

# Economics essays - corporate company failure



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## Corporate Company Failure

### **Main Approaches to Predicting Corporate Failures in relation to Economic decision making**

*Megginson & Smart (2006, p. 898, para3)* defined business failure as the unfortunate circumstance of a firm's inability to stay in the business. The financial failure of a company can have a devastating effect on the seven users of financial statements e. g. present and potential investors, customers, creditors, employees, lenders etc. As a result, users of financial statements are interested in predicting not only whether a company will fail, but also when it will fail.

*Neophytou, Charitou & Charalambous (2001)* identified reasons for business failure i. e. high interest rates, recession squeezed profits, heavy debt burdens, government regulations and the nature of operations can contribute to a firm's financial distress. *Drapeau et al. (2004)* argues the causes leading to business failure and later bankruptcy can be divided into economic, financial, neglect, fraud, disaster and other factors.

Exposure of operative and financial difficulties of a company generally has been done through traditional analysis of financial ratios (quantitative factors). The high subjectivity of traditional financial ratios analysis encourages search for mathematical models to determine the predictability of accounting information. Traditional ratio analysis allows the user to understand the firm's performance when placed in environment e. g. the firm's previous performance, prevailing economic climate and industry averages.

Liquidity or working capital ratios are the base for analysis of potential corporate failure, which is significant to investors as they wish to know whether additional funds could be loaned to the company with reasonable safety and whether the company stop working without additional funds.

*Boritz, Kennedy & Sun (2007)* states that business community uses bankruptcy prediction models directly in order to identify companies that are likely to experience future financial distress including bankruptcy. *Elliott & Elliott (2006, p. 703)*, *Alexander & Britton (2004, p. 697)*, *Sandin & Porporato (2007)* looks at the two types of studies to predict managerial bankruptcy. Firstly Univariate Analysis, which looks at the relationship between the individual figures or ratios and the bankruptcy.

Secondly Multivariate Analysis, which uses multiple ratios and weighing to determine a prediction function of bankruptcy. *Aziz & Dar (2003)* also state the statistical models include univariate & multivariate analyses of which the Multivariate dominates & uses multiple discriminants analysis (MDA), linear probability, logit, and probit models. *Sandin & Porporato (2007)* identified multivariate can be distinguished in parametric models and non parametric models.

Parametric models include discriminant models and models of conditional probability (logit & probit) whereas non parametric models includes iterative partitions models, Argenti`s failure model and neural net models. Previous research has created useful predictive univariate and multivariate financial ratio models e. g. Beaver (1966), Altman (1968), Deakin (1972), Ohlson (1980), Taffler (1983).

Business failures can be predicted by approaches like `Z` score, using a number of financial variables. Some of these predicting corporate failure models are discussed in this essay.

Various univariate studies demonstrate a definitive potential of the ratios as the predictors of the failure. Generally, the ratios measuring liquidity, earnings and solvency remain the most significant ratios. *Beaver (1966)* was among the first to predict corporate failure whose approach was univariate in which each ratio was evaluated in terms of how it alone could be used to predict failure without consideration of the other ratios.

*Beaver (1966)* showed that corporate failure could be reliably predicted through the combined use of sophisticated quantitative techniques on selected financial ratios. *Neves & Vieira (2006)* states that by using univariate analysis; *Beaver (1966)* concluded that `cash earnings to total debt` was the best ratio for signaling bankruptcy and financial leverage ratios provide the highest univariate classification accuracy.

Beaver's univariate analysis shown the way to a multivariate analysis by Altman (1968), who used multiple discriminant analysis (MDA) in the effort to find a bankruptcy prediction model.

Multivariate analysis has been widely used in predicting corporate failures; *Altman (1968)* combined five ratios to produce Z score. *Megginson & Smart (2006, p. 914, para1)* defined Z score as the product of a quantitative model that uses a blend of traditional financial ratios and a statistical technique known as MDA.

Firms with a Z score of 2.7 or more indicated as non failure or a going concern and firms with a Z score of 1.8 or less indicated as failure.

Therefore, Altman's Z score is found to be about 90% accurate in forecasting bankruptcy one year in the future and about 80% accurate in forecasting in two years in the future.

*Elliott & Elliott (2006, p. 703, para2)* pointed out that the Z score analysis can be employed to rise above some of the limitations of traditional ratio analysis as it assess corporate stability and more significantly predicts potential case of corporate failures. *Smith (1997)* mentioned that the Taffler's (1983) Z-score model is used in the identification and selection of financially distressed companies as it is recognized as one of the most reliable in predicting company failure in the UK.

Taffler's Z-score model, which is a single measure, arrived at by adding four weighted ratios determined by multiple discriminant analysis, which together indicate a company's financial health. *Taffler (1983)* used linear discriminant analysis (LDA) to develop a model that was able to discriminate effectively between failed and healthy companies.

*Elliott & Elliott (2006, p. 704, para3)* pointed out that in Taffler Z model, companies scoring 0.2 or less or with a negative Z-score are financially distressed and in danger of failure, while those with a 0.2 above or positive Z-score are unlikely to fail. `Z` scoring method favours long established companies.

If a company's Z score has fallen over the course of year or two from a healthy position to one in the unhealthy group, the shares should be

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avoided. Present and potential investors, lending institutions and the auditing profession are interested in determining the ability of a distressed company to enact a recovery.

Altman and Taffler's Z score models also have some limitations in relation to economic decision making. Corporate failure models relate to the past, without taking into account the current state of the macroeconomic environment e. g. the level of inflation, interest rates etc.

The publication of accounting data by companies is subject to a delay, failure might occur before the data becomes available. These failure models share the limitations of the accounting model including the accounting concepts and conventions on which they are based. *Sori, Hamid & Nassir (2004)* identified that there are criticisms on the use of quantitative approach to predict corporate failure e. g. the application of linear MDA was not preceded by tests to determine its optimality in most financial studies.

If the measures incorporated in the models become used as objectives, as some suggest, then the model is likely to become less useful as a predictive tool as the measures will be subject to manipulation. Also, the definition of corporate failure is not clear, given that various forms of rescue or restructuring are possible, short of liquidation, for a company which is in trouble.

*Laitinen & Laitinen (1998)* argued that bankruptcy prediction model is not a superior approach to qualitative technique where wrong judgment might arise due to firm-specific factors e. g. accounting information & financial ratios provided by management, size and firm industry. Also, the data quality

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factors e. g. historical data, different accounting policies used by companies and the decision maker specific factors i. e. differences in age, experience and skills.

*Sori et al. (2004)* pointed out that the identification of potential failures can be done through a qualitative approach e. g. Argenti failure model (1976). A qualitative approach usually examines the non-financial variables such as type of management, the number of active shareholders or outside shareholders, the degree of creative accounting practices to hide problems, the availability of effective accounting information systems and also the levels of gearing in different economic situations.

*Elliott & Elliott (2006, p. 706, para1)* states that from historical data on a wide range of actual cases, Argenti (1976) developed a model which is intended to predict the likelihood of company failure. The model is based on calculating scores for a company based on three stage events i. e. defects of the company, management mistakes and the symptoms of failure.

In calculating company `A` score, different scores are allocated to each defect, mistake and symptom according to their importance. Then this score is compared with the benchmark values i. e. if a company achieve a overall score of over 25 or a defect score of over 10, or a mistake score of over 15, then the company is showing classic signs leading up to failure.

*Ooghe & Prijcker (2007)* identified two important limitations of Argenti`s model. Firstly, that there are no specific financial indicators used to describe the financial health of a company. As a result, the concept of financial health of a company is unclear and gives no idea of the importance of the different

financial indicators such as profit, ROI, turnover and liquidity during the different phases of the failure path.

Secondly, although Argenti (1976) emphasizes the importance of management errors, the existence and importance of specific errors in different failure paths and within distinctive phases of a failure path are not entirely clear. As a result, the details of the failure paths are not apparent and there are too few differences between them.

Neural Networks is another technique that has been applied in predicting corporate failure, mainly in the last two decades. Neural networks models that include qualitative criteria are computer systems that take the idea from known facts about how the brain works and they can be trained to solve certain problems or to identify specific patterns.

Neural networks have out performed other mathematical modeling tools in predicting corporate bond ratings and profitability. *Neophytou, Charitou & Charalambous (2001)* states that previous studies compared the results of multiple discriminant analysis (MDA) against the neural network approach and results show that the neural networks approach is more effective than MDA in classifying distressed and non distressed companies.

*Neophytou et al. (2001)* identified some of the advantages of neural networks i. e. their ability to induce algorithms for recognizing patterns.

Unlike traditional models, the neural networks approach is considered to be more robust in that it is not subject to restrictive statistical assumptions such as the linear relation and multi-variate normality. As such it has an adaptive nature and has the ability of expressing non-linear relations.

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*Hawley, Johnson & Raina (1990)*, pointed out that the neural networks approach can be most effectively applied to such tasks as classification and clustering where problem-solving environments are unstructured with incomplete data. Neural networks disadvantages include that they do not provide the contribution of each variable to the final classification i. e. the variable's significance. Therefore, it is impossible for an investigator to select the most significant predictor variables for the model development with the neural networks approach.

In conclusion, this essay looks at different approaches i. e. Z score, A score etc. to predicting corporate failures and their pro and cons in relation to economic decision making e. g. Beaver, Altman, Taffler, Argenti, Neural networks models. Corporate failures are common in competitive business environment where market discipline guarantee the survival of fittest. The financial distress on a company and its management can have an intense effect on how the firm behaves and how its suppliers and customers see it.

When a company is in financial distress, suppliers are reluctant to extend credit and customers are concerned about warranties and after sales services. Distressed firms that enjoy a high level of stakeholder support are more likely to survive, as these firms will have continual support from its investors, creditors, employees, customers etc.

Managers in an organisation has to make a credit decision on whether to grant credit to customer e. g. grant credit if the expected profit from granting credit is greater than the expected loss from refusing credit. Since the granting of credit is equivalent to making an investment in debtors, the

firm should grant credit so long as the NPV of credit decision is greater than zero.

Univariate analysis of financial ratios was first approached by Beaver (1966). Univariate analysis emphasizes on individual signals of firms' looming distress and hence classification can take place for only one ratio at a time. But Altman (1993) noted, ratio analysis in such a univariate fashion is susceptible to faulty interpretation and is potentially confusing. Obviously, financial status of a firm depends on multidimensional factors and no single ratio may be capable to depict all these together.

Inconsistent with such limitations univariate analysis was later replaced by Multivariate analysis. Despite a number of studies showing usefulness of Neural networks, there are also blemish in these model e. g. long processing time to complete the neural training stage, requirement of having a large number of tests to identify appropriate neural structure and the problem of over fitting can significantly limit the use of neural networks.

Both the qualitative and quantitative information are important in identifying financially distressed firms e. g. the financial information, share price & profitability changes, creative accounting practices, bank debts which also are the important distressed signals for potential failures.

Predictor variables other than financial ratios may prove beneficial for the company e. g. measures of management experience & expertise and other behavioural aspects that impact the operations of the firm could be significant in a bankruptcy prediction model.

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