

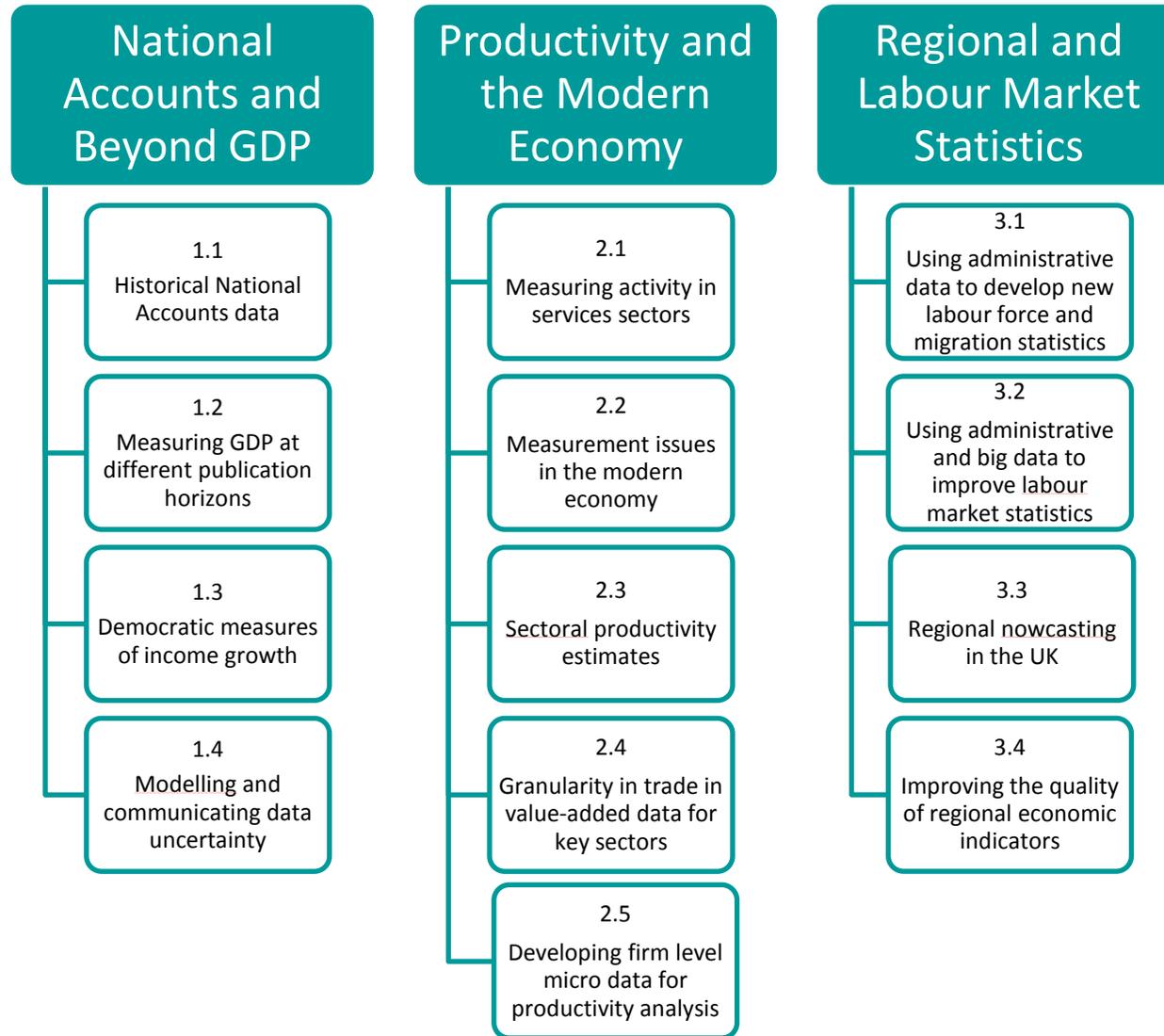
# ESCoE RESEARCH PROGRAMME

The Bean Review has highlighted the significant challenges and opportunities that the ONS and wider economic statistics community face in light of rapidly changing technologies, which raise a host of conceptual issues around measuring economic activity and which are revolutionising the ways in which economic statistics can be compiled. ESCoE's aim is to deliver research that enables ONS to meet its vision of delivering world-class economic statistics in this environment. Our research programme will provide cutting-edge research against agreed priorities, supporting the transformation programme ONS has put in place. In particular, dictating the research programme and delivery, are the needs for research that will allow ONS to exert greater influence over the direction of travel of the international standard-setting agenda and that will meet user demands. These considerations influence ESCoE's research programme and the research team and networks established with the ESCoE. The research programme is delivered via three mechanisms: the core research programme, ad-hoc project support to ONS, and additional contractual research to augment and reinforce the core mission of the ESCoE.

The core research programme for the period to end 2018-19 is outlined below. As shown on the next page our core research programme is currently organised in thirteen projects under three broad work streams: National Accounts and Beyond GDP, Productivity and the Modern economy, Regional and Labour Market statistics. Each of the thirteen projects is headed by senior academics, tasked with ensuring that the research is carried out to world-class standards and helping to re-establish statistical enquiry as an important research topic in economics. All of our projects use advanced tools from economic theory, econometrics, mathematics and statistics to explore novel uses of data and take forward the development of economic statistics.

We also illustrate below our projects against the themes of the ONS Economic Statistics and Analysis Strategy (ESAS). Most projects cover several of the ten themes listed in the ESAS, which are interdependent and overlapping. Our core research programme is thus broad in scope and includes research under each ESAS theme addressing many of the detailed priorities listed there. We envisage that some of these priorities will be supported by ESCoE through ad-hoc project support to ONS.

## ESCoE RESEARCH PROGRAMME



## SUPPORTING THE ONS ECONOMIC STATISTICS ANALYSIS STRATEGY (ESAS)

ESAS Theme	ESCoE Work Stream and Project Number												
	National Accounts & Beyond GDP				Productivity & the Modern Economy					Regional & Labour Market Statistics			
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4
Measurement of the National Accounts	■	■	■	■		■						■	
Measurement of trade and international statistics							■	■					
Measurement of services sector activities					■	■	■	■			■		
Measurement of devolved, regional, and local statistics										■	■	■	■
Measurement of the labour market										■	■		
Measurement of prices			■		■	■	■	■					■
Measuring the modern economy – the digital revolution					■	■	■	■					
Beyond GDP – broader measures of welfare and activity			■			■					■		
Exploitation, interrogation and understanding of administrative data and other large datasets		■	■			■			■		■		■
Understanding the productivity puzzle					■	■	■		■				

ESCoE's research programme also offers research in areas that are not detailed in the ESAS, but which clearly sit very well within the overarching vision of economic statistics transformation and the objectives of the ESAS. For example, our programme includes work on international migration statistics (project 3.1) and indicators of economic uncertainty (project 2.5), which are in high demand by users of UK economic statistics at this time. And our research programme includes work on better communicating to users and commentators the uncertainty and limitations around economic statistics (project 1.4), in direct response to recommendations in the Bean Review.

The core research programme will provide ONS with research that addresses established statistical limitations, such as the absence of double deflated volumes measures of GDP (project 2.3), inadequate measurement of the service sector (projects 2.1, 2.2 and 2.4) and regional statistics (projects 3.1, 3.3 and 3.4), as well as the need for longer runs of data (project 1.1). Further, the research programme will evaluate the quantitative implications for measurement of economic activity associated with the modern and digital economy, including e.g. evaluation of methods for gauging the magnitude of intangible investment (project 2.2), re-developing the multi-factor productivity methodology to better accommodate new inputs (project 2.3), exploring how new digital business models map into existing statistics (project 2.2), and understanding the impact of global supply chains on trade and GDP statistics (project 2.4).

Our research programme explores new methods for collating and improving economic statistics from existing data sources, making better use of administrative data, other microdata and data from a range of sources to produce better regional (projects 3.1, 3.3 and 3.4) and labour market statistics (projects 3.1 and 3.2), more timely and accurate measures of National Accounts aggregates (project 1.2), and new aggregate indicators of welfare (project 1.3). We explore the possibilities for using novel data sources to inform the development of economic statistics, including occupational and service sector classifications (projects 2.2 and 3.2) and measures of intra UK trade (project 3.4), and further develop and analyse business microdata to better understand the productivity puzzle, investment and innovation patterns (project 2.5).

Below we provide further detail on the individual projects under development within the ESCoE.

## **Work Stream 1 – National Accounts and Beyond GDP**

### **Historical National Accounts Data (Project 1.1)**

**Lead:** Jagjit Chadha (NIESR, Kent)

**Co-Leads:** Martin Weale (King's), Nick Oulton (LSE, NIESR) and Ryland Thomas (Bank of England)

**Expected end date:** Q1 2018/2019

**Objectives:** The ONS would like to provide historical national accounts data on its web site, so as to match the standards of provision of other statistical offices such as those in the Netherlands and the United States. Historical series were published by Feinstein (1972) but there are a number of obstacles to using them immediately.

The first task for this project will be to draw up an inventory of data sources. In the light of the data inventory, we will form a view of how far it is possible to construct back national accounts data that are materially different from the balanced national accounts presented by Sefton and Weale, except in terms of chain linking. For the period from 1920 to 1946 there is probably very little more that can be done. From 1946 onwards the approach we adopt to producing GDP and sectoral data on a consistent basis will depend on what further data are available as well as the treatment of volume indicators.

### **Measuring GDP at different publication horizons (Project 1.2)**

**Lead:** Andrew Harvey (Cambridge)

**Co-Leads:** George Kapetanios (King's), Simon Kirby (NIESR) and Ivan Petrella (WBS)

**Expected end date:** Q4 2018/2019

**Objectives:** Our overarching aim is to enhance the quality of the estimates of GDP and their subcomponents across the publishing horizon, from the preliminary release to the 'final' Blue Book measure, and further to increase the informational content available to users of ONS data.

This includes providing a procedure which adds greater structure to the rebalancing process of GDP via econometric modelling; providing guidance in how to identify and organise additional data outside of official statistics such that they can be used within predictive econometric models; building and evaluating a suite of nowcasting models which are designed to deal with large datasets; and investigating the ability to identify turning points in real time through econometric methods.

### **Democratic measures of income growth (Project 1.3)**

**Lead:** Martin Weale (King's)

**Co-Leads:** Nick Oulton (LSE, NIESR)

**Expected end date:** Q2 2018/2019

**Objectives:** The ONS acknowledges that GDP is flawed as a measure of societal welfare and it therefore wishes to make a wider range of measures available to policy-makers. One of the limits of GDP-related indicators of welfare (such as real national disposable income) is that they in effect

weight together the welfare of individual households on the basis of their relative incomes or consumption. A recognition that this is less than satisfactory has prompted the ONS to give more focus to the distribution of income. This project will investigate alternative aggregate indicators of welfare which are not subject to the criticism that they are, in effect, weighted by income or expenditure.

The first issue to be addressed is production of quarterly estimates of median household income and the development of a nowcasting model which can be used to produce timely estimates. The next tasks will be to develop equal-weighted measures of income growth, explore the issues raised by deflation and investigate how sensitive the answers are to the choice of deflator.

### **Modelling and communicating data uncertainty (Project 1.4)**

**Lead:** James Mitchell (WBS)

**Co-Leads:** Ana Galvao (WBS) and Ivan Petrella (WBS)

**Expected end date:** Q1 2019/2020

**Objectives:** This research project has two aims. Firstly, to measure uncertainty due to data revisions caused by transitory and permanent statistical uncertainty in key macroeconomic variables. Secondly, to analyse the effects of communicating this data uncertainty on a range of decision makers, with uncertainty modelled, communicated and visualised in different ways.

This project, therefore, aims to complement ONS plans and ambitions, and build on the recommendations in the Bean Review (pages 10-11), to better meet user needs by both helping users improve their understanding of ONS data and by helping the ONS better understand how their data are interpreted and used by the public and policymakers.

## Work Stream 2 – Productivity and the Modern Economy

### Measuring activity in services sectors (Project 2.1)

**Lead:** Mary O’Mahony (King’s)

**Co-Leads:** Sylaja Srinivasan (NIESR, Bank of England), Augustin de Coulon (King’s) and Martin Weale (King’s)

**Expected end date:** Q4 2018/2019

**Objectives:** The Bean Review highlighted the need for better measures of services activities given their increasing importance as a share of value added and employment. Also much of the increased productivity growth associated with the information technology revolution occurred in services sectors. Although there have been significant improvements in measuring service sector activity, both conceptually and practically, there is no doubt that much more effort is required.

This project will investigate the deficiencies in the current measures of services activities for the UK and how might they be improved. Specifically this project will:

1. Define and value the activities provided by the services sector in measuring nominal output
2. Identify the most appropriate deflators to use to construct real output measures and how these might be adjusted for quality change
3. Identify additional measures that can be used in measuring real output, such as volumes of activity, in the public sector and how these might be adjusted for quality
4. Identify which sources of data might be employed to estimate outputs and prices in the services sectors

### Measurement issues in the modern economy (Project 2.2)

**Lead:** Diane Coyle (Manchester, NIESR)

**Co-Leads:** Rebecca Riley (NIESR), Hasan Bakhshi (Nesta) and Mary O’Mahony (King’s)

**Expected end date:** Q4 2018/2019

**Objectives:** This project will address the following: How do new digital business models map into existing statistics, and how might measurement approaches evolve in the light of this?; Improving measurement of the service sector; Better measurement of firms’ investments in intangible assets; Implications of the digital revolution for the measurement of economic welfare.

Some of these issues will be explored in a second stage of the project beyond the end date shown.

### Sectoral productivity estimates (Project 2.3)

**Lead:** Nick Oulton (LSE, NIESR)

**Co-Leads:** Sylaja Srinivasan (NIESR, Bank of England), Rebecca Riley (NIESR), Mary O’Mahony (King’s)

**Expected end date:** Q4 2020/2021

**Objectives:** This project seeks to examine if, and the extent to which, measurement error contributes to the productivity puzzle. This will include revisiting the sector level productivity

estimates in the light of advances in measurement and examination of both growth accounting and productivity levels relative to our major competitors. The main issues that will be addressed in this project will be:

1. How is industry real output by sector affected by a movement from single to double deflation of value added?
2. How have revisions to output and input measures, the system of national accounts and adding new inputs affected relative industry performance in terms of productivity growth?
3. What impact might revisions to tackle well known problems in measuring service sector activities and in measuring the modern economy have on the shares of industries in aggregate output?
4. Are there issues specific to levels accounting that require addressing?

### **Granularity in trade in value-added data for key sectors (Project 2.4)**

**Lead:** Giordano Mion (Sussex)

**Co-Leads:** Monique Ebell (NIESR) and Sylaja Srinivasan (NIESR, Bank of England)

**Expected end date:** Q4 2018/2019

**Objectives:** The aim of this research proposal is to produce and analyse data which will allow the identification of the precise industries most likely to be vulnerable to a loss of single market membership. Currently, data on services trade in value-added in particular is not sufficiently granular to permit this. It is necessary to better understand the importance of each sub-industry for the domestic economy and also their position in national and international supply chains, so as to quantify knock-on effects of any loss in exports on domestic suppliers.

### **Developing firm level micro data for productivity analysis (Project 2.5)**

**Lead:** Nick Bloom (Stanford)

**Co-Leads:** Rebecca Riley (NIESR), Tatsuro Senga (QMUL), Paul Mizen (Nottingham) and Hasan Bakhshi (Nesta)

**Expected end date:** Q1 2019/2020

**Objectives:** Together with ONS, ESCoE researchers aim to conduct a UK firm survey that measures the level of uncertainty facing each individual firm, maximising synergies with other ONS business datasets. This will allow us to create uncertainty measures by region, sector and firm type, and will allow the study of the role of uncertainty in shaping firms' activities. A new dataset with firm-level uncertainty measures will be made available to other researchers. This project also aims to develop the business microdata at ONS to be better able to study the links between firms' financial arrangements and firms' productivity and investment outcomes. Later stages (beyond the project end date) may consider the development of relational firm-level data.

## **Work Stream 3 – Regional and Labour Market Statistics**

### **Using administrative data to develop new labour force & migration statistics (Project 3.1)**

**Lead:** Jonathan Wadsworth (RHUL, LSE)

**Co-Leads:** Jonathan Portes (King's) and Augustin de Coulon (King's)

**Expected end date:** Q3 2019/2020

**Objectives:** This project will directly address the objectives of ESCoE, as well as ONS's wider objectives relating to economic statistics; it will use administrative data in new and innovative ways; it will aim to directly improve our understanding of key economic statistics, in particular those relating to the labour market, as well as population statistics; and it will be relevant to key political and policy priorities of government and great public interest. It therefore offers huge and wide-ranging potential benefits to ONS and to government as a whole.

This project will address a number of research questions relating to labour market dynamics, in particular in relation to the non-UK born population:

1. Mapping the EU resident population
2. Short-term and circular migration
3. Length of migration/return migration
4. Mapping changing migrant populations at small area level

### **Using administrative and big data to improve labour market statistics (Project 3.2)**

**Lead:** Peter Dolton (NIESR, Sussex)

**Co-Leads:** Richard Dorsett (NIESR), Hasan Bakhshi (Nesta) and Stefan Speckesser (IES)

**Expected end date:** Q4 2018/2019

**Objectives:** This project aims to explore opportunities offered by government datasets to achieve a fuller understanding of labour market flows, including the potential for combining datasets to enrich the data currently used for analytical purposes. Big data offers further exciting opportunities for labour market statistics. This project also explores whether online job ads data can be used to produce improved data on occupations, skills and wages.

An important part of this project is to understand the implications of problems associated with the use of such datasets and to identify ways of mitigating them.

### **Regional nowcasting in the UK (Project 3.3)**

**Lead:** Gary Koop (Strathclyde)

**Co-Leads:** James Mitchell (WBS) and Stuart McIntyre (Strathclyde)

**Expected end date:** Q1 2019/2020

**Objectives:** The project has four aims. Firstly, to produce and disseminate timely model-based quarterly regional estimates of nominal GVA to the same timetable as the UK's first estimates of quarterly GVA for the UK as a whole. Secondly, to produce historical quarterly estimates of regional

GVA, if feasible, at greater levels of regional and sectoral levels of disaggregation using Big Data econometric methods. Thirdly, to produce real or volume GVA estimates, using the ONS's "experimental" real regional GVA data. To explore the use of alternative ways of estimating regional GVA deflators. Finally, to explore, jointly with ONS staff, the possible use of underlying micro-level and administrative data to produce model-free (or less model dependent) quarterly regional output data.

### **Improving the quality of regional economic indicators (Project 3.4)**

**Lead:** Steve Gibbons (LSE)

**Co-Leads:** Katerina Lisenkova (Strathclyde), Graeme Roy (Strathclyde) and Kim Swales (Strathclyde).

**Expected end date:** Q4 2018/2019

**Objectives:** It is clear there is an increasing focus and attention on regional economic performance and the devolution of powers in the UK. Scotland is at the forefront of devolution and we believe provides a useful case study to begin developing new regional indicators.

We plan to undertake two projects, to take forward a stream of work to improve the quality and usefulness of regional economic statistics. The first of these focuses on improving inter-regional trade flows data. The second area of work, which would take place beyond the project end date shown, is to further improve the quality and robustness of regional fiscal data in the UK and to consider how to construct regional price indexes using new data sources.