WHAT IS THE BEST WAY TO PREDICT FINANCIAL DISTRESS OF COMPANIES?

Predicting distress is essential for investors or lending institutions who wish to protect their financial investments. Which predictive techniques work best?

Since the demise of Arthur Andersen, Enron and World-Com, global economies have become increasingly sensitive to signs of corporate demise and bankruptcy. It was the collapse of these companies that resulted in enormous losses to both investors and lending institutions involved with these companies. As a result, many organisations around the world have concentrated on corporate ethics and governance with a view to minimise the risks of corporate financial distress.

The early prediction of distress is essential for investors or lending institutions who wish to protect their financial investments. As a consequence, modelling, prediction and classification of companies to determine whether they are potential candidates for financial distress have become key topics of debate and detailed research.

A bit of history

Corporate bankruptcy was first modelled, classified and predicted by Beaver in 1966. He defined financial distress as bankruptcy, insolvency, liquidation for the benefit of a creditor, firms which defaulted on loan obligations, or firms that missed preferred dividend payments.

Beaver's technique accurately classified 78% of the sample companies five years prior to failure. Beaver's research concluded that the cash flow to debt ratio was the single best indicator of bankruptcy.

What is financial distress?

One of the major concerns in this field of research is the lack of consensus on the defini-tion of corporate failure or financial distress.

On the one end of the continuum, authors have strictly used bankruptcy as the defi-nition. However, other researchers define financial distress as mergers, absorptions, delisting or liquidations or major structural changes to the company.

In 2001, Cybinski explained that "failed" and "non-failed" firms do not lie in sepa-rate boxes, but rather lie on a continuum of "failed" and "non-failed". This researcher contended that, in reality, there is not a cut-off point between "failed" and "non-failed" firms, but rather an overlap or grey area be-tween the two. It is in this grey area that prediction of financial distress is so difficult.

Other researchers mention that "corporate failure is not a well-defined dichotomy". It appears from most research that the criteri-on for failure is chosen arbitrarily and could

either mean judicial bankruptcy or financial distress. This has serious implications in the repeatability and generalisation of results.

According to Wikipedia, financial distress is a term in corporate finance used to indicate a condition when promises to creditors of a company are broken, or honoured with difficulty – and sometimes financial distress can lead to bankruptcy.

In most studies, however, filing for bankruptcy has been the most commonly used criterion for financial distress. In 1986 Foster indicated that filing for bankruptcy is a legal event which is heavily influenced by the actions of bankers and/or other creditors. He defines the term financial distress to mean "… severe liquidity problems that cannot be resolved without a sizable rescaling of the entities' operations or structure".

It must be noted that companies may file for bankruptcy even though their performance and financial ratios do not predict this. On the other hand, some companies may only just be surviving corporate failure, but are actually classified as "non-failed" companies. Some companies may strategically file for bankruptcy to eliminate rising debts. Other companies may file for bankruptcy due to "acts of God" and may be forced into bankruptcy even though their previous financial results were excellent.

It is also worth noting that in different countries the occurrence of liquidation may differ.

For the purpose of their research in 2006, Steyn-Bruwer and Hamman defined financial distress as the situation when a company cannot continue to exist in its current form. It therefore includes bankruptcy, delisting or major organisational restructuring. For the purposes of this research, the terminology "failed" and "non-failed" will be used to classify the respective companies.

What did other research in the field of failure prediction find?
In the reviewed literature, 64% of all authors used statistical techniques, 25% of the authors used AIES models, and 11% of the authors used theoretical models. The different categories were as follows:

- **Statistical model category:**
  This category comprised the MDA and LA techniques where the overall predictive accuracy was 84%.
- **AIES models:**
  This category included RP and NN, where overall accuracy was 88%.
- **Theoretical models:**
  This category primarily consists of entropy theory where the accuracy was calculated as 85%.

What did this research set out to do?
In 2006, Steyn-Bruwer and Hamman highlighted several deficiencies in previous research which investigated the prediction of corporate failure (or financial distress) of companies. In their research, they used the population of companies for the period under review, and not only a sample of bankrupt versus successful companies.

Here the sample of bankrupt versus successful companies was considered as two extremes on the continuum of financial condition, while the population was considered as the entire continuum of financial condition.

The main objective of this research, which was based on the 2006 study, was to test whether some modelling techniques would in fact provide better prediction accuracies than other modelling techniques. The different modelling techniques considered were: Multiple Discriminant Analysis (MDA), Recursive Partitioning (RP), Logit Analysis (LA) and Neural Networks (NN).

This study introduces a novel concept (not seen in other research) called the Normalised Cost of Failure (NCF).

What did this research conclude?
The first conclusion drawn from the literature surveyed, was the fact that there is very little consensus on any of the major issues within the field of study.

The main objective of this research was met by showing that each of the different modelling techniques produced different predictive accuracies. Here MDA and RP techniques correctly predicted the highest

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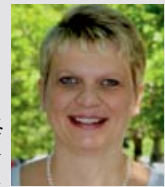
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number of "failed" companies and consequently had the lowest NCF. The research also showed that LA and NN provided the best overall predictive accuracy.

The secondary objective of the research was to compare the difference in predictive accuracies when the data is subdivided per economic period, as done by Steyn-Bruwer and Hamman in 2006, as opposed to a subdivision of each year prior to failure as in conventional literature. This study shows that using the year before failure as a subdivision, rather than the economic period as a subdivision, provides somewhat better predictive accuracy.

Finally, the research proposes that the predictive strengths of the four different modelling techniques are combined to attain a better overall predictive methodology. **a**