1.4

Finance for Technology-based Small Firms (TBSFs)

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There are special problems for the owners of technology-based small firms (TBSFs) in raising finance for development and expansion, which are inherent in their key characteristics:

- initially, their products have little or no track record, are largely untested in markets and are sometimes subject to high rates of obsolescence;
- in their early stages, they lack tangible assets which would provide collateral;
- their value is derived from scientific knowledge and intellectual property and is linked primarily to longer-term growth potential.

In its report *Financing of Technology-based Small Firms* (February 2001), the Bank of England considers whether these characteristics disadvantage TBSFs particularly in comparison to other SMEs at the start-up stage in terms of the availability and cost of debt and equity finance.

Defining the TBSF and its financing needs

As long ago as 1987, the Department of Trade and Industry adopted a sectoral classification of 'high-technology' industries in the United

Kingdom.[1] This classification was reviewed and further extended in conjunction with the Organisation for Economic Cooperation and Development (OECD) and now includes the communications, IT, computing, biotechnology, electronics, medical/life science and aerospace industries. SMEs or new ventures in all of these display the three key characteristics listed above.

Firms located in different high-technology industries do not develop uniformly. Three main types of TBSF may be distinguished:

- where the product is subject to high front-end development costs (eg the biotechnology industry);
- where market entry and product development occur over an extended period of time, involving heavy research and development (R&D) expenditure and complex consultancy arrangements (eg medical and life sciences);
- where front-end development costs are lower and lead times from product to market launch are shorter (eg the IT and computer software industries).[2]

Within this spectrum of different types of TBSF, financing requirements and the nature and sources of finance through a firm's life cycle will vary considerably.

In general, there are four main stages: seed, start-up, early growth and sustained expansion. The difficulties in accessing the finance required are likely to change as the firm progresses through these stages.

In its first report on the subject (1996), the Bank of England considered these issues and reached the following conclusions:

- in common with SMEs generally, TBSFs depend heavily on internal funds at the seed stage (including the proprietor's own resources);
- seed and early-stage costs are likely to be higher for TBSFs than for SMEs because of the more complex product development process;
- equity risk capital is the main source for start-up and early-stage financing requirements, having regard to the perceived higher risks and longer development times applicable;

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1 Butchart, R.L. (1987): 'A United Kingdom definition of high-technology industries', *Economic Trends, 400*.

2 Moore, B. (1994): 'Financial constraints to the growth and development of small high-technology firms', in Hughes, A. and Storey, D.J. (eds): *Finance and the small firm*, Routledge, London.

- TBSFs may require second and third round funding before clear profitability is established;
- as TBSFs grow, their financing needs become more similar to other SMEs, and bank debt becomes a more important source of external finance;
- in common with most SMEs, the rate at which a TBSF progresses will depend not only on its access to appropriate finance but also to such interrelated factors as the type of product, the type of market, the firm's growth objectives and the capacity of the firm's management.

The fall-out from these conclusions is a broad implication that the staged development process entails additional risks in funding TBSFs compared with SMEs in general. The financing of the innovation and development cycle of TBSFs from the initial product concept, through prototype development, initial production and, finally, product sales demands a series of cash injections. Failure to finance adequately any part of the cycle may cause the firm to fail and this, in turn, will add to the risks of any single finance provider. The biotechnology industry provides a good example, where the gestation period up to sustainable profitability may be as long as 10–15 years, which is well beyond the investment horizons of banks and most venture capitalists rooted in their 3–5 year exit strategies.

Alternative sources of finance for TBSFs

This analysis suggests that there may be a further dimension to the longstanding debate about the 'equity gap', which dates back to the original *Report of the Committee on Finance and Industry* (1931), chaired by Hugh Pattison Macmillan.

Perhaps small firms in high-tech industries experience 'gaps' in the provision of finance. There have been numerous reports and surveys on the topic of the general availability of finance for small firms, but inquiries as to whether there are supply-side or demand-side constraints that dominate in the financing of TBSFs have been inconclusive. The most recent relevant findings are from the ESRC Centre for Business Research (2000) survey, which concluded that finance was not a major constraint for high-tech firms in the sample. The survey showed that the success rate in obtaining finance was similar for SMEs in high-tech sectors as for SMEs in conventional sectors (in

manufacturing 94.7 per cent against 89.3 per cent; in services 83.8 per cent against 90.4 per cent). However, the survey did not include any start-up firms and thus the picture is incomplete.

On the one hand, there is a strong feeling that although the United Kingdom has many high-tech high-growth businesses, it suffers a lack of investor interest and this supply-side constraint has been addressed in part by the public funding initiatives described in Chapter 1.3. On the other hand, a number of venture capitalists and 'business angels' maintain strongly that there is a demand-side shortage of 'investment-ready' companies, not in the sense of an absence of growth potential but as a reflection of owners' inability to prepare persuasive business plans and projections. Clearly, there is also a 'fashion' element in financing TBSFs with a marked downturn in sentiment during the period since March 2000 following the bursting of the IT dot.com bubble and disenchantment with the telecommunications sector focused on the overvaluation of 3G mobile telephony licences at auction.

Nevertheless, there is consensus among investment professionals that equity is more appropriate than debt for financing TBSF start-ups. Although the banks do provide finance to TBSFs, often through specialist units, a lack of collateral and market presence generally are deterrents to the provision of debt finance rather than equity for small high-tech start-ups. Given the substantial fixed costs, such as underwriting and advisory fees, public equity flotations are not a suitable route for raising relatively small amounts of capital. Moreover, for many small firms their lack of size and trading record preclude them from meeting the listing criteria of public exchanges. Therefore, the venture capital industry, the networks of informal business angels and the government initiatives now channelled through the Small Business Service (described in Chapter 1.3) are the main potential sources of private equity finance to TBSFs.

Research was commissioned by the British Venture Capital Association (BVCA) and carried out in 2000 by the London Business School to explore the relationship between investment rates of return (IRRs) and risk indicators, particularly in respect of early-stage funds over three-, five- and ten-year horizons. The research confirmed that, over long periods of time, returns on both early-stage and high-technology UK funds have fallen short of targets related to risk, while returns on later-stage and management buy-out (MBO) funds have generally exceeded such targets. There is evidence also that over the ten-year period to 1998 UK early-stage funds significantly under-

performed equivalent funds in the United States and continental Europe. However, it seems that over the last six or seven years of the 1990s early-stage UK funds outperformed UK funds specialising in later-stage finance. The influence of the present economic slowdown, even if the United Kingdom avoids the worse effects of the global downturn, may cause the more recent trend to reverse.

As noted in Chapter 1.2, the formal venture capital industry is focused on larger and later-stage deals with a marked concentration on MBOs/MBIs (management buy-ins). It is estimated that there are currently some 18,000 actual and potential business angels in the United Kingdom, investing around £500 million annually, which makes the business angel market of equal importance to the formal venture capital industry as a potential source of finance for start-ups. There is a belief that business angels could fill gaps in the provision of small-scale equity to SMEs in general and to TBSFs in particular, either working alone or in partnership with formal venture capitalists.

Perhaps the most significant potential source of equity finance in high-tech sectors such as pharmaceuticals and software may be corporate venturing. This trend is reinforced by the growing desire of larger companies to broaden their access to new technologies; conversely, TBSFs may also benefit from not only a new source of risk capital but also new management expertise and access to the larger company's production, marketing and distribution resources. At present, corporate venturing is carried out by only a relatively small proportion of UK companies, although in the period leading up to the March 2000 watershed there was an increased level of activity as more companies established venture capital units to invest in Internet or technology spin-offs.

Conclusion

Although the accumulated evidence of the Bank of England 2001 report suggests that some, but by no means all, TBSFs in the United Kingdom encounter difficulties in accessing finance at the seed, start-up and early stages, it is not clear that these difficulties are significantly greater than for SMEs generally. The most likely explanation for the financing difficulties experienced is the actual or perceived risk–reward relationship.

There was a substantial shift in quoted equity market investors in favour of high-tech stocks between early 1998 and early 2000, which

encouraged venture capitalists to invest heavily in TBSF start-ups in the expectation of high IRRs on flotation. The severe market correction post-March 2000 bears out the warnings of those who maintained that the generation of such large amounts of finance could not be sustained for companies without backgrounds of historical profit records. However, looking to the future, the capitalisations achieved by many young high-tech companies may well lead to higher realised IRRs for some early-stage capital funds over the longer term. In time, this may correct the imbalance of venture capital financing between early- and later-stage deals towards TBSFs, particularly if returns on MBOs/MBIs fade.

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