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# The effect of internationalisation on modelling credit risk for SMEs: Evidence from UK market



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### ABSTRACT

This study considers domestic and international small and medium-sized enterprises (SMEs) of the United Kingdom separately while modelling their default risk. To establish the empirical validation, separate one-year default prediction models are developed using dynamic logistic regression technique that encapsulates significant financial information over an analysis period of 2000 to 2009. Almost an identical set of explanatory variables affect the default probability of domestic and international SMEs, which contradicts the need for separate default risk models. However, the lower predictive accuracy measures of the model developed for international SMEs motivate us to compare the weights of regression coefficients of the models developed for domestic and international firms. Test results confirm that four out of the nine common predictors display significant statistical differences in their weights. However, these differences do not contribute to the discriminatory performance of the default prediction models, given that we report very little difference in each model's classification performance.

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## 1. Introduction

SMEs are the predominant type of business units in all OECD economies and account for about two-third of the total employment. Over the past decade, we have witnessed momentum in the study of their financial health, particularly after the introduction of Basel Capital Accord. Recent studies show that, SMEs demonstrate capacity to drive economic development at domestic and international levels. The International Trade Association (ITA) reports that 286,661 SMEs exported from the United States (US) in 2010, constituting about 98% of the total number of US exporting firms. This was approximately 34% of all US export revenue for that year (ITA, 2010). US SMEs also accounted for about 98% of total number of importers in the year 2010. Hence, understanding the effect of internalisation is of considerable relevance for SMEs. The OECD-APEC study (Secretariat, 2009) aimed at identifying the major barriers to internalisation facing SMEs provides renewed impetus on the importance of SMEs in the global economic platform (Lloyd-Reason et al., 2009). Lloyd-Reason et al. (2009) report that growth and knowledge-related motives are most influential factors in driving SMEs towards internationalisation. Also, Acs et al. (2001) and Gjellerup (2000) report that explosive growth of low-cost technology, better information processing and communication technology, and reducing trade barriers, along with financial deregulation, are the key forces driving internationalisation of SMEs.

Previous literature broadly agrees that internationalisation has a positive influence on firms' performance. Caves (2007) and Rugman (2009) argue that unlike their domestic counterparts, international firms enjoy less volatility in their revenue earnings due to diversified revenue streams and face lower business risk due to integrated international markets. Hout et al. (1982) report that they enjoy greater cost efficiency as they gain ability to exploit benefits from economies of scale due to higher volume of business. Benefits may also arise from differential input prices across different locations (Ghoshal, 1987; D. E. Thomas and Eden, 2004), tax saving from appropriate transfer pricing to subsidiary entities, and arbitrage (Kogut, 1993; Allen and Pantzalis, 1996). International firms also enjoy valuable learning experience while serving diverse customer needs and competing in the international markets (Kostova and Roth, 2002; Zahra et al., 2000). On the darker side, foreign exchange risk (D. E. Thomas and Eden, 2004) and increased coordination and transaction costs have adverse impacts on international firms' performance. However, the majority of empirical studies report that the benefits of internationalisation outweigh the associated costs (see among others Ghoshal, 1987).

Similarly, SMEs that export may gain from economies of scale, enhanced labour productivity and management efficiency (Kogut, 1993; Grant et al., 1988), which potentially leads to cost savings and enhanced profitability. Burgman (1996) on the other hand argues that, through diversification of operations, international firms do not benefit from reduced earnings variability, but are exposed to higher level of risk (Michael et al., 2009) arising from exposure to multiple political environments, variability of exchange rates etc. This may ultimately result in a higher credit risk. Although international SMEs face higher credit risk, they are financially more transparent to lenders and suppliers than their domestic counterparts (Beck and Demircuc-Kunt, 2006). Thus, they may have better access to finance than their domestic counterparts, and fewer problems of financial distress. Lee and Kwok (1988) report that US based multinational and domestic corporations exhibit different capital structures, and different factors lead to their default risk (Doukas and Pantzalis, 2003). This context motivates our examination of the effect of internationalisation on the default risk of SMEs. This may help lending institutions and trade creditors in better understanding and pricing of credit risk. Considering the mixed empirical arguments discussed above, at this stage it is difficult to assess the impact of internationalisation on the default risk of SMEs.

There is extensive empirical literature on modelling default risk for large firms; primarily Altman (1968)'s Z-Score model which predicts firms' default risk using historic accounting information, and Merton (1974)'s subsequent approach, which employs security market information are the predominant ones. Thereafter, we witness a substantial increase in the number and complexity of default prediction studies due to the rapid advancement in technology and methodology. Recent empirical literature also shows momentum in understanding the credit risk behaviour of small firms. Using multivariate discriminant analysis, Edmister (1972) is the first to develop a distress prediction model for small businesses by analysing 19 financial ratios over the period of 1954 to 1969. Recently, Altman and Sabato (2007) study a panel of over 2000 US SMEs from 1994 to 2002 and develop a distress

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