Impact of market-based finance on SMEs failure

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ABSTRACT

Capital Market-Based financing for Small and Medium-sized Enterprises (SMEs) is increasingly viewed as complementary to traditional bank-based financing for SMEs. In response, policymakers are recognising the need for better access of SMEs to capital markets and are making efforts to remove major impediments to their participation in capital markets. Thus, SMEs listed on stock exchanges benefit from better access to finance and reduced information asymmetry than their unlisted counterparts. This in turn shall lead to lower failure likelihood of listed SMEs. In this study, we empirically test this hypothesis and report that listed SMEs enjoy a lower likelihood of financial distress and bankruptcy than their unlisted counterparts. Although factors affecting financial distress of both listed and unlisted SMEs are almost identical, Average Marginal Effects of respective factors are strikingly higher for their unlisted counterparts. This suggests a higher vulnerability of unlisted SMEs due to changes in financial ratios. Due to the extremely low number of legal bankruptcy events, our hypothesis finds weak support when bankruptcy is used as the dependent variable in the regression analysis. Broadly, our findings support the view that stock exchange listing can relieve SMEs from external financing constraints, thus reducing their failure likelihood.

1. Introduction

Access to finance for Small and Medium-sized Enterprises (SMEs) is a perennial problem for policy makers, and thus an area worthy of scholarly debate. For several reasons, access to external finance is unanimously considered to be the most important factor hindering SMEs growth, development (e.g. Beck and Demirguc-Kunt, 2006; Ardic et al., 2012), and potentially their failure. Several reasons such as insufficient collateral, poor creditworthiness, short/no credit history, underdeveloped bank-borrower relationships, high transaction costs, and information asymmetry, contribute toward the difficulty that they face in obtaining commercial bank financing, especially long-term borrowings. This problem became more severe with the unfolding of the financial crisis toward the end of 2007. During the crisis period, SMEs suffered from severe credit constraints and many had to rely on trade credits to meet their financing needs (Carbó-Valverde et al., 2016). Belgian SMEs with a large proportion of long-term debt maturing at the beginning of the crisis faced difficulties in renewing their loans due to the negative credit supply shock, and thus were left underinvested (Vermoesen et al., 2013). This crisis also had a significant detrimental impact on the ability of innovative SMEs to access external finance (Lee et al., 2015). Further, empirical evidence also suggests that the increasing market power of banks leads to higher

credit constraints for SMEs (Love and Martínez Pería, 2015; Ryan et al., 2014), and thus a complementary source to traditional bank-based financing for SMEs might be an appropriate alternative choice.

Considering the limited use of alternative sources of financing by SMEs (Berger and Udell, 2006), efforts are being made to understand the factors affecting their participation in capital markets (see Bongini et al., 2017) and make their financial structure less dependent on bank financing (see OECD, 2015). This could be particularly relieving in conservative economic scenarios when bank lending decisions become increasingly selective due to banks' own balance sheet constraints, and the rising default likelihood of its borrowers (European Central Bank, 2014). Although trade credit, factoring and leasing might be viewed as closer substitutes to bank lending (Ferrando and Mavrakis, 2017), these alternative sources are primarily dependent upon their level of business activity, which gets adversely affected during economic downturns, and thus leads to constrained access to such alternatives.

While stock exchange listing could relieve them from financing constraints (Kim, 1999), listing might be difficult due to admission requirements and disclosure regulations (see Gao et al., 2013). This realization has led to the emergence of stock markets with relaxed admission requirements and disclosure regulations specifically targeting SMEs (e.g. Alternative Investment Market of the London Stock Exchange). Thereby, they may relax their overdependence on lending

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Table 1
Sample industrial classification.

Industry code	SIC code	Industry	Included/Excluded
1	< 1000	Agriculture, Forestry, Fishing	Included
2	1000 to < 1500	Mining	Included
3	1500 to < 1800	Construction	Included
4	2000 to < 4000	Manufacturing	Included
5	5000 to < 5200	Wholesale Trade	Included
6	5200 to < 6000	Retail Trade	Included
7	7000 to < 8900	Services	Included
Excluded	4000 to < 5000	Transportation, Communications & Public Utilities	Excluded
Excluded	6000 to < 6800	Finance, Insurance & Real Estate	Excluded
Excluded	9100 to < 10,000	Public Administration	Excluded

Notes: This table reports Standard Industrial Classification (SIC) of US firms. SIC Code is a four digit code that represents a given industrial sectors. The last column reports the industrial sectors that we included or excluded from our sample.

institutions/banks for external financing by listing themselves in stock exchanges, consequently removing the financial barriers hindering their growth and competitiveness. This further reduces information asymmetry between firms and external investors, which in turn can make access to external finance easier. As a consequence, listed SMEs are expected to experience lower likelihood of failure than their unlisted counterparts. Thus, in this study we hypothesize that the financial distress and bankruptcy likelihood of listed SMEs are lower than their unlisted counterparts, primarily due to their ability to access external market-based (equity) finance.

Considering the discussion above, we believe it is important to understand the impact of market-based finance on SMEs failure likelihood for several reasons. Improved understanding of the difference between credit risk behaviour of listed and unlisted SMEs shall allow for: (i) better pricing of credit risk by lending institutions; (ii) improved investment decisions by capital market investors; (iii) better allocation of resources by policymakers and regulators in developing capital markets targeted toward encouraging participation from small companies; and (iv) reduced constraints to external financing for SMEs. Thus we contribute to the fast growing literature on SMEs failure and their financing constraints (e.g. Bassetto and Kalatzis, 2011) by investigating whether Stock Exchange listing reduces SMEs likelihood of financial distress and bankruptcy. In particular we examine if there are significant differences in the determinants of financial distress and bankruptcy of listed and unlisted SMEs.

We empirically test our hypothesis using a sample of listed and unlisted SMEs in the United States covering a sampling period between 1985 and 2016. Firm level annual accounting information and monthly/daily stock prices data are sourced from the Compustat database. Considering the suggestion by Gupta et al. (2017), we use panel logistic regression to perform univariate and multivariate one-year financial distress and bankruptcy prediction models for listed and unlisted SMEs respectively. Twelve financial ratios with established reputations for financial distress/bankruptcy prediction in earlier studies are used as accounting covariates (see among others Altman and Sabato, 2007; Gupta et al., 2017) along with a number of appropriate control variables. In order to understand any complementary explanatory power of market variables in explaining financial distress and bankruptcy of listed SMEs, we also estimate our regression models supplementing five market variables in line with suggestions from Shumway (2001) and Campbell et al., (2008). Our definition of financial distress based on firms' financial performance is adapted from Keasey et al. (2015), and firms that filed for legal bankruptcy under Chapter 7/11 are considered to be bankrupt.

Based on our empirical findings, we report significant differences between failure hazards of listed and unlisted SMEs. At any given age, the failure (survival) rate of unlisted SMEs is significantly higher (lower) than their listed counterparts. Although an identical set of financial ratios are significant in discriminating between financially distressed and censored groups of listed and unlisted SMEs in

univariate analysis, we observe significant difference in the weights of regression coefficients of respective covariates of listed and unlisted SMEs. *Average Marginal Effects* (AME) of respective covariates for the unlisted group of firms is strikingly higher than for their listed counterparts, suggesting higher vulnerability of unlisted firms due to changes in their financial position. However, univariate regression estimates using bankruptcy as a dependent variable reveal striking differences in the factors affecting the bankruptcy likelihood of listed and unlisted SMEs. Although all twelve accounting covariates are significant in predicting bankruptcy for the unlisted group of SMEs, only seven are significant predictors for listed SMEs. Moreover, values of AMEs for mutually significant covariates are much lower for listed firms. This may be explained by the fact that listed firms are discounted much earlier than their unlisted counterparts due to their lower information asymmetry. These univariate regression results support our hypothesis that listing reduces SMEs risk of failure; as a consequence listed SMEs shall be less vulnerable to financial distress and bankruptcy risk than their unlisted counterparts.

Results obtained in our multivariate analysis are also broadly consistent with our univariate findings. We adopt the multivariate model building strategy suggested by Gupta et al. (2017) and find empirical evidence in support of our hypothesis. Out of twelve significant covariates in the univariate analysis, we find nine covariates are significant in predicting the financial distress likelihood of listed SMEs over the one-year period, with significant values of AME and excellent within-sample and out-of-sample classification performance. Multivariate models developed supplementing significant market variables reflects the complementary nature of market information in predicting financial distress of listed SMEs. Broadly, the significance of respective accounting covariates remains unchanged, and four market variables enter significantly into the multivariate model. However, our primary interest lies in the comparative performance between multivariate models developed using accounting ratios for listed and unlisted SMEs. Out of twelve highly significant covariates in univariate analysis, eight enter significantly into the multivariate setup. We also find few differences in the factors affecting financial distress likelihood of listed and unlisted SMEs. Comparison of AMEs of respective accounting covariates further reinforces our hypothesis. AME for all accounting covariates are significantly higher for unlisted SMEs than their listed counterparts, as observed in the univariate analysis. This suggests that unlisted SMEs are more vulnerable to changing financial positions, unlike listed SMEs.

However, our multivariate results are not appropriately reliable for regression models estimated using bankruptcy as the dependent variable. This is due to an extremely low number of bankruptcy events (28 for listed SMEs with accounting variables, and 21 for listed SMEs with accounting and market variables) in our sample. Only two accounting covariates are significant with mostly insignificant values of control and market variables. We understand that this is a serious drawback of this study, but the appropriate solution to this problem