



Submission to *Inquiry into Economic Statistics*

Economy, Jobs and Fair Work Committee, Scottish Parliament

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Background

We welcome the Scottish Parliament Economy, Jobs and Fair Work Committee's inquiry into Economic Statistics in Scotland.

The continuous development of existing and new data sources and their accessibility from across a wide range of economic indicators remain key to effective policymaking.

This written evidence focuses on issues related to the measurement of '**competitiveness**' (one of the policy goals that underpin the Scottish Government Economic Strategy). Its aim is not to be exhaustive in its coverage, but rather to assess availability and highlight scope for improvements in a few key areas that are central to the measurement of an economy's performance and to the setting of policy.

There is no consensus on the definition and measurement of 'competitiveness'.

- Traditionally, it has been based on aggregate performance indicators such as 'labour productivity' or 'unit labour costs'.
- Empirical evidence shows that unit labour costs are not a good predictor of a country's export performance.
- Recent research has shifted the focus to a 'finer' understanding of competitiveness based on firm-level information, revealing how aggregate performance (e.g. industry/regional productivity, trade flows, etc.) relates to firm-level factors.
- Assessment needs to consider not only average performance but also the dispersion of firms' performance indicators within an industry.
- Sectoral linkages, both domestically and internationally, are also an important channel through which changes at the microeconomic level affect both interconnections between firms and sectors and macroeconomic performance.

'Competitiveness' is a multifaceted concept.

We suggest that **firm-level microeconomic data need to complement aggregate data in the measurement of competitiveness**. It is therefore important to considerably strengthen firm-level data already available, their accessibility, and ensure their comparability and consistency across regions and countries.

Data Requirements

Reliable economic data at different levels of disaggregation (country, industry, and firm) are necessary to reflect the complexity of an evolving economy. In particular, data need to be able to capture:

- (i) The **micro-economic adjustments** that underpin aggregate performance.

It is not 'nations' that trade, produce and 'compete', but firms.

Altomonte *et al*, *Measuring Competitiveness in Europe*, Bruegel, 2016

- (ii) The **interconnectedness of the Scottish economy** with the rest of the world (including the rest of the UK) and its reliance on the **Global Value Chains (GVCs)**.

Input-output linkages across national borders play a key role in the propagation of aggregate fluctuations across countries.

Acemoglu *et al* "The Network Origins of Aggregate Fluctuations", *Econometrica*, 2012.

GVCs are a well-established vehicle for productivity spillovers to local firms.

Criscuolo *et al*, "The Relationship between GVCs and Productivity, OECD, 2017.

- (iii) The **multifaceted nature of competitiveness** which includes price/cost, quality, and organisational dimensions.

Firms specialised in high-quality segments compete via innovation, skill-intensity, organisational practices.

Bas *et al*, "Towards a better assessment of competitiveness", MAPCOMPETE, 2014

The **emerging consensus** is that aggregate competitiveness indicators at the country and sectoral levels can be obtained via a **bottom-up approach** from firm-level data in a given sector or region (MAPCOMPETE Project, <http://mapcompete.eu/>). Relevant firm-level indices can be categorised as:

- Productivity (labour and total factor productivity, TFP)
- International activities (number of export destinations, values, volumes of exports and imports, etc.)
- Firms' dynamics (growth rates, entry and exit)
- Other (ownership, R&D expenditure, management practices, etc.).

In addition, for policy analysis, the above measures should underpin and be used in conjunction with:

- Export, import and foreign direct investment (FDI) statistics to show measures of value and volume for Scotland. These statistics ideally would need to be disaggregated by industrial sectors, country of origin, and destination.
- Input-output data reflecting the international origin of different inputs used in the sectoral production processes.

Data Availability – Strengths and Limitations

At the **microdata** level, across the whole of Europe, the **current availability of data is patchy and not easily accessible**; thus it does not enable a proper assessment of micro-based competitiveness.

Firm-level datasets are typically obtained from customs records and surveys carried out by national government statistics agencies as well as from firms' annual financial statements.

The **Competitiveness Research Network (CompNet)**, set up by the EU System of Central Banks to analyse competitiveness, has adopted a common protocol to extract information from existing firm-level datasets collected by National Central Banks and Statistical Offices, but **their sample does not include the UK**.

Other reports are made available by **private data providers** at a significant cost, e.g.: U.K. and Ireland (FAME), Germany (Dafne), Europe (Amadeus).

FAME (<https://fame.bvdinfo.com/version-2017713/Home.serv?product=fameneo>) is a financial reporting dataset produced by the Bureau van Dijk which includes profit and loss, and balance sheet information (as filed with Companies House) for most UK firms. It also reports "overseas turnover" and captures export sales and includes the overseas sales of the foreign affiliates of a UK firm.

FAME is widely used because UK customs data were not accessible until recently and the Annual Business Survey (ABS) did not contain any information about exports until 2011 and only has a binary indicator for export status since then.

In **Scotland**, aggregate statistics are underpinned by a great deal of the desirable firm-level data collected mainly by the ONS. The Scottish Government also boosts the size of ONS samples in some surveys and/or undertakes its own surveys.

Effective scrutiny and assessment of the determinants of differences across firms requires being able to link firm-level performance indicators to practices within the firm, such as labour market and management practices. Crucial to this is an Inter-Departmental Business Register (IDBR) number that enables the value of a single survey to be greatly increased through links to administrative data and other surveys. There are, however, issues concerning:

- **Reliability**
- **Accessibility and 'Linkability' across datasets**
- **Gaps in provision**

Firm-level data typically suffers from a number of issues which affect their **reliability**, such as:

- **Sample size,**
- **Sample coverage varying across indicators,**
- **Sample composition changing** over time (including due to entry and exit of firms).

Self-reported data are particularly prone to reliability issues. For instance: FAME underestimates export activity relative to HMRC, e.g.: SMEs often report no exports in FAME when they have exported according to HMRC data (Breinlich *et al*, University of Nottingham, 2017).

Greater reliance on administrative rather than survey-based data can mitigate these problems.

Following the Bean Review (2016), the ONS plans to start using data from VAT returns to augment its existing paper-based compulsory business surveys.

There are **Accessibility, Reliability, Linkability** issues with Scottish data. For example:

- The **Scottish Annual Business Statistics (SABS)** microdata could conceivably be made available under secure access conditions ensuring protection of confidentiality. At the moment it is not.
- The **Global Connections Survey (GCS)** is sent to approximately 5,500 businesses, but has a **significant non-response rate** (of about 70%).

Sampling appears to be **biased** towards known exporters and this prevents capturing the differences between exporters and non-exporters as well as changes in export status over time.

- **Export Statistics Scotland (ESS)** is based on the GCS: data is aggregated to the sectoral level and by country of destination (including the rest of the UK), but is **neither accessible at the firm-level** nor is it **linkable to other firm-level surveys using the IDBR number**.

Gaps in Provision concerning **trade data** include:

- The **Index of Manufactured Exports (IME)** uses **survey data** collected monthly by the ONS. The sampled firms are **legally obliged to respond**, but the Scottish **sample is small**. The index provides a quarterly time series of the growth (in real terms) of export sales in the manufacturing industry. **Service industries** are collected by the ONS, but **not used in the IME**.
- **International trade data only covers exports. Import data** are not available either from overseas or from the rest of the UK. At the aggregate level, they are **obtained as residual** component within GDP (essentially as a measure of excess demand).
- Relatedly, in the **Input-Output (IO)** tables **imports are determined as residuals**.

The IO tables reflect another key problem: even at an aggregate level, **it is not always possible to extricate distinctly Scottish economic data from overall UK data**.

Thus, in the IO tables, for many items, direct estimates for Scotland are not available. The compilation process for the Scottish tables is therefore a mixture of a top-down apportionment driven approach, and a bottom-up raw data driven approach.

The **World Input-Output database (WIOD)**, (<http://www.wiod.org/home>) is a time series of Input-Output (IO) tables covering 43 countries and the 'Rest of the World' for the period 2000-2014 and with data for 56 sectors classified according to the International Standard Industrial Classification (ISIC Rev.4).

WIOD is based on officially published IO tables merged with national accounts data and linked by statistics on bilateral trade flows, thus providing a comprehensive summary of all transactions in the global economy between industries and final users across countries.

The combination of national and international flows provides a **powerful tool for the analysis of global production networks**.

Further Gaps in Provision concern firm-level practices (e.g. management).

For existing UK-wide datasets, the **Scottish sample is often small** and **lacks cross-over** to other Scottish economic data. An example of this is the:

- **Workplace Employment Relations Survey (WERS)** which provides large-scale evidence on industrial relations in Britain collecting data from of employers and employees across almost every sector of the economy.

A very promising development is the **Management Practices Survey** launched in 2016 by the ONS for British manufacturing businesses, with a plan to include service industries in the future. It is based on the *US Management and Organizational Practices Survey* (MOPS) covering business practices on production, key performance indicators, targets and employment practices. Importantly, **the survey was designed to be linked to other firm-level data using the IDBR number**, thus allowing the connection between management practices and productivity and financial performance to be examined. Regional samples were small in the pilot study, but there is an intention to increase the UK sample in the future.

The **World Management Survey (WMS)** (<http://worldmanagementsurvey.org/>) aims to produce a dataset measuring the quality of firm-level management practices across the world.

The data unveils a causal impact on inter-firm productivity differences of management practices such as competition, governance, and information frictions (Bloom and Van Reenen, *Quarterly Journal of Economics*, 2007).

A lack of management quality is a plausible candidate explanation for the UK's relatively small share of high productivity firms

Andy Haldane, Chief Economist, Bank of England, *Productivity Puzzles*, March 2017

Challenges and Opportunities – A Summary

Significant progress has been made both at the UK and Scottish level in producing data that enable the analysis of competitiveness, productivity, and their drivers.

In Scotland, alongside issues of **sample size** and **coverage** in some areas, there remain issues of **data availability**, particularly at the firm level; by and large, firm-level data exists and is being used to construct aggregate data but significant constraints in terms of **accessibility** exist.

Quality and Availability of data (accuracy and coverage) could be improved in a **cost effective manner** by:

- **Exploiting the increasing access to administrative records** (e.g. by collecting key variables via VAT returns).
- **Accessing information via data sharing and strengthening collaboration with ONS and HMRC** to ensure their efforts following the Bean Review allow for regional disaggregation by embedding administrative data into the production of statistics for UK countries and regions.

It is encouraging that the latest Scottish Economic Statistics Plan mentions ongoing discussions with HMRC to access firm-level trade data.

- **Exploiting existing data collection mechanisms**, e.g. modifying existing questionnaires.
For example, a way to address the limitations of the GCS would be to follow up non-exporters with a brief question to find if their status has changed.
- **Expanding sample sizes**, e.g. by: empowering the Scottish Government to require businesses' response by law (as for most ONS surveys); directly contributing to UK surveys, as was done at the UK level with the Annual Business Survey; or by maximising response rates in existing projects such as the GCS.
- **Ensuring continuity in timeframes and variable definitions** in longitudinal data. It is important for data documentation to list methodological changes over sample periods and to allow tracking these changes from all years.
- **Enabling data linkage** by providing key identifiers to join different datasets.
- **Facilitating international comparability** required by a great deal of policy evaluation work. This requires representativeness of sample size as well as adoption of common protocols in data collection (e.g. CompNet approach).

A lack of international comparability, in addition to insufficient sample size, can be a significant barrier to participation in international research projects. For instance, a particular strength of the IME is that the source data is collected according to Eurostat protocols.

- **Strengthening collaboration with academic researchers**, e.g. by participation as stakeholders in grants applications to obtain primary data (see also, the Bean Review's recommendation for a hub for the development and application of data science techniques).

Accessibility could be improved by:

- **Facilitating easier access to administrative data.** To some extent, this involves overcoming cultural barriers regarding the openness of administrative data.

The **Administrative Data Research Network (ADRN)** is a good step in this direction but long lead times still exist, especially when aiming to access data from HMRC or DWP. Likewise, obtaining permissions to access secure data hosted by the UK Data Service can also cause significant delays in projects commencing.

International Practices

There is **great variation across countries** in the availability and computability of competitiveness indices that can be obtained through a *bottom-up* approach.

The **best practices** in Europe rely on **data existence, ease of merging different sources** and clarity in the rule of **access**: e.g., Belgium, Estonia, Finland, France, Hungary, Ireland, Italy and Sweden offer the widest degree of computability and allow different datasets to be easily linked.

In **Sweden**, the *Structural Business Statistics (SBS)*, the *International Trade Survey*, *R&D Survey*, and the *Business Registry* can be linked. All databases are collected by the Statistical Office Sweden (SCB) and firm-level data can be matched through a firm ID.

In **Germany**, the *German Federal Agency* has Research Data Centres (RDCs) in each of the Regional Statistical Offices that centralise the preparation, management and supply of microdata.

The Inter-Departmental Business Register (IDBR) number is the key to enable linkages in the UK.