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Predicting the risk of corporate failure for Australian listed companies : a fresh approach using probability-based tri-dimensional modelling

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**PREDICTING THE RISK OF
CORPORATE FAILURE FOR
AUSTRALIAN LISTED COMPANIES: A
FRESH APPROACH USING
PROBABILITY-BASED TRI-
DIMENSIONAL MODELLING**

A thesis submitted in partial fulfilment of the
requirements for the award of the degree

DOCTOR OF BUSINESS ADMINISTRATION

from

UNIVERSITY OF WOLLONGONG

by

Bill Wilkinson, Bachelor of Business

GRADUATE SCHOOL OF BUSINESS

2009

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Abstract

Corporate failure is a regularly recurring problem for stakeholders, particularly investors, creditors and customers. Early attempts at predicting such failure typically relied on analysis of individual performance measurements such as accounting ratios; it was not until the late 1960s that a modelling approach to the problem started to evolve. Altman's Z-score model was the first approach to combine a series of weighted ratios using the statistical technique of multiple discriminant analysis (MDA) to arrive at a final score, which was used to determine whether or not a company was likely to fail. Substantial research has followed over the subsequent 40 years, resulting in model variants ranging from slight changes to the seminal Z-score approach, and finally to totally different approaches using a range of statistical tools.

This thesis builds on this earlier research by, firstly, reviewing the extensive literature to assess the perceived strengths and deficiencies of previous modelling approaches. Then, having set the key objective of arriving at a robust model that recognises these strengths and deficiencies and is readily accessible to researchers and practitioners, the model construct uses a combination of key components research has indicated to be of high predictive value. These comprise a combination of Z-score component factors, indicators of excessive gearing and overtrading, and key cash-flow indicators. The importance of non-financial factors has been emphasised by some researchers and, whilst they were considered and included in the model development, their value was found to be restricted to the most recent

accounting period prior to the failure event; other problems also limited their overall effectiveness. A raw cash flow from operations (CFFO) figure was not discussed at length in the literature and has been largely ignored in previous models, usually in favour of cash-flow ratios. However, its inclusion was found to enhance the robustness of the model developed in this thesis.

One of the key problems highlighted in previous research was the practicality of embracing a fail/non-fail cut-off point as presented by the MDA approach so commonly applied in many models. With the limitations and risks of such an approach it was decided instead to pursue a probability-of-failure scenario using the statistical tool, logistic regression. Two databases of Australian listed companies were developed, one of 47 failed companies and the other of 35 non-failed, both from three closely related industry groupings. The data from these companies, when applied to the model, produced results that predominantly met expectations with higher static and trending probability of failure as the actual failure event approached, and declining static and trending probability of failure for those companies in the non-fail category.

Substantial scope exists for further application of the modelling approach used in this thesis once adjustments are made for different industry categories and/or geographic environments. This could involve application of the model across a broad range of industry applications as well as ongoing refinement of the model in line with testing the effectiveness of an expanded range of potential indicator inputs.

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