural to guess that there are any other elements to cause miss-classification of the model. I tried to find out another reason why the model miss-classified them.

EVALUATION OF BANKRUPT FIRMS BY SAF MODEL

A few empirical studies of corporate bankruptcy in Japan have been undertaken [1][3][4]. However, the results of these studies are not generalizable due to the limited size of their samples. In contrast, SAF model developed with observations of 686 firms which went bankrupt, and 300 non-bankrupt firms which were extracted from 107,034 non-bankrupt firms by systematic sampling method. After proving the accuracy and reliability of the variables, following linear function was developed as SAF model. Robustness of linear model against quadratic model or logistic model was also proven before modeling.

$$Z = 0.014X1 - 0.003X2 - 0.058X3 - 0.062X4 + 0.742$$

X1 = Retained earnings to total assets

X2 = Current gross capital to Previous gross capital

X3 = Interest and discount expense to borrowings, corporate bond & note receivable discounted

X4 = Note payable & accounts payable x12 to Sales

0.38 was chosen as the cut-off point that best discriminates bankrupt firms and non-bankrupt firms with the lowest misclassification cost. It was proven that firms with Z score less than 0.38 have a high probability (86.13%) of going bankrupt. It was also proved that SAF model could predict corporate bankruptcy regardless of industry and size [3]. To verify the discriminant power of the model, I assessed eleven Japanese bankrupt firms with SAF model. Financial data one year prior to bankruptcy were collected and analyzed. These firms had been listed in the Japanese stock market when they went bankrupt during the period between 1986 and 1996. Table 1 illustrates the results of analysis.

TABLE 1

ANALYSIS OF BANKRUPT FIRMS WITH SAF MODEL

Name of Firms	Date of Bankrupt	Total Debt when Bankruptcy (unit:1,000yen)	Z score B<0.38
Toyo Tanshi	1986.4	42,000,000	0.26
Ohto	1986.5	23,000,000	0.10
Kokko Steel	1986.8	19,000,000	-0.18
Lek	1992.5	25,344,000	0.36
Daichibo	1992.10	89,410,000	-0.03
Nikkatsu	1993.7	49,700,000	0.18
Koyo Machinery	1993.12	97,000,000	0.17
Oriental Photo	1995.5	21,000	0.43
Ga-jo-en	1997.1	15,370,000	-0.99
Kyotaru	1997.1	101,332,000	0.52
Yaohan Japan	1997.9	161,383	0.47

The notable point here is the financial condition of Kyotaru that is miss-classified with a large Z score. Oriental Photo and Yaohan Japan were also miss-classified but with smaller Z scores than Kyotaru's, and their amount of debts when they went bankrupt was smaller compared to other bankrupt firms. Therefore, it is presumed that the financial condition of Oriental Photo and Yaohan when they went bankrupt were not so in critical situations but on the boundary line. In contrast, Kyotaru had more than 101.3 billion-yen debts when they went bankrupt; nevertheless, SAF model classified Kyotaru into non-bankrupt group with a large Z score. It is conjectured that there were some elements to cause such contradicted situation.

REASON FOR MISS-CLASSIFICATION

I wonder why SAF model miss-classified Kyotaru in spite of having a large amount of debts when they went bankrupt. Kyotaru had 867 shops selling take-out SUSHI in 1991. They also had kept Japanese restaurants and their turnover in 1991 was 82,4 billion-yen. They were one of the top-ranking Japanese restaurants and it was well known as the first tier stock in Japan.

It is said that the trigger of their bankruptcy was urged to retire a large amount of debts that had been owed by their ex-subsidiary, from financial institutions. Financial institutions loaning to the ex-subsidiary forced Kyotaru to repay the loan instead because Kyotaru gave a guarantee of these loans. According to Kyotaru Financial Report one year prior to the bankruptcy, they had eight different guarantees of liabilities. The total amount of these guarantees was more than twenty-two million yen that was 38.28% of Kyotaru annual sales. The largest amount of the guarantees was for a debt of Kyotaru-Shoji. However, Kyotaru-Shoji was not a member firm of Kyotaru group, therefore, debts of Kyotaru-Shoji was not consolidated with Kyotaru accounts. Before three years prior to the bankruptcy, Kyotaru had hold the whole stock of Kyotaru-Shoji's, while Kyotaru were already sold out them when they went bankrupt. After selling out the whole stock of Kyotaru-Shoji, Kyotaru still had given the guarantees of debts for Kyotaru-Shoji to financial institutions continuously. The manager of Kyotaru must know about the critical financial condition of Kyotaru-Shoji, however, no information concerning Kyotaru-Shoji had been provided in a financial report of Kyotaru.

The primary consideration is the consolidated policy of financial statements in Japan is different from that one in U.S.A. Kyotaru-Shoji must be treated as a member firm of Kyotaru group and financial data of Kyotaru-Shoji should be consolidated with Kyotaru accounts under consideration of substance over form. However, current consolidation policy under Japan Accounting Standards judges only by the ratio of shareholdings (more than 50% is full-consolidation and, more than 20% to less than 50% is consolidated by equity method). Hence Kyotaru-Shoji had not been consolidated with Kyotaru accounts because Kyotaru did not own any voting common stock of Kyotaru-Shoji.

New policy of consolidated financial statements was officially announced by Japan Ministry of Finance in 1998 and the new policy will be applied from FY1999 statements, therefore, it will be available from May or June in 2000. New policy includes "control" concept of the consolidation criterion. That is even if a parent company owns less than 50% voting common stock of the subsidiary, it must be consolidated with parent accounts when a parent company controls the decision board of the subsidiary. However, the new policy does not mentioned in case of owning no voting stock. Is it available to consolidate? And there is also another notable trap that the final decision will be made by a manager of a parent company whether the firm is fully controlled by the parent company. It is well known that Japanese managers try to hide their bad news. When a parent company practically controls a subsidiary who has a material amount of bad debts, a manager of the parent company try to argue that the subsidiary is not a member firm of group because the parent company has never owned any voting common stock of them. Who can penetrate the manager's disguise? Is it reliable such financial information prepared by the manager?

HOW TO SOLVE THE ISSUE?

As I pointed out at the case study, it is really difficult to predict corporate bankruptcy reading through the current Japanese consolidated financial statements. One big reason why to make it difficult is Japanese manager's attitude toward disclosure. Such unfair attitude may mislead information users toward different direction. To solve the issue, I recommend preparing the original consolidated financial statements by information users as the information would allow. During bubble economy, the difference between historical cost and current cost of assets, especially cost of land, had made information users misunderstanding the financial position of Japanese firms. Now, it must pay attention to hidden bad debts, especially hidden guarantees of obligation including secured debts for non-consolidated subsidiaries. Because, some Japanese firms intentionally hide their bad debts in non-consolidated subsidiaries.

Hence, following points must be considered. 1. If a company gives guarantees of liabilities for third firms (no matter what firms' are) to financial institutions, those liabilities should treat as the company's own debts. Furthermore, some companies give letters of awareness or letters of comfort to financial institutions. These letters will be able to force the company to replay the whole liabilities of original debtors instead when the original debtors went into default on financial obligations. Therefore, 2. if a company gives these letters to financial institutions, all liabilities of original debtors should also treat as the company's own debts.
The author prepared new consolidated financial statements of Kyotaru, as the information would allow. Consolidated policy for the new statements was an original method that was mentioned before, therefore, all liabilities including guarantees of debts for third parties (for both consolidated subsidiaries and non-consolidated subsidiaries) consolidated with Kyotaru accounts. Financial date from new consolidated financial statements is re-evaluated with

SAF model again. Table 2 shows the results of re-evaluation

TABLE 2
RE-EVALUATION OF SAF MODEL

	X1	*X2*	*X3*	*X4*	Z score (B<0.38)
Mean of Bankrupt firm	0.76	7.67	6.72	2.80	0.17
Original statements	3.59	-3.45	4.41	0.42	0.52
New Statements	-18.03	-10.12	4.41	0.42	0.24

One of characteristics of bankrupt firms is indicating higher (larger) *X2* than *X1*. According to the results of evaluation, these ratios from original Kyotaru financial statements were indicating higher *X1* than *X2* that was an opposite tendency of bankrupt firms. In contrast, the ratios from new financial statements are indicating higher *X2* than *X1* that is a bankrupt firms' tendency, and Z score is decreasing from 0.52 to 0.24 that is discriminated into bankrupt group.

CONCLUSION

This paper proved that it is very difficult to predict bankruptcy from Japanese public financial statements. Therefor, I conclude that it is required to add some more information or data to create useful financial information to predict Japanese corporate bankruptcy. Especially in recent few years, rapid economic changes have caused a huge amount of bad debts of Japanese firms, and these bad debts are hidden from their front intentionally or accidentally. Even if the financial statements shows good financial positions, some bad debts may be hidden somewhere. Hence, I recommend you to prepare original (not following accounting standards but keeping more substance over form) consolidated financial statements from separate financial statements by ourselves, especially for the purpose of bankruptcy prediction.

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