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# ESRC End of Award Report

### For awards ending on or after 1 November 2009

This End of Award Report should be completed and submitted using the **grant reference** as the email subject, to **reportsofficer@esrc.ac.uk** on or before the due date.

The final instalment of the grant will not be paid until an End of Award Report is completed in full and accepted by ESRC.

Grant holders whose End of Award Report is overdue or incomplete will not be eligible for further ESRC funding until the Report is accepted. We reserve the right to recover a sum of the expenditure incurred on the grant if the End of Award Report is overdue. (Please see Section 5 of the ESRC Research Funding Guide for details.)

Please refer to the Guidance notes when completing this End of Award Report.

| Grant Reference | RES-189-25-0135 | |
|---|---|---|
| Grant Title | UK Survey of SME Finances 2009 Follow On Study | |
| Grant Start Date | 05 December 2010 | **Total Amount** |
| Grant End Date | 04 December 2011 | **Expended:** |
| Grant holding Institution | University of Warwick | |
| Grant Holder | Dr Stuart Fraser | |
| Grant Holder's Contact Details | **Address** | **Email** |
| | Centre for Small and Medium Sized Enterprises (CSME) Warwick Business School University of Warwick Coventry CV4 7AL | **Telephone** |
| Co-Investigators (as per project application): | **Institution** | |
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## 1. Non-technical summary

Please provide below a project summary written in non-technical language. The summary may be used by us to publicise your work and should explain the aims and findings of the project. *[Max 250 words]*

The UK Survey of SME Finances (UKSMEF) 2009 is the third wave of a panel survey of SME

finances. The context for UKSMEF 2009 is the serious concerns of policy makers about the availability, cost and other terms of credit for SMEs following the financial crisis in 2008. The project involved collaborating with the Department for Business Innovation and Skills (BIS) to maximise the policy impact of the research.

UKSMEF 2009 showed that, compared to 2008: loan demands continued to fall; overdraft rejection rates continued to rise; loan margins continued to rise; and incidences of collateralisation increased further among low risk businesses. There was also a significant increase in the percentage of business owners that did not apply for loans because they believed they would be rejected (discouraged borrowers). Econometric analysis of the relationship between loan rejections and business growth also showed that businesses of all ages were affected by financial constraints in 2008-9 but only younger firms in 2003-8.
This suggests that the extent of financial constraints among small firms increased following the financial crisis in 2008.

A second strand of the project involved working with Barclays Bank to develop an innovative model of small business default risk for a potential commercial application. During the project a very large data-set was developed providing information relating to the current accounts, borrowing and default events for every Barclays SME customer since 2002. This part of the research has also led to the development of a dynamic panel data model of default risk which will be applied to the Barclays data-set.

## 2. Project overview

### a) Objectives
Please state the aims and objectives of your project as outlined in your proposal to the us. *[Max 200 words]*

The objectives of the follow-on study (involving collaboration with the Department for Business, Innovation and Skills and Barclays Bank) were to:

- Conduct a panel survey tracking changes in SME finances in 2008-2009.
- Conduct analysis on the data to inform policy makers about changes in the availability and cost of finance in 2008-2009.
- Conduct econometric analysis to inform policy makers about the effect of financial constraints on firm survival and growth. This involves a novel test of financial constraints based on the relationship between finance gaps (the difference between the demand and supply of finance) and firm performance.
- Develop an innovative model of small business default risk, based on the default risk distribution, with the view to developing it commercially.

### b) Project Changes
Please describe any changes made to the original aims and objectives, and confirm that these were agreed with us. Please also detail any changes to the grant holder's institutional affiliation, project staffing or funding. *[Max 200 words]*

There were no project changes.

## c) Methodology

Please describe the methodology that you employed in the project. Please also note any ethical issues that arose during the course of the work, the effects of this and any action taken. *[Max 500 words]*

Survey

UKSMEF data are based on large representative samples of private sector SMEs (<250 employees) located in the UK. Respondents were interviewed in detail about:
- The characteristics of the business and its owner (risk profiles).
- Finances used/sought in the last 3 years.
- Financial relationships.

UKSMEF 2004, 2007 and 2008 are deposited on the UK Data Archive (SN 5326; SN 6049; and SN 6314). The survey fieldwork was conducted by telephone interviews, carried out by IFF Research Ltd, an independent market research company, at their CATI centre in London. UKSMEF 2009 specifically consisted of 1,250 follow up interviews with respondents to UKSMEF 2008. The interviews were based on an abbreviated questionnaire (compared to previous surveys) focussing mainly on the cost and availability of overdrafts and term loans. UKSMEFs 2004, 2008 and 2009 form a panel data-set but may also be used for cross sectional analysis.

Financial Constraints

This analysis examines the relationship between finance gaps (i.e., the difference between the demand and supply of finance) and firm performance. On the one hand finance gaps may be the result of credit rationing by ill-informed banks. In this case creditworthy businesses may end up with none, or only some, of the funding required. If these businesses were able to reduce their finance gaps then their performance would improve.

An alternative view is that banks, due to their experience in screening loan applicants, are better informed than entrepreneurs about the firm's prospects. In this case banks may offer a smaller loan than requested in order to rein in excessive funding demands. In this scenario, the size of finance gaps (which reflect excessive demands rather than under-supply) is irrelevant for firm performance.

This approach to testing financial constraints overcomes the ambiguities associated with standard tests based on the relationship between the entrepreneur's assets and firm performance. This is because the finance gaps test generates different predictions depending on whether the entrepreneur is financially constrained or, alternatively, has excessive funding demands (whereas asset based tests have no power against a range of alternatives).

Default risk

The commercial application involves developing a structural model of the small firms' default risk distribution. Standard credit scoring models are based on a non-stochastic default risk. This would seem inappropriate for small firms due to the inherent (Knightian) uncertainty of the default probabilities in this context. Specifically, the uncertainty in the model derives from firm level uncertainty about the talent of the entrepreneur. In turn, the stochastic evolution of talent determines the dynamics of default risk from which follows the properties of the stationary distribution of default risk.

The default risk distribution implied by the likelihood of rejection is analysed in a related model. The model provides a forward looking estimate of default risk based on banks' lending decisions; this is analogous to the implied default risk obtained from bond prices/spreads for large firms. The project has developed a dynamic panel data approach to estimating the model assuming Markov rejection probabilities. Previous research on this subject was based on a cross-sectional estimator (see UKSMEF 2008: RES-177-25-0007). A related panel data model is being developed to analyse the Barclays Bank data-set which has been compiled as part of this project (see below).

## d) Project Findings

Please summarise the findings of the project, referring where appropriate to outputs recorded on the ESRC website. Any future research plans should also be identified. *[Max 500 words]*

Survey

The key findings of the summary analysis of UKSMEF 2009 include:
- Applications for finance continued to fall in 2009. For example, the rate of overdraft applications fell to 16.5% down from 18.5% in 2008.
- Overdraft rejection rates continued to rise: 14.3% of applicants were turned down outright in 2009 compared with 11.3% in 2008.
- Loan margins continued to rise in 2009: margins on overdrafts increased on average to 5.4% points over base in 2009 (compared to 3.3% points over base in 2008); and term loan margins increased on average to 4.5% points over base (compared to 2.7% points over base in 2008).
- Among low risk businesses, the incidence of collateral on term loans increased on to 70% in 2009 compared to 50.7% in 2008.
- In 2009, 15.2% of business owners were discouraged from applying for loans because they believed they would be rejected. This compares with 6.3% of business owners who felt similarly discouraged in 2008.

(See 'Developments in Small Business Finance Markets: Evidence from the UK Survey of SME Finances' (available on ROS) for further discussion of these findings).

Financial constraints

The key findings from the econometric analysis of financial constraints are:
- Businesses of all ages were financially constrained due to a lack of overdraft finance in 2003-9.
  - The fall in business growth in 2008-9 due to the increase in overdraft gaps is about 0.8% (or about 5% of the total fall in growth in 2008-9 of 14.9%

compared to average growth in 2003-8).
- However, only younger businesses (aged < 7 years) were similarly affected when looking at the period 2003-8.
  - This suggests that businesses of all ages were affected by financial constraints in 2008-9 but only younger firms in 2003-8.
  - That is, the financial crisis following Lehman's collapse widened the extent of financial constraints among small firms.
- Discouragement is an important factor lowering term loan demand and growth.
  - Here we find a fall in growth in 2008-9 due to the increase in term loan discouragement of about 1.9% (or about 13% of the total fall in growth in 2008-9 of 14.9% compared to average growth in 2003-8).

(See 'Mind the Gap: Growth, Financial Constraints and the Credit Crisis' (available on ROS) for further discussion of these findings).

Default risk

During the last year I have been working with the Barclays Business Economics and Research Team in building an SME data-set for the analysis of default risk. These data exceed my original expectations in providing information relating to the current accounts, borrowing and default events for every Barclays SME customer since 2002. For larger businesses, I will also have access to an extensive range of financial statement data. The resulting data-set will provide a panel of around 700,000 businesses observed monthly for a period covering up to December 2002 to August 2011 over a minimum of 48 variables.

The compilation of this data-set began in January 2011 and, given the scale and complexities of the task, has only recently been completed (January 2012). However, the delay to the start of the analysis has given me more time to develop the modelling and panel data techniques that will be applied to the data (see above). Going forward, Barclays have expressed in writing their interest in potentially applying the model commercially when the results of the analysis become available.

**e) Contributions to wider ESRC initiatives (eg Research Programmes or Networks)**

If your project was part of a wider ESRC initiative, please describe your contributions to the initiative's objectives and activities and note any effect on your project resulting from participation. *[Max. 200 words]*

UKSMEF 2009 is not part of a wider ESRC initiative.

## 3. Early and anticipated impacts

### a) Summary of Impacts to date

Please summarise any impacts of the project to date, referring where appropriate to associated outputs recorded on the Research Outcomes System (ROS). This should include both scientific impacts (relevant to the academic community) and economic and societal impacts (relevant to

broader society). The impact can be relevant to any organisation, community or individual. *[Max. 400 words]*

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The first impact was the carrying out of the survey itself in October 2009 with funding from the Department for Business Innovation and Skills (BIS). This followed representations which I made to senior officials in the Enterprise Directorate at BIS that a follow up survey to UKSMEF 2008 would provide policy makers with important up to date information about lending conditions for SMEs following the financial crisis in 2008.

Findings from UKSMEF 2009 formed an important part of the evidence in relation to SME finances presented in the Finance Green Paper, *Financing a Private Sector Recovery*, published jointly by Her Majesty's Treasury (HMT) and BIS in July 2010 (cm 7923). Analysis of UKSMEF data also formed part of a joint response to the Finance Green Paper with Paul Nightingale (Sussex University), Gordon Murray and Marc Cowling (both Exeter University).

A specific concern raised in the Government's response to the Finance Green Paper (published in October 2010) was whether Creative Industry Businesses (CIBs) 'are suffering more than others in accessing finance'. Accordingly the Government announced that BIS and the Department for Culture, Media and Sport (DCMS) would work together to investigate this issue. In this context, I was asked by BIS and DCMS officials to assist in this investigation by writing a report on access to finance for CIBs based on analysis of UKSMEF data. The project began in December 2010 and the final report was published by BIS and DCMS in May 2011. This report can be downloaded at:
http://www.bis.gov.uk/assets/biscore/enterprise/docs/a/11-898-access-to-finance-for-creative-industry-businesses

UKSMEF 2009 was also used in October 2010 by the Business Finance Taskforce (comprised of the 6 largest UK banks) as a source of independent data on the state of lending to SMEs. This has led to a number of commitments by UK banks to: improve banking relationships; ensure SMEs have better access to finance; and provide better information on SME finances. This includes the introduction of a quarterly independent business finance survey (SME Finance Monitor) based directly on UKSMEF. In February 2011, the four largest banks and Santander also committed under the Project Merlin agreement to put in place for 2011 new committed lending capacity of £76bn for UK SMEs.

Other impacts/outputs in relation to UKSMEF 2009 include guest speaking at a BIS ministerial presentation hosted by Lord Sugar (former Enterprise Champion) and Lord Davies (Labour Small Business Minister) in February 2010 and several presentations at BIS in 2011 in relation to the CIB research. Also, I was a key note speaker at a seminar for academics, finance professionals and business support representatives held at De-Montfort University in May 2011. The UKSMEF 2009 data-set is currently being deposited at the UK Data Archive.

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**b) Anticipated/Potential Future Impacts**
Please outline any anticipated or potential impacts (scientific or economic and societal) that you believe your project might have in future. *[Max. 200 words]*

I am currently conducting analysis of changes in SME lending conditions following the financial crisis in 2008 on behalf of the Breedon Review of business finances:
http://www.bis.gov.uk/businessfinance
The recommendations of the Breedon Review are due to be delivered before the Budget in March 2012.

I am an invited speaker at a conference hosted by the Central Bank of Ireland in Dublin in March 2012. I will be presenting research findings from UKSMEF at this conference.

Now that the task of compiling the Barclays data-set has been completed, the analysis for the default risk research is ready to proceed. This stage of the project will benefit from the deeper understanding of the issues and techniques that have been developed during the grant period and tested using UKSMEF data. Barclays have expressed in writing their interest in considering applying the model commercially when the results of the analysis with their data become available.

A paper involving a new test of financial constraints applied to UKSMEF data is being prepared for submission to the *Journal of Political Economy*. Also a paper based on the default risk research is being written up for submission to the *Journal of Finance*.

You will be asked to complete an ESRC Impact Report 12 months after the end date of your award. The Impact Report will ask for details of any impacts that have arisen since the completion of the End of Award Report.

## 4. Declarations

Please ensure that sections A, B and C below are completed and signed by the appropriate individuals. The End of Award Report will not be accepted unless all sections are signed. Please note hard copies are **not** required; electronic signatures are accepted and should be used.

### A: To be completed by Grant Holder

Please read the following statements. Tick **one** statement under ii) and iii), then sign with an electronic signature at the end of the section (this should be an image of your actual signature).

**i) The Project**

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|---|---|
| This Report is an accurate overview of the project, its findings and impacts. All co-investigators named in the proposal to ESRC or appointed subsequently have seen and approved the Report. | ☑ |

**ii) Submissions to the Research Outcomes System (ROS)**

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|---|---|
| Output and impact information has been submitted to the Research Outcomes System. Details of any future outputs and impacts will be submitted as soon as they become available. | ☑ |
| **or** | ☐ |
| This grant has not yet produced any outputs or impacts. Details of any future outputs and impacts will be submitted to the Research Outcomes System as soon as they become available. | |

**iii) Submission of Datasets**

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| Datasets arising from this grant have been offered for deposit with the Economic and Social Data Service. | ☑ |
| **or** | ☐ |
| Datasets that were anticipated in the grant proposal have not been produced and the Economic and Social Data Service has been notified. | |
| **or** | ☐ |
| No datasets were proposed or produced from this grant. | |