Section A

Institution: Middlesex University

Unit of Assessment: 17 Business and Management

Title of case study:
Transformation of the Financing and Support for Early Stage SME Innovation

Period when the underpinning research was undertaken: 2002-2020

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title)	Period(s) employed by submitting HEI
Dr Robyn Owen (previously Baldock)	Senior Research Fellow	1994-ongoing
Prof. David North	Professor of Regional Development	1972 - 2016
Dr Maja Savic	Research Fellow	2012 - 2020
Dr Suman Lodh	Senior Lecturer in Finance	2012 - ongoing

Period when the claimed impact occurred: 2013-2020

Is this case study continued from a case study submitted in 2014? No

Section B

1. Summary of the impact

The challenge of improving small and medium-sized enterprises' (SMEs) access to finance for innovation has become central to UK economic policy. Research led by Owen has demonstrated the significant role that public co-finance venture capital can play in meeting early-stage funding gaps for potential high growth and innovative SMEs. Evidence from this research has impacted the economy and innovation in two areas.

- *Expansion in scale and scope of public co-finance venture capital (VC) provision* - including the establishment of the Greater London Authority's £85m London Co-investment Fund (LCIF) to assist early-stage business innovation and the £1bn uplift of the British Business Bank's (BBB) Enterprise Capital Fund (ECF).
- *Creation and development of more effective innovative SME finance schemes* - including Oxford Innovation's revised programme of business finance support for over 550 innovative enterprises, Innovate UK's establishment of the £75m Investment Accelerator Programme and £50m Innovation Loan Pilot, and the £40m BEIS Clean Growth Fund.

2. Underpinning research

Analysis of the growth needs of SMEs, particularly in relation to access to finance, has been central to the work of the Centre for Enterprise and Economic Development Research (CEEDR) at Middlesex University over 25 years. A CEEDR evaluation of the Department of Trade and Industry's High Growth Start-Up Programme in 2002, led to a landmark identification of the policy issues arising from targeted support for high growth start-ups [3.1]. After the Global Financial Crisis in 2007, a shortfall in early-stage SME innovation funding exacerbated the problems of innovative, growth-oriented SMEs accessing finance. The negative consequences of this for UK economic growth prospects led to a policy focus upon the role of government venture capital (GVC) investment programmes designed to plug investment gaps, drive business innovation and catalyse private investment.

Baldock/Owen and North developed a prominent programme of research into GVC programme design, delivery and impact nationally and internationally, leading research and collaborations with other prominent academics in the field, including Professor Mason (Glasgow), Professor Deakins (Lancaster), and Dr Mac An Bhaird (Dublin), and specialist consultancies and practitioners (SQW, BMG, Oxford Innovation, Sanders Thomas). Between 2010-2020 research advanced through a series of 14 projects worth over £600k, commissioned variously by the Department of Business Energy and Industrial Strategy (BEIS/previously BIS), British Business Bank (BBB), Innovate UK (IUK) and the Enterprise Research Centre (ERC), including an influential CEEDR led study on *Journeys to Finance for Innovative Businesses* (2015) for BEIS (see 5.7). Collectively, this research stream has demonstrated how targeted, intensive, specialist support and finance for innovative and potential high growth (PHG) SMEs, correlated with improved SME growth [3.2]. Research involved mixed methods, including secondary data review, CATI telephone surveys, in-depth business and key informant interviews and case studies of business beneficiaries and international case studies of government equity schemes.

Findings from these multiple studies into early-stage SME innovation investment and its economic impact revealed the role that public co-finance venture capital can play in meeting early-stage funding gaps and identified the key issues that the development of innovative SME finance schemes needed to address. These results related principally to the UK, although CEEDR also undertook research into the development of venture capital funds and policies internationally (Nigeria, Finland, New Zealand, Estonia, Republic of Ireland). Key findings comprised:

(i) Role of public co-finance venture capital

- ***Imbalance between supply and demand across stages of SME development***: SME finance demand outstripped supply, particularly in the development 'Series A' funding round phase after firms had received initial seed grant and equity finance. In this pre- to early commercialisation stage an acute gap was evident in provision of required funding above angel syndicate range (£500k) and below private VC consideration (£2m+) [3.2, 3.3, 3.4, 3.5].
- ***Additionality and positive impacts of public co-finance*** in 80% of young innovative SMEs that received support through the Enterprise Capital Fund (ECF) and Angel Co-Fund GVC co-finance programmes. The ECF demonstrated positive additionality in 89% of 75 surviving assisted companies. Economic impacts included increased turnover (£57m aggregate rise), direct new jobs (758 jobs) and via subcontracting (200+ jobs), innovation (95% progressed innovations) and workforce upskilling. [3.3, 3.4, 3.5].
- ***Need to raise the EU state aid cap***: The CEEDR-led Early Assessment of the UK Innovation Investment Fund commissioned by BIS (2012), identified the need to raise the EU state aid cap in order to address the EU's widening patient capital finance gap at above £2m [3.3, 3.4].
- ***Importance of developing greater regional finance access across the UK*** from the British Business Bank and angel networks, in order to tackle UK regional venture capital funding disparities, particularly for later Series A pre-commercialisation finance [3.2, 3.4, 3.5].
- ***Effectiveness of the pari passu public investment model*** alongside business angel syndicates to enable expanded early-stage co-financing with angel syndicates [3.4, 3.5].

(ii) Issues to inform the development of innovative SME finance schemes

- ***Supply of finance***: Companies routinely faced difficulties in obtaining private match funding for grants and follow-on funding, and reaching sufficient scale and/or closeness to commercialisation to attract private investments [3.2, 3.3, 3.4].
- ***Finance demand and SME investment readiness***: Demand was strongly influenced by SME's management resource base and networking [3.2]. Analysis of the UK Longitudinal Small Business Survey [3.6] (further developed in 2019 ERC Research Paper 79) on SME access to finance and its relationship to growth and productivity, demonstrated younger and smaller SMEs were significantly more likely to be discouraged or rejected borrowers, and where financed, lacked management capabilities to exploit this to improve productivity. Firms with higher levels of business investment readiness and capability for finance management showed greater impact upon firm performance from finance schemes.
- ***Policy disconnect between funding streams limiting their impact***: CEEDR's BEIS (2015) *Journeys to Finance for Innovative Businesses* revealed the lack of integration between innovation grants, matching funds, and follow-on scale-up funding provided under different policies. The disconnect between IUK grants and private investment indicated a widening UK patient capital gap and need to encourage early-stage venture seed to Series A private VC investment [3.2].
- ***Need to improve targeting of SMEs for green finance support***: Research into low carbon innovation finance showed the importance of environmental metrics and the need to collect new forms of evidence for selecting and evaluating early-stage Cleantech SMEs [5.11].

3. References to the research

[3.1] Smallbone D, Baldock R and Burgess S (2002) Targeted support for high growth start-ups: some policy issues. *Environment and Planning C* 20(2):195-209 https://doi.org/10.1068/c0049.

[3.2] Owen R, Deakins D and Savic M (2019) Finance pathways for young Innovative SMEs. *Strategic Change: Briefings in Entrepreneurial Finance* 28(1) https://doi.org/10.1002/jsc.2243.

[3.3] Baldock R (2016) An assessment of the business impact of the UK Enterprise Capital Funds. *Environment and Planning C* 34(8):1556-1581 https://doi.org/10.1177%2F0263774X15625995.

[3.4] Baldock R and Mason C (2015) Establishing a new UK finance escalator for innovative SMEs: the roles of the Enterprise Capital Funds and Angel Co-Investment Fund, *Venture Capital: An International Journal of Entrepreneurial Finance* 17(1-2): 59-86 https://doi.org/10.1080/13691066.2015.1021025

[3.5] Owen (Baldock) R and Mason C (2016) The role of government co-investment funds in the supply of entrepreneurial finance: an assessment of the early operation of the UK Angel Co-investment Fund. *Environment and Planning C* 35(3): 434-456 https://doi.org/10.1177%2F0263774X16667072.

[3.6] Owen R, Botelho, T and Osman A (2016) Exploring the success and barriers to SME access to finance and its potential role in achieving growth. Research Paper 53, ERC https://www.enterpriseresearch.ac.uk/publications/exploring-success-barriers-sme-access-finance-potential-role-achieving-growth-research-paper-no53/

Selected funded projects: (2010-20 total of 14 projects worth £600k):

Baldock (**CEEDR-led**) and Sanders Thomas, *Early Assessment of the UK Innovation Investment Fund (UKIIF)* (2012), BEIS: £25k.

Baldock (CEEDR) and SQW's **joint** *Scoping study of SME finance in London* (2013) GLA; £25k.

Baldock (**CEEDR-led**), Sanders Thomas and BMG, *Interim Evaluations of Enterprise Capital Funds and Capital for Enterprise Fund* (2013-14) BEIS/BBB; £75k.

Baldock (**CEEDR-led**), assisted by Mason (Glasgow University) *Early Assessment of the Angel Co-Fund* (2014) BEIS/BBB: £10K.

Baldock (CEEDR), SQW, Mason (Glasgow) *Research into the Future of VC and Private Equity Finance in Northern Ireland* (2014-15) Northern Ireland Government, £80k.

Baldock (**CEEDR-led**), Savic, Deakins, with BMG *Journeys to Finance for Innovative Businesses* (2015) BEIS; £60k.

Owen (**CEEDR-led**), Botelho and SQW *Analysis of SME access to finance from UK Longitudinal Small Business Survey* (2017) Enterprise Research Centre (ERC), £7.5k; follow up longitudinal study by Owen, Harrer, Lodh, Botelho and SQW (2019) ERC; £5k)

Owen (CEEDR) and SQW *Investment Accelerator Pilot evaluation* (2018-2021; UKRI £55k.

Owen (CEEDR), SQW, Belmana and Beauhurst *Evaluation of the Regional Investment Funds* (2018-2022); British Business Bank: £190k.

Owen (**CEEDR-led**), SQW and Mair (Surrey University) *Redefining SME Productivity Measurement and Assessment for a Low Carbon Economy* (2020) ESRC Productivity Insights Network; £46k.

4. Details of the impact

A number of significant investment policy and programme impacts resulted from CEEDR's research findings. These impacts have been principally in the UK but also extended to the EU, through the European Angels Fund, and Owen's current advisory role on the design of South Africa's new Sovereign Innovation Co-Fund. Impacts of this evidence base are apparent through the: (i) expansion in scale and scope of public co-finance venture capital to meet SME early-stage funding gaps; (ii) creation and development of innovative SME finance schemes to ensure maximum positive impact.

(1) Expansion in the scale and scope of public co-finance venture capital

In 2013, CEEDR, working in collaboration with SQW, were commissioned by the GLA to research the provision of finance to SMEs in London. The resulting report, *SME Finance in London,* identified a Series A finance gap for potential high growth (PHG) SMEs and recommended the creation of a co-investment fund and the targeting of digital technology companies [5.1], with the results presented to London's Deputy Mayor. The *London Co-Investment Fund (LCIF)*, subsequently established in 2014, drew directly upon the findings of this research. A GLA official stated that this research discovered: "*a significant gap [in finance] and identified areas for potential public intervention and highlighted some potential areas of focus. This evidence was crucial in making the case for a publicly-backed finance initiative for SMEs which was subsequently developed and agreed by the LEP and the Mayor*" [5.2]. The LCIF has since fully invested its £85m fund (£25m public funding), targeted at early-stage science and technology businesses, providing funding to 129 innovative PHG digital/technology SMEs by 2019.

CEEDR's reputation for research into SME finance led BEIS/BBB to commission CEEDR in 2014 to lead evaluations (in conjunction with BMG, Lewis and Mason), of the UK's flagship early-stage SME PHG innovation co-finance programmes: the £450m *Enterprise Capital Funds* (ECFs) and the £100m *Angel Co-Fund* (ACF) [5.3]. The evaluation of the ECF's £450m public-private co-financing demonstrated positive additionality and demand for larger-scale follow-on funding, especially above £2m. These evaluations recommended boosting ECF follow-on investment capacity to optimise benefits and led directly to additional programme funding. The process of ministerial review between BEIS and the Treasury in 2014 was strongly influenced by these findings. A BBB official stated: "*The evaluation has directly supported additional programme funding. At Budget 2017, the Government committed to maintaining the ECF programme with up to £1bn of commitments over the next 10 years. Key data used from the reports include information on finance additionality, company size and growth potential, as well as the role of the funds in addressing market gap*" [5.4]. In total, the UK Treasury used this data to obtain an additional £1.4bn public funding commitment over 10 years; a near quadrupling of the first 8 years of ECF funding. To date, this has led to the creation of 31 funds, including 16 new VCs to the UK market, and £1.36bn investment in over 550 SMEs.

Findings from CEEDR's Early Assessment of the *UK Innovation Investment Fund* identified the UK's widening innovation patient capital gap. Alongside findings from the ECF evaluation, BEIS used this as key evidence in favour of raising the EU state aid cap from £2m to £5m per company per annum; a change agreed in 2014 [5.4]. Within the CEEDR-led evaluations of the Enterprise Capital Funds and Angel Co-Investment Fund, major regional disparities in VC funding across the UK were identified. This prompted the BBB and angel networks to seek to develop a greater regional presence, leading to the BBB subsidiary British Business Investments establishing the Regional Angels Programme in 2018 [5.4; 5.5].

(ii) Creation and development of more effective innovative SME finance schemes

The identification of the importance of business investment readiness in how effectively SMEs made use of finance led to Owen and SQW working in active collaboration with Oxford Innovation's (OI) business finance advisors from 2016, to improve their understanding of the market segmentation of SME finance and growth within their support programmes. This work directly informed the design of OI's ERDF funded Access to Finance (A2F) programme for Cornwall, established in 2017, which had assisted 877 SMEs by 2018. The CEO of Oxford Innovation stated: *"This has been a very helpful collaboration and the resultant [ERC] report [2016] has been used to inform the design of the new Financial Readiness Project that is being funded by DCLG to provide services to 550 businesses to enable them to identify and secure appropriate finance to grow their business"* [5.6].

Ongoing government concern over how access to finance for innovative PHG SMEs might be constraining their growth, led BEIS to commission CEEDR to produce a report entitled the *Innovative Firm's Journey to Finance* [5.7]. This identified the disconnect between UK grants and private investment and the widening UK patient capital gap report and recommended tackling this through encouraging seed to Series A private VC investment. Following submission to the Treasury Patient Capital Review (2017), its findings were subsequently used by UKRI (Innovate UK) to inform the establishment of the £50m *Investment Accelerator Pilot* (IAP) in 2017. The IAP sought to overcome the disconnect identified in the CEEDR report through matching seed VC to IUK grants. UKRI testimony [5.8] stated the Report was: *"...key in providing some of the evidence to support the initial pilot. The Report outlined a number of structural issues with patient capital... The critical importance of grant funds for early stage was acknowledged, as well as the problems of achieving sufficient… matching funding… this suggested a need for improved grants and matching funding."* UKRI subsequently commissioned CEEDR/SQW, to evaluate the IAP. Findings from this ongoing evaluation were used to justify the further expansion of this programme (to £75m), notably through co-financing with regional angel investor networks, as for example in South West England.

Research led by Owen with CEEDR colleagues, played a leading role in setting the policy agenda on low carbon innovation finance for SMEs [5.9]. Results of the *Innovative Firm's Journey to Finance* report, together with earlier findings from evaluations of the Enterprise Capital Funds and Angel Co-Investment Fund, were influential in helping Clean Growth Investment Management (CGIM) establish the *BEIS Clean Growth Fund* in 2020. A managing partner of CGIM stated the key role of these publications "...*in making the case for addressing the cleantech innovation patient capital gap at Series A stage in the UK. They also provided guidance for best practice operation and scale for public-private co-financing VC funds"* [5.10]. This new £40m fund has the potential to grow to over £100m when private funding is further raised. CGIM will draw upon research led by Owen on the role of environmental metrics [5.9] in their selection of the best business cases presented by early stage Cleantech SMEs seeking access to the BEIS Clean Growth Fund.

5. Sources to corroborate the impact

[5.1] SME Finance in London report (2013) Report used by London's Mayor, GLA and LEP as the basis for establishing the London Co-Investment Fund (LCIF) in 2014.

[5.2] Factual statement from Principal Policy Officer at GLA. Sets out use of the joint SQW/CEEDR report in the creation of the LCIF £85m co-investment fund creation.

[5.3] *Early Assessment of the Angel Co-Fund* (2014) CEEDR/BMG (**BBB confidential report**), and evaluation of the £450m public-private co-financing Enterprise Capital Fund in *Evaluation of BIS Equity Schemes* (2014) CEEDR/BMG (**BBB confidential report**).

[5.4] Factual statement from BBB official, providing details of Ministerial and Treasury Review leading to £1bn funding for ECFs and the role that the two CEEDR ECF and ACF reports played in developing BBB equity programmes and the Regional Angels Programme.

[5.5] British Business Investments (2018) Regional Angels Programme £100m Regional Angels Programme established in response to evidence that regional imbalances in access to early stage equity finance for smaller businesses across the UK needed to be addressed.

[5.6] Factual statement from Oxford Innovation demonstrating how CEEDR-led work with SQW influenced the development of business investment readiness support provided by OI, and referring to Owen et al's 2016 ERC research paper 53 (see 3.6).

[5.7] *The Innovative Firm's Journey to Finance* (BEIS Research Paper No.23, 2017) including recommendations adopted in the development of Innovate UK's Loan Pilots and Investment Accelerator Pilot schemes in relation to finance gaps (for pre commercial Series A and early stage patient capital investments) and disconnects between grant funding and matching funding.

[5.8] Factual statement from Innovate UK's Investor Partnerships Team setting out how findings from the BEIS Innovative Firm's Journey to Finance report were used in the establishment of the £50m IUK Investment Accelerator Pilot (IAP).

[5.9] Owen, R., Brennan, G., Lyon, F. and Harrer, T. (2020) Financing Cleantech SME innovation: setting an agenda. *IEEE Transactions on Engineering Management* 10.1109/TEM.2020.3005702. Paper setting out the importance of environmental metrics and need to collect new forms of evidence for selecting and evaluating early stage Cleantech SMEs.

[5.10] Factual statement from Managing Partner of Clean Growth Investment Management (CGIM) setting out how CEEDR research contributed to the establishment of the £40m BEIS Clean Growth Fund Series A cleantech innovation finance.