

Estimating the probability of financial distress in European markets: prediction models and empirical applications

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ABSTRACT

Although multiple statistical failure prediction models are described in the literature, appropriate tests as to whether such methodologies work in practice are lacking. This paper describes the operating characteristics of a base model, the Altman's Z-score, evaluating its performance as a tool for insolvency prediction in today's European market, and matching its results with more innovative failure prediction models.

Validation exercises are conducted, testing the base model capability over a four-year span, between 2006 and 2009, and examining 165 companies listed in the main stock indexes of UK, Germany, Spain, Italy, and Portugal.

The Altman's model was originally created for US industry and for a highly developed stock market. Now, forty years after its first application, the largest companies within these European markets have grown enough to be considered comparable to those North American markets upon which the model was originally based: how does perform the Z-score model in its original form in the European scenario?

Since the model has been developed years ago we need to highlight some peculiarities that as researchers we have to consider. Firstly, the balance sheet analysis is changed over the time due to different indicators introduced in the most recent financial analysis and then the ratios used in the Z-Score Model can appear superseded. An example can be the X_1 variable that does not consider in the Z-score model the difference between the financial liabilities and the commercial loans as happens in the actual financial analysis.

The analysis conducted proves that there is a large variability among the different kind of industries. This demonstrates that the original differences between the European and American markets have never been completely filled over the years. Proof is the fact that there is no real evidence of defaults among the listed companies in Europe that can be comparable to those occurred in the same period of time in the US markets.

Keywords: Z-score, Altman, European Market, financial distress, prediction model