Institution: University of Leicester

Unit of Assessment: 19 Business and Management Studies

Title of case study: Reducing the cost of debt for SMEs

1. Summary of the impact

According to the European Commission, over ninety nine per cent of Europe's businesses are SMEs. Their success is crucial for local enterprise, employment and taxation revenue. However, such organisations face major obstacles to accessing additional equity that typically are not faced by large corporations. This research has changed the way some Italian SMEs make decisions about the relative proportion of short-and long-term debt through adopting an optimisation model developed at Leicester's School of Management and which is now being rolled out in Italy and the UK. The Italian firms involved have reduced their cost of borrowing and enhanced their reputation with banks, hence making it easier for them to access more credit.

2. Underpinning research

This research was inspired and informed by user-engagement, and fits with the emphasis on SMEs in the School's impact strategy. As the European Commission also notes, many small firms often face problems in accessing the credit they need and are also charged high interest rates for the credit that they get. Thus they need tools that can help them improve access to credit and to reduce its overall cost (2). Dr Andrea **Moro** (Leicester since 2010), has worked with a small business consulting firm (Strategie d'Impresa Srl) in Northern Italy who have provided him with a clear idea of the importance of this issue and its potential solution.

The importance of developing an model for determining the optimal debt structures of SMEs emerged clearly in a round of ten meetings with Strategie d'Impresa's senior and junior consultants as well as SME managers in 2010-11 in the Trentino-Alto Adige and Friuli-Venezia Giulia areas of Italy. The early involvement of firms was vital in order to have a clear understanding of the issues that SMEs face in accessing finance and in building up an optimal capital structure on the top of what is reported in the literature (3).

It became clear that since SMEs do not typically look for external funds in the form of equity, they tend to finance growth through different forms of bank finance and by leveraging trade credit, that is to say, borrowing from suppliers. Improving the efficiency of the allocation of these sources of finance was deemed a major priority by both managers in firms and their business advisors. The model developed at Leicester is based on the fact that short term debt is used only when the firms need it but it is more expensive than the long term, which generates costs even when the firm does not need it (because it has some cash available in the bank). Thus, because of the differential in costs, it is possible to build up a mix that minimises the overall cost.

In 2010 a first draft version of the mathematical model for debt structure optimisation was built. The model was then empirically tested on a set of one hundred simulations, including using extreme scenarios (for example, very high short term or long term debt, or a very limited and very big difference in terms of interest rate charged) in order to verify whether the model works. The results showed that the model worked well and that the only constraint is linked to the fact that the interest rate charged on the short term debt has to be higher than the interest rate charged on the long term debt. In fact, in the case of this unlikely scenario, the best solution provided by the model is to use only long term debt. Interestingly, such a solution is perfectly logical and reported as one of the assumptions of the model. The draft version of the mathematical model was then presented in a conference in Poznan in 2010.

The resultant model was evaluated and refined using detailed data about daily cash movement of five firms in cooperation with Strategie d'Impresa Srl who also made helpful suggestions. For instance, the consultancy firm suggested consolidating part of the debt using alternative sources of

finance such as leasing on owned assets. Subsequently the model was evaluated and finally implemented with the five Italian firms, as reported in research paper 1. This paper is a good example of the entanglement of Gibbons *et al*'s mode 1 and mode 2 research – an academic paper which has its origins in practical questions for SMEs. It is anticipated that the UK stages of this research will demonstrate a similar relationship between impact, research and dissemination.

The research has been led by Moro in a team that includes two Italian consultants and two ex-colleagues at the Open University, Dr. Mike R. Lucas and Prof. Uwe G. Grimm. Related work has been done with Fink (Linz), Howarth (Bradford) and Nolte (ex Leicester)

3. References to the research

The full model is published in

1. Moro A., M. Lucas, U. Grimm, 2012, "The Debt Structure of SMEs: An Optimization Model" *Journal of Entrepreneurial Finance*, 16/1: 87-108.

Related research:

2. Moro A., M. Fink, 2013, "Loan managers' trust and credit access for SMEs", *Journal of Banking and Finance*, 37/3: 927–936
3. Howorth, C., A. Moro, 2012, ""Trustworthiness and the Cost of Credit: An Empirical Study of SMEs and Small Banks in Italy", *Small Business Economics,* 39/1: 161-177
4. Moro A., S. Nolte, 2012, "Entrepreneur Historical Performance, Firms Survival Rate and the Expected Return on Equity: A Probabilistic Approach" 21st European Financial Management Association Annual Meeting, Barcelona Spain, June 27-30, 2012.

4. Details of the impact

This is an area of crucial importance for the UK and European economy. Nine out of ten European SMEs employ less than ten people, yet SMEs provide two out of three of the private sector jobs and contribute to more than half of the total value-added created by businesses in the EU. Any research which promises to optimize the debt for these businesses will have a huge impact on the UK and Europe as a whole. The plan is to disseminate the results of the model as a smartphone application in the UK now that the Italian phase of the research has been successful.

Model Testing (January – June 2011)

Once theoretically developed and presented, the model was originally tested with 5 Italian SMEs. The test involved planning their financial needs according to the model but did not involve them actually acting on the information. At the end of the six months the plan was compared to the actual borrowing they made, and more specifically between the cost of finance they actually incurred with the cost of finance they would have incurred had they implemented the model. This provided the team and the firms with the evidence of the economic impact that the model might have on the cost of financing for the firms. In all the five cases, the difference between the costs that the firm would have incurred by implementing the model and the cost incurred suggested a clear advantage (savings between €15,000 and €50,000 a year depending on the amount of bank debt and the current debt structure). Thus, the model potentially had the capability to generate savings in the region of €20/25,000 a year for a firm with an average turnover in the region of €5,000,000 and an overall debt in the region of €3,000,000.

Implementation (June – November 2011)

In the next step each firm worked out the optimal financial structure for the following year using the model. Then, the information about the optimal debt structure was used to renegotiate their current loans with their banks and other financial institutions. The negotiation involved consolidating part of the short-term debt in a new long-term debt as well as discussions on repayment plans.

The precise impact of the change in the debt structure for these five firms was:

1) A reduction in the cost of debt

The major impact was a 5% to 16% reduction in the overall interest paid by the firm. Typically this happened because the firms had previously relied too much on short term debt and thus incurred a higher cost. In addition, previously the firm used trade credit without investigating its cost and the impact it can have on the financial structure of the firm. Now they are more cautious about using trade credit since they are aware of the cost they may incur or the discounts they may gain. For instance, one of the firms decided to pay cash to their Austrian suppliers that typically offer a 3% discount when paid in 10 days instead of being paid in 60 days. The decision about the use of trade credit is now more balanced. Firms leverage the trade credit of suppliers that do not apply any discount for cash payments and they examine carefully the any justifications for leveraging trade credit when discount for cash payment is offered.

2) An improvement in relationships with banks

The trust the banks placed in the firms was enhanced. Banks typically observed that the firms that are using the model are being more logical in their decisions about short and long term debt structure. In other words, the liabilities side of the balance sheet is rationally constructed with a debt structure that better attunes to the firm's needs. These aspects matter to banks, which are naturally concerned about the financial structure and stability of firms to which they lend.

Information about the successful implementation is currently being disseminated by word of mouth in Italy and through the activities of Strategie d'Impresa Srl that now offers the tool among its services. There are now over ten Italian firms using the model. Dr Grassi from the consulting firm commented 'The tool has proved to be extremely effective: all the firms that have used it have been able to reduce the cost of their debt and some of them even improved their relationship with the banking system.'

The latest development is that the Enterprise and Business Development Office at the University are organising a presentation of the model to a group of 20/30 SMEs that operate in the Leicestershire area. A presentation will be given by Moro and a senior consultant at Strategie d'Impresa. Participating SMEs will be offered free use of a smartphone app version of the tool in order to test it in the UK context. Moro has also had meetings with a small bank in the UK, and they intend to use the model in their evaluation of clients. Given that there were 4.8 million SMEs in the UK in 2012, the impact of even marginal adoption of this new model would be huge.

5. Sources to corroborate the impact

1. Financial Analyst ESSEDI Strategie d'Impresa Srl,
2. Management Consultant ESSEDI Strategie d'Impresa Srl,
3. CEO Cogestim Srl,
4. [text removed for publication]