Institution: University of Sussex

Unit of Assessment: UoA 19 Business and Management

Title of case study: Financing innovative SMEs

1. Summary of the impact

The funding of innovative SMEs is widely recognised to suffer from market failures and has been an area of policy concern since the 1930s. Sussex research has contributed significantly to understanding the underlying causes of these market failures, particularly for innovative firms in the UK and EU. It has placed stronger emphasis, than was the case in the past, on addressing demand -, rather than supply-side constraints (caused by the limited number of UK firms capable of generating commercial returns). This enables it to contribute towards the design and implementation of more effective equity support.

2. Underpinning research

The standard economic model informing public policy assumes that entrepreneurs are constrained by market failures in the provision of risk/equity financing. This is a particular problem for innovative, R&D-intensive small firms because they lack collateral for debt and are hard to evaluate. This has led to policies to provide finance and then to support the market for commercial equity and debt provision. We have provided research on the most effective scheme designs and worked with policy-makers to implement changes.

Research at Sussex has addressed this issue in three ways:

- First, we have undertaken detailed studies of capability development in financial institutions, starting within the ESRC-funded Complex Product Systems (CoPS) Innovation Centre (1997–2007) and continuing through the EPSRC and ESRC projects detailed below, led within SPRU by Nightingale when he was a Senior Research Fellow.
- Second, we have undertaken econometric evaluations of a range of UK and EU policy interventions. The results show that funded firms do not perform better than unfunded controls unless certain conditions are in place. This research was undertaken by Nightingale, Tidd, Hopkins and Siepel.
- Thirdly, we have shown that capability constraints in firms, financial institutions and the government restrict the provision of funding (particularly VC funding associated with specialist managerial support) and the growth of innovative firms.

Our research on capability development in financial institutions [see Section 3, R1] goes back to the late 1990s and was some of the first to highlight that the financial services sector was technically sophisticated despite being 'low tech'. The research [R1] was co-produced with banks and showed how financial institutions' capabilities in risk management and credit scoring generated novel production economies that have transformed the provision of financing. More sophisticated credit-scoring systems have reversed the information asymmetries between entrepreneurs and lenders, allowing banks to know more about firms and move away from traditional relationship-banking [R4]. While this change has improved the provision of debt to the majority of firms with good credit ratings (i.e. >95 per cent now get loans), banks have difficulty supporting innovative, export-orientated and high-tech firms, despite their lower failure rates [R4].

As part of a second stream of research on the financing of innovative SMEs (conducted at SPRU since the 1980s) we have evaluated most UK and many EU schemes to provide SMEs with debt and equity [R4, R5]. This research highlighted the limited impact of many schemes which failed to consider the high fixed costs of equity provision, or the capabilities needed in firms and investors, or the institutional structures needed to support an effective funding escalator. As a result, policy struggled to generate the scale needed for an effective UK SME investment system to emerge, manage risks and deliver investors commercial returns in a sustainable way. Our 8S-scheme design framework highlights that a successful VC industry is small, skewed, specialised, skilled, scale-intensive, supported, systemic and economically significant and explains how to design policy to work with economic incentives.

A third stream of research explored how, rather than finance being engineered to match the requirements of large firms, small innovative firms have modified their business models to match their financial environments. This explained how high-tech UK firms differ from the equivalent US firms because of differences in VC provision and capital markets, with the UK bio-tech sector, for example, generating technology and drug projects for larger firms, but being less likely to grow than their US counterparts [R2, R3].

3. References to the research

R1 Nightingale, P. and Poll, R. (2000) 'Innovation in investment banking: the dynamics of control systems within the Chandlerian firm', *Industrial and Corporate Change*, 9(1): 113–141, http://icc.oxfordjournals.org/content/9/1/113.short (39 cites on Google Scholar).

R2 Hopkins, M.M., Crane, P.A., Nightingale, P. and Baden-Fuller, C. (2013) 'Buying big into biotech: scale, financing, and the industrial dynamics of UK biotech, 1980–2009', *Industrial and Corporate Change*, 22(4): 903–952, http://icc.oxfordjournals.org/content/22/4/903.full

R3 Hopkins, M.M., Martin, P.A., Nightingale, P., Kraft, A. and Mahdi, S. (2007) 'The myth of the biotech revolution: an assessment of technological, clinical and organisational change', *Research Policy*, 36(4): 566–589, http://www.sciencedirect.com/science/article/pii/S004873330700056X (140 cites on Google Scholar).

R4 Hutton, W. and Nightingale, P. (2011) *The Discouraged Economy: A Submission from The Work Foundation to the Independent Commission on Banking*. Available at: http://bankingcommission.independent.gov.uk/wp-content/uploads/2011/07/Hutton-Will-and-Nightingale-Paul.pdf

R5 Nightingale, P., Murray, G., Cowling, M., Baden-Fuller, C., Mason, C., Siepel, J., Hopkins, M., and Dannreuther, C. (2009) *From Funding Gaps to Thin Markets: UK Government Support for Early-stage Venture Capital.* London: NESTA, British Venture Capital Association, http://www.nesta.org.uk/library/documents/Thin-Markets-v9.pdf

Grants supporting and obtained because of the underpinning research:

The research was developed in the ESRC-funded CoPS Innovation Centre's work on finance. This led to research on funding SMEs in an EPSRC-funded project on financial innovation and innovative firms: (EP/E037208/1) *Financial and Organisational Innovation in UK Biotechnology* (held in partnership with Cass Business School (City); £891,000 with additional industry contributions in kind of £328,000), 1 December 2006– 30 November 2009.

This was developed further in a large ESRC-BIS-TSB-NESTA-funded project on financing firms (ES/H008705/1) *The Development and Exploitation of Financial Innovation* (jointly with Exeter, £595,000), 1 January 2010–31 December 2012; and in the European FP7 FINOV project (with a number of international partners, £1.1m in total).

These projects were in turn supported by smaller research contracts from the British Venture Capital Association, NESTA and the EU, which resulted in the '*Thin Markets*' report [R5] evaluating hybrid VC funds, and the ERAB EU project on funding high-growth firms in Europe. These in turn were supported by Doctoral research, such as Siepel (awarded 2011) on the performance of VCT funds.

4. Details of the impact

Our impact strategy, which started in 2009, has involved repeated engagement with policy debates to highlight ways of increasing the UK tax take by £1bn through encouraging enterprise, and removing £1bn of ineffective public policy. As a result, we have contributed towards preventing, reducing and reforming a number of poorly performing policy interventions (such as regional venture-capital funds), and replacing them with better-designed alternatives. The strategy builds on ESRC-funded research on research-impact (repeatedly evaluated as 'internationally outstanding') and involves extensive collaboration with other academic groups (e.g. 'From Funding Gaps to Thin Markets: UK Government support for early-stage venture capital', *NESTA-BVCA, 2009*), and persistent engagement with 'bridgers and brokers' in the UK policy community. We have co-authored reports and academic papers, co-organised seminars with the Department for Business, Innovation and Skills, provided fast-turn-around research support for Select Committees, spoken at party conferences, had direct discussion with Ministers, made submissions to inquiries, given verbal evidence before Select Committees and provided direct support (e.g. Prof. Nightingale was an expert advisor to the House of Lords Science and Technology Select Committee).

From these activities, we can claim to have had a major influence in three key areas:

- **Post-crisis banking reform**, where our submission to the Vickers inquiry [C1] co-authored with Will Hutton (*The Observer,* the Work Foundation), was cited in sections on support for SMEs [C1], which fed into subsequent banking reforms (such as increased capital requirements), new funding mechanisms (such as the new business bank, announced in September 2012) and policies to support the securitisation of SME loan portfolios. Our submission highlighted the value to SMEs of ring-fencing commercial banking if it changed business models in the sector, and how a range of simple policy interventions was providing financial support to SMEs at a time when the commercial banking sector was not delivering. Our suggestions on a publicly-supported business bank which would focus on areas underserved by traditional banks are currently being implemented, with £300m of funding recently announced. The beneficiaries of this change will be SMEs seeking debt-funding, policy-makers and the public, who will benefit from more choice in the market.

- **SME equity provision**, where our research has been repeatedly drawn on to inform policy on hybrid-equity schemes (co-funded by the government) [C2, C3]. Currently over half of EU VC funding comes from such schemes. Our work has highlighted the need for scale in funds, contracts that balance the distribution of risks and rewards, and the relatively long periods of time needed for an external system of professional services to emerge. We disseminated this research through a public policy report [C4] for NESTA and the British Venture Capital Association, which we led in combination with academics from seven other UK universities. The work was presented to the Access to Finance group at BIS and, on 14 October 2009 at a speech at the BVCA Private Equity Summit, a Treasury spokesperson highlighted 'We have taken on board the policy suggestions in the BVCA and NESTA joint report, *From Funding Gaps to Thin Markets*' www.betterregulation.com/doc/2/8681514. Research results were discussed directly with the Minister in 2013. This research has also informed EU policy through the European Research Area Board http://ec.europa.eu/research/erab/pdf/erab-recommendations-on-venture-capital_en.pdf based on our 8S model of VC support. As a result of our work there is now increased recognition that hybrid funds need to be larger, professional, aligned with commercial imperatives, and not regional to be commercially viable. We have also helped to change BIS evaluations to include indirect as well as direct measures such as future increases in taxation [C4]. Beneficiaries include innovative SMEs seeking funding, the UK VC sector, and the UK economy [C6].

- **The conceptual framework used by policy-makers to develop support for innovative SMEs.** A decade ago, innovation was understood within market failure frameworks, based on an R&D, linear model where entrepreneurial firms commercialised university research. Strong political constituencies supported this framing and benefited from the market distortions that policy generated. Our research fed into policy debates through bespoke policy briefs to the House of Lords Science and Technology Select Committee (Coad) and to Number 10 and BIS (Nightingale). One of these was highlighted by Vince Cable's special adviser as 'one of the best emails I have ever read' and was widely distributed in Whitehall and the London policy community (private email available on request). As a result, the civil service is more realistic now about the potential of new technology based firms [C2] and has moved away from thinking that the only constraints they need to consider are financial (i.e. the shift in emphasis from the first to the second BIGT reports and C2 C3, and C4; C5 on policy debate).

5. Sources to corroborate the impact

C1 Independent Commission on Banking (Vickers Report), Final Report, Recommendations September 2011 ISBN 978-1-845-32-829-0. Page 76, footnote 85, citation to our work on SME financing and the organisational structure of banking.

C2 http://www.publications.parliament.uk/pa/cm201011/cmselect/cmsctech/619/619we07.htm highlights the BVCA 'thin markets' study we did.

C3 The "***Potential of Venture Capital in the European Union***" study for the European Parliament (DG Internal Policies: Policy Department A: Economic and Scientific Policy; *Industry, Research and Energy*) IP/A/ITRE/ST/2011-11, PE 475.088, February 2012 highlights a large body of our work.

http://www.europarl.europa.eu/committees/en/studiesdownload.html?languageDocument=EN&file66851

C4 See also http://www.bis.gov.uk/assets/biscore/enterprise/docs/i/10-1300-improving-venture-capital-provision

C5 http://www.demos.co.uk/files/DF_-_Finance_for_Growth_-_web.pdf?1378216438 (see especially chapter 5 and appendix A).

C6 http://www.detini.gov.uk/e-synergy_limited.pdf