

ERC DATA RESOURCES

Introduction

The ERC has developed expertise in the analysis of firm-level secondary data on the UK economy as well as undertaking its own bespoke business surveys based on that secondary analysis. Staff in the ERC also manage the Global Entrepreneurship Monitor (GEM) UK project which conducts an annual survey measuring entrepreneurial attitudes, activity and aspiration.

Over the last three years ERC have developed a unified data project within the UK Data Service (UKDS) secure data environment¹. For approved researchers this provides access to a range of anonymised publicly funded data sources at the level of the individual business/respondent. A brief summary of the datasets ERC has developed within the UKDS is provided below.

Business Population Dynamics: The Business Structure Database (BSD)

The Business Structure Database (BSD) is a 'snapshot' in time of the Inter-Departmental Business Register (IDBR), which is a live register of firms registered for VAT and/or Pay As You Earn (PAYE) in the UK. The IDBR is estimated to cover approximately 99% of UK economic activity.

The 'snapshot' of the IDBR used for the BSD is taken around April annually; the reporting period for the firm is generally the financial year although the IDBR data are complimented with data from ONS business surveys and hence reporting periods can vary by firm depending on whether the record has been updated by survey data. The BSD snapshots contain approximately 2 million observations annually.

The BSD is divided into two datasets, one covering 'enterprises' and the other 'local units'. An enterprise is the overall business organisation. A local unit is a 'plant', such as a factory, shop, branch, etc. In some cases, an enterprise will only have one local unit, and in other cases (such as a bank or supermarket), an enterprise will own many local units.

For each company on the BSD dataset, data are available on employment, turnover, foreign ownership, and industrial activity based on Standard Industrial Classification (SIC)92, SIC 2003 or SIC 2007. Year of 'birth' (company start-up date) and 'death' (termination date) are also included, as well as postcodes for both enterprises and their local units.

A longitudinal version of the BSD can be created by linking together the annual snapshots, which are available from 2007 onwards. As a snapshot of the IDBR the BSD contains unique reference numbers

¹ The UKDS secure data environment is strictly controlled by the UKDS with appropriate login protocols from an accepted HEI (Higher Education Institution) IP address (verified by the individual institution) for an ONS approved academic researcher given specific access to agreed ONS datasets and other imported datasets approved by their owners. All analysis undertaken by the ERC for public dissemination in the UKDS is checked by UKDS statistical staff to ensure the identity of an individual respondent could not be revealed. It is, indeed, a criminal offence to breach these rules.

for each firm which can be used to link the data to other ONS business survey datasets that are sampled from the IDBR. Linking to other commercial datasets such as FAME is possible and ERC has undertaken some research projects linking these two datasets.

The ERC have put together the annual snapshots of the BSD to produce a longitudinal dataset covering the 1997-2014 period. The dataset is restricted to the private sector and includes employer enterprises only, that is, firms with at least one employee. Birth and death variables have also been re-created, with birth regarded as the first year in which a firm records an employee. It is this dataset which is used to develop metrics relating to the size and structure of the SME population in each LEP area and Local Authority areas outside England.

The Business Register and Employment Survey (BRES)

The Business Register and Employment Survey (BRES) is an annual survey which is used as the official source for employee and employment estimates in the UK by detailed geography and industry. BRES was introduced in 2009, replacing the Annual Business Inquiry, Part 1 (ABI/1) and has two main purposes; it is used for producing published annual employment statistics and secondly, it collects data which is used to update local unit information and business structures on the Inter-Departmental Business Register (IDBR) which is the main sampling frame for business surveys conducted by the Office for National Statistics (ONS).

BRES is a sample survey which currently samples around 80,000 businesses in Great Britain across the whole economy. Employment information is sought from businesses for each site that they operate, allowing employee and employment estimates to be produced by detailed geography (including urban-rural) and detailed industry (up to 5-digit SIC). Estimates can also be made on the split of full-time/part-time workers and whether the business is public/private.

The IDBR is used as the sampling frame from which a stratified random sample is drawn for BRES. The strata are defined by SIC 2007, by country and by employment size, with all employment sizes of businesses being covered. If an enterprise is selected for BRES, then all its constituent local units are selected and data are requested from each local unit. Broadly, the sample is stratified into: large or complex enterprises, unusual enterprises, and medium and small enterprises.

As a representative sample each responding business represents a number of similar businesses from the IDBR, based on number of employees and the SIC 2007. The sampling weights are adjusted for non-response and births and deaths within the BRES business universe and are combined with calibration weights, based on IDBR employee counts, to produce overall weights to enable the estimates to represent the business population.

The BRES sample does not cover Northern Ireland; these data are supplied directly to ONS by The Department of Finance and Personnel Northern Ireland (DFPNI). These data are added to the GB based tables produced by the BRES results system to produce UK based tables published on the ONS website.

Innovation: The UK Innovation Survey (UKCIS)

The UKIS is the main source of information on innovation within UK businesses, covering areas such as the extent of product, process and wider innovation; expenditure on innovations, drivers and

barriers to innovation; and co-operation partners. The survey is the UK contribution to the EU Community Innovation Survey, undertaken by the ONS, and is based on a stratified random sample of 28,000 firms with 10 or more employees, with sampling based on sector. The survey covers all sectors of the economy with the exclusion of agricultural businesses. In 2013, for example, UKIS achieved a sample of 14,000 firms and covers the three year period 2010-12.

ERC have created an unbalanced panel dataset covering the innovation activity of over 65,000 companies over the 2002 to 2012 period. We anticipate data covering the 2013-2015 period becoming available around March 2016. UKIS data can easily be matched with other official data sets such as the BSD described above.

Key measures covered in the UKIS are:

- Investment in R&D and innovation activity and related outcomes;
- Data on cooperation for innovation and related knowledge sources;
- Background data on the firm and its customers;
- Trade, growth and skills data although each is relatively limited.

The UKIS is a sample survey and observations are therefore weighted for any analysis. ERC have used this data for a number of econometric analyses. In addition this data was the basis for the ERC 'Geography of Innovation' report published in May 2015.

The Annual Business Survey (ABS)

The Annual Business Survey (ABS) is the largest business survey conducted by the ONS in terms of the number of respondents and variables it covers. It is the key resource for understanding the detailed structure and performance of businesses across the UK, and is a large contributor of business information to the UK National Accounts.

There are 51 different questionnaires for the ABS, made up of 34 'short' and 17 'long' versions with the short requesting totals, and the corresponding long questionnaire asking for more detailed breakdowns. As a result the ABS contains variables relating to around 600 questions and provides a number of high-level indicators of economic activity such as the total value of sales and work completed by businesses, the value of purchases of goods, materials and services; stocks; capital expenditure, and total employment costs. The contribution of different industries to the overall value of economic activity can also be assessed through a measure of value added.

The ABS is a sample-based annual survey of businesses in the UK covering the Production, Construction, Distribution and Service industries. Every year, ABS questionnaires are sent by the ONS to around 62,000 businesses in Great Britain, and by the Department for Finance and Personnel Northern Ireland (DFPNI) to around 9,000 businesses in Northern Ireland. Sampling stratification is based on SIC (2007), employment and country; all large businesses are surveyed along with subsets of medium and small businesses. As a compulsory survey response rates of 74% are anticipated by the end of the survey year; responses are weighted to the full population of firms on the IDBR.

The ABS replaced the Annual Business Inquiry, Part 2 (ABI/2) in 2009. The historical annual ABI datasets are available under the Annual Respondents Database.

The ABS data include 3 files for each year of the survey:

- Data files, which contain the responses on a reporting unit basis from the businesses selected for the survey who provided returns to the ONS;
- 'reporting unit universe' files, which are sampling files that include records on a reporting unit basis for all businesses, including those not selected by the ONS for the survey; to include variables covering employment, turnover, Standard Industrial Classification codes, legal status, foreign ownership codes
- 'local unit universe' files, which are sampling files that include records on a local unit basis for all businesses, including those not selected by the ONS for the survey; to include variables covering geography, employment, Standard Industrial Classification codes, legal status, foreign ownership codes.

The Business Expenditure on R&D Survey (BERD)

The Business Expenditure on Research and Development is an annual survey providing information on total Research and Development expenditure in the UK by business enterprises; total Research and Development employment, and sources of funds.

The BERD is a sample-based survey, drawn from the IDBR. Since 1995, the BERD survey has used a stratified random sample, stratified by Product Group and employment size-band. In the first stage of the sampling procedure the largest 400 firms are chosen; these companies have either been identified as R&D active from previous returns or from another data source. There are a number of sources that contribute towards the sampling frame for the BERD. The ABI business survey asks a filter question about whether or not a firm engages in R&D. The NI Department of Enterprise, Trade and Investment and the Scottish Executive provide ONS with R&D information on companies. These 400 firms are then sent a long form.

The sampling frame covers all industries. For those firms not receiving a long form, they are broken down in to the remaining two employment size-bands. Enterprises are then selected randomly from each size band using the sampling fractions applicable to that band. Those identified are then sent a short form. For non-selected firms, data is imputed on the basis that these enterprises have the same R&D to employment ratio as selected reporting units in their class.

The Reporting Units surveyed receive either a 'long form' or 'short form'. The long form asks for information on:

- in-house expenditure on Research and Development:
- current expenditure broken down by basic research; applied research; and experimental research
- capital expenditure broken down by land and buildings; and plant and machinery
- Research and Development commissioned outside the company
- number of employees working on Research and Development broken down by scientists and engineers; technicians; others.

Smaller firms receive a short form. This only asks for a breakdown of Research and Development by civil and defence for three questions. It requests aggregate figures for Intra-mural Research and

Development (i.e., work within the organisation including both current and capital expenditure), purchasing of Research and Development (work conducted outside the company, funded by the business) and average employment on Research and Development (number of full time equivalents).

The BERD survey has been conducted since 1994 and is an annual survey covering approximately 3,500 - 26,000 businesses.

Skills and High Performance Work Practices: Employer Skills Surveys (ESS)

The Employer Skills Surveys have been undertaken every 2 years supported by the UK Commission for Employment and Skills (UKCES). The survey is intended to provide a representative profile of HR practices and high performance work practices across almost all UK sectors. The 2013 survey contained responses from 60,000 companies weighted by company size-band. ERC have matched this data with the Business Structures Database described earlier. The ESS covers:

- Firms' qualification and skills profile;
- Difficulties with recruitment and skills deployment;
- Over-qualification and mismatch between skills and job requirements;
- Training and staff development activities;
- Team-working and other high performance work practices.

Higher Education - The Higher Education – Business and Community Interaction Survey (HE-BCI) and other HESA data

The HE-BCI survey is the main source of information on knowledge exchange activities in UK universities and is collected by the Higher Education Statistics Agency (HESA). The 2013/14 HE-BCI survey is the 14th year of this mandatory survey of all UK Universities and provides a comprehensive profile of engagement activities. The survey focuses on 'specific interactions with external partners, such as contract and collaborative research, consultancy, continuing professional development and intellectual property, rather than attempting to assess the entire contribution of higher education institutions as throughout their teaching and research activities'. Key metrics covered by the survey include:

- Value and number of research contracts by each university with small and larger firms. Same data for consultancy contracts, training contracts and facilities and equipment contracts.
- Data on the strategic objectives of universities and their commitment to the development of local business etc.

ERC have aggregated this data to LEP level. The data, therefore, has the potential to add to the range of contextual variables which can be used to understand business performance at the local level.

The UK Longitudinal Small Business Survey (UKLSBS)

The Department of Business Innovation and Skills supported by a number of other Departments and Agencies recently commissioned the first wave of the UK Longitudinal Small Business Survey or LSBS. Covering around 15,500 respondents the LSBS builds on previous BIS Small Business Surveys but is broader in scope and larger in size. Anonymised data from the first wave of the LSBS will be deposited in the [UK Data Archive](#) in March/April 2016 following the publication of the initial analysis

report by the Department. This means data will be available for an ERC-GT research programme with Year 2 data available in March 2017.

The UKLSBS covers the following themes in 2015:

- About the business
- Employment
- Exports
- Business capabilities
- Obstacles
- Finance
- Pensions
- Innovation
- Business support
- Training
- Technology
- Turnover
- Future intentions

Many of these themes will be a regular feature of the survey. Additional topics in 2016 will include social enterprise. ERC are part of the Steering Group for this survey and run the Survey User Group.

Global Entrepreneurship Monitor (GEM) UK

The Global Entrepreneurship Monitor (GEM) research consortium has been measuring entrepreneurial activity of working age adults across a wide range of countries in a comparable way since 1998. In 2014, the study conducted surveys in 70 sovereign nations and represented the world's most authoritative comparative study of entrepreneurial activity in the general adult population.

GEM's primary focus is on the study of three areas:

- To measure differences in the level of entrepreneurial activity between countries
- To uncover factors leading to appropriate levels of entrepreneurship
- To suggest policies that may enhance the national level of entrepreneurial activity.

The 2014 GEM global study was based on an analysis of adult population survey (APS) results from 70 economies and more than 198,000 adults across the world. The core of the APS is identical in each country and asks respondents about their attitudes towards entrepreneurship, if they are involved in some form of entrepreneurial activity, and if so what their aspirations for their business are. The global GEM Executive 2014 Report was published in February 2015 and can be downloaded from www.gemconsortium.org.

From the GEM survey, we examine individual entrepreneurs at three key stages:

- **Nascent entrepreneurs:** The stage at which individuals begin to commit resources, such as time or money, to starting a business. To qualify as a nascent entrepreneur, the business must not have been paying wages for more than three months.

- New business owner-managers: Those whose business has been paying income, such as salaries or drawings, for more than three, but not more than forty-two, months.
- Established business owner-managers: Those whose business has been paying income, such as salaries or drawings, for more than forty-two months.

In addition, we measure general intention to start a business by asking individuals if they expect to start a business within the next three years. Finally, we ask individuals if they have sold, shut down, discontinued or quit a business, in the past year. It is important to understand that the main subject of study in GEM is entrepreneurs rather than the businesses that they run. GEM measures the entrepreneurial activity of people from intention to exit.

GEM UK is one of the largest, longest-running national studies of entrepreneurial activity in the world, with over 250,000 individuals interviewed since monitoring began with a sample of 1,000 adults in 1998. In 2015, 9,500 adults aged 16-80 were interviewed. This large pooled cross-sectional dataset is now seen as the authoritative source on UK entrepreneurial 'activity'. Each respondent has a postcode identifier and are allocated to a range of UK geographies (e.g., LEPS, Local Authorities, areas of multiple deprivation, urban/rural spectrum using DEFRA and ONS definitions)

Building Longitudinal Datasets

ERC has recognised that there is a general paucity of robust longitudinal data in the UK on businesses and individual entrepreneurs. This needs to be addressed and some progress has been made by the ERC

Longitudinal data resources now held within the ERC SDS project area include:

- Longitudinal version of the population of all employer enterprises (1997-2015) using the Business Structure Database (BSD) – trends in entries, exits, survivors by size, sector and location have been analysed. This work is connected to wider work with the OECD to produce international comparative data. In addition, this dataset has been used to provide analysis for BIS and the BBB on 9 business support products including GA.
- ERC have created an unbalanced panel dataset within the UKIS covering the innovation activity of over 65,000 companies over the 2002 to 2012 period. We anticipate data covering the 2013-2015 period becoming available around March 2016.
- ERC are advising BIS on the design and implementation of the new Longitudinal Small Business Survey (LSBS) which was launched in 2015 – previously the BIS Small Business Survey (SBS). We will be building it into our research activity when the data from the first wave becomes available in Q2 of 2016.
- ERC began work in 2013 on a UK Panel Study of Entrepreneurial Dynamics (PSED) building on the annual GEM UK surveys. This is designed to track nascent and new business owners identified in the GEM surveys over time to understand more clearly the nature of start-up process and the process of building a scalable business over time.

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