

Institution: University of Birmingham
Unit of Assessment: C19 – Business and Management Studies
Title of case study: Improving Productivity Measures in the European Union (EU KLEMS)
<p>1. Summary of the impact</p> <p>The EU KLEMS project, of which Professor Mary O'Mahony from Birmingham Business School was a leader, resulted in impact on two groups of users: statistical offices in EU member states and the policy community tasked with analysing and promoting economic growth, such as finance ministries and central banks. The research team demonstrated how to derive productivity statistics at the industry level, highlighting how to make best use of information already in national accounts and fill gaps in the available data. This led to the formation of a Eurostat EU-KLEMS Task Force. The task force recommended that productivity measures be introduced in national accounts; this is currently being implemented by statistical offices across the EU, drawing from the methodology proposed in the research. In the meantime EU KLEMS is being used by policy makers, especially central banks and finance ministries, to inform policy interventions designed to raise economic growth.</p> <p>2. Underpinning research</p> <p>The EU KLEMS consortium was set up in 2001, with funding from the European Commission 6th framework programme from 2004 to 2008. The project is on-going, benefiting from additional funding as part of a series of EC 7th framework projects. KLEMS is the acronym for EU level analysis of capital (K), labour (L), energy (E), materials (M) and services (S) inputs.</p> <p>The project consortium consisted of 16 partner institutes and universities across the EU including the University of Birmingham. The academic coordinators were Bart Van Ark and Marcel Timmer, University of Groningen, and Mary O'Mahony, University of Birmingham. O'Mahony has been involved in this project since its inception. The University of Birmingham joined the consortium in 2005, when Mary O'Mahony took up the position of Professor of International Industrial Economics at Birmingham Business School (Jan 2005 to April 2013), and was responsible especially for developing the methodology for constructing measures of labour quality, putting together data for the UK and Ireland and overseeing the research outputs of consortium members using the database.</p> <p>The main insights from this research programme were that in order to understand why countries' growth rates differ, it is necessary to construct data series that have the following characteristics:</p> <ul style="list-style-type: none"> • Use common definitions, methodologies and data sources across countries. • Use measures of inputs that reflect their valuation in markets; this is especially important for inputs associated with rapid technological change such as information technology and skilled labour. • Construct measures at the industry rather than the aggregate level. <p>The research by the project leader using the data constructed in the EU KLEMS project showed, for example, that the US productivity revival from the mid-1990s was concentrated in service sectors that intensively used information technology and that similar gains were not achieved in those industries in the EU</p> <p>The output of the project in addition to the papers listed in section 3 were a publicly available database with annual series on outputs, inputs and productivity that covered up to 72 industries in 25 EU countries plus selected other developed countries (Australia, the US, Korea and Japan).</p> <p>Since the end of the EC specific funding for this project, updating and revisions to the data series have been the responsibility of the University of Groningen and the University of Birmingham, the latter through the EC funded Framework 7 projects INDICSER and SERVICEGAP, coordinated by O'Mahony.</p>

3. References to the research

Research Outputs:

- R1) Marcel Timmer, Robert Inklaar, Mary O'Mahony and Bart Van Ark, *Economic Growth in Europe*, Cambridge University Press, November 2010. [Book DOI: **10.1017/CBO9780511762703**]
- R2) Mary O'Mahony and Marcel P. Timmer, 'Output, Input and Productivity Measures at the Industry Level: the EU KLEMS Database', *The Economic Journal*, June 2009 [DOI: **10.1111/j.1468-0297.2009.02280.x**] (51 citations: Scopus as at 17/07/13)
- R3) Bart Van Ark, Mary O'Mahony and Marcel P. Timmer, 'The Productivity Gap Between Europe and the United States', *The Journal of Economic Perspectives*, 2008, 22(1), pp. 25-44 [DOI: **10.1257/jep.22.1.25**] (62 citations: Scopus as at 17/07/13)
- R4) Robert Inklaar, Mary O'Mahony and Marcel P. Timmer, 'ICT and Europe's productivity performance: Industry-level growth account comparisons with the United States', *The Review of Income and Wealth*, 51 (4), p. 485-623, December 2005. [DOI: **10.1111/j.1475-4991.2005.00166.x**]

Grants:

- O'Mahony, M (PI) *EC Seventh Framework Programme, SERVICEGAP: The Impact of Service Sector Innovation and Internationalisation on Growth and Productivity*, Sponsor: Commission of the European Communities, March 2010- February 2013, £344,412 [UoB allocation £258,309]
- O'Mahony, M (PI) *FP7 Collab - INDICSER : Indicators for Evaluating International Performance in Service Sectors*, Sponsor: Commission of the European Communities. January 2010- December 2012, £431,277 [UoB allocation £323,459].
- O'Mahony, M (PI) *EC Sixth Framework Programme, EUKLEMS: growth accounts at the industry level*, Sponsor: Commission of the European Communities. September 2006 – June 2008, £42,942

4. Details of the impact

The EU KLEMS project developed methodology and implementation methods to create a database on measures of economic growth, productivity, employment creation, capital formation and technological change at the industry level for all European Union member states and selected other OECD countries from 1970 onwards. The direct beneficiaries of this work have included national statistical offices, the European Commission, Eurostat (the EU statistical office), the European Central Bank and national agencies. The scope of published data is being extended as a result of this, and the resulting information utilised to inform further policy analysis and development.

Impact on compilation of national statistics

Following presentations in 2007 by O'Mahony to the main European fora on national statistics, including Eurostat's *Working Group on National Accounts*, the EC *Economic Policy Committee* and the ECB-led *Committee on Monetary, Financial and Balance of Payments Statistics*, leaders of statistical agencies in the EU decided that for policy purposes it would be useful to investigate the value and feasibility of incorporating EU KLEMS type productivity statistics routinely in national accounts. Participants in these fora, which included chief national accounts statisticians and chief advisors to finance ministers, agreed that these data provide an important input to policy evaluation, in particular for the assessment of national and international goals concerning competitiveness and economic growth potential. The outcome of these discussions was the setting up of a taskforce by Eurostat to look into the feasibility of including productivity measures in national accounts (source 1, pp12-13; and source 2, page 32, below). The taskforce met on several occasions with the EU KLEMS team acting as advisors and O'Mahony attending one of the meetings in Luxembourg in 2008.

The EU KLEMS Task Force recommended that all EU statistics offices should attempt to routinely produce productivity measures based on EU KLEMS methodology. Some national statistical offices were quick to respond, such as the UK Office for National Statistics [source 3] and Statistics Netherlands (source 4). Others which faced more severe budget constraints plan to produce the

Impact case study (REF3b)

measures in the medium to long term.

There have also been impacts on methods employed by National Statistical Offices in their standard national accounts. A notable contribution of the work carried out at Birmingham Business School was facilitating the inclusion of capital stock measures by the Irish Central Statistical Office since 2009; prior to this they only produced investment series. This arose following a number of visits during 2007 to 2008 by O'Mahony to CSO who presented the EU KLEMS Irish capital stocks series, demonstrating the feasibility of producing such measures.

Informing policy drivers for economic growth

EU KLEMS data has also been used to inform policy on drivers of economic growth.

Policy users of the database and the subsequent research carried out by the project leaders include the European Central Bank, national Central Banks such as the Bank of England and Bank of France, many EC DGs especially DG Economics and Financial Affairs, DG Enterprise and Industry, DG Information Society and DG Employment, as well as numerous national government departments including HM Treasury. DG Economics and Financial Affairs have a web-page on EU KLEMS (source 5).

The President of the ECB identified the collection of data for updating the EU-KLEMS as a Bank priority in a speech in 2008 (source 6). KLEMS data was also used to identify the issue of lower growth in productivity in the European financial sector compared to that in the US by a member of the Executive Board of the ECB Ronda (source 7). DG Economics and Financial Affairs used the EU-KLEMS database to assess the EU-US productivity gap (source 8). EU-KLEMS data were also used by the Bank of England's Executive Director Financial Stability in an analysis of the contribution of the finance sector to economic well-being (source 9; see section 3 of this speech).

As well as disseminating the research to producers of statistics, the research team devoted considerable effort to presenting the research findings to policy workshops and conferences. The EU KLEMS mid-term conference in Brussels in November 2007 (report issued by DG Economic and Financial Affairs, March 2008) was attended by over 100 representative from EC and National governments with an endorsement of the database for use in policy analysis by the then EC Commissioner for Economic and Monetary Affairs, Joaquin Almunia (source 10). The EC Commissioner for Enterprise and Industry (1999-2004), Erkki Liikanen, organised a policy conference in 2005 at the Bank of Finland to publicise the EU KLEMS project.

Subsequently the data and research have been used to inform policy. The uses of the data range from informing the setting of interest rates by central banks, budget projections by finance ministries, informing policy initiatives targeted at raising investment in information technology, use of skilled labour and innovation more generally.

5. Sources to corroborate the impact

1. Reports from the Eurostat Task force on EU KLEMS to the Committee on Monetary, Financial and Balance of Payments Statistics, 5-6 February 2009 (agenda item 8.5) <http://www.cmfb.org/pdf/CMFB%202009-02-05-06%20minutes.pdf>
2. EU Economic and Financial Committee: Status Report on Information Requirements in EMU, Brussels, 10 November 2009 <http://www.ecb.int/stats/pdf/statusreport2009.pdf?a9d318432314701f584051a0272277fe>
3. ONS, Multi-factor Productivity (experimental), Estimates for 1970 to 2009, May 2011 <http://www.ons.gov.uk/ons/publications/index.html>
4. Productivity Measurement at Statistics Netherlands, <http://www.cbs.nl/NR/rdonlyres/64407BAF-222F-4432-B196-12CA9E974B55/0/200803x41pub.pdf>
5. http://ec.europa.eu/economy_finance/db_indicators/eu_klems.
6. Speech by Jean-Claude Trichet, President of the ECB, Fourth ECB Conference on Statistics, Frankfurt am Main, 24-25 April 2008 <http://www.ecb.int/press/key/date/2008/html/sp080424.en.html>

Impact case study (REF3b)

7. Speech by José Manuel González-Páramo, Member of the Executive Board of the ECB Ronda, 11 July 2008,
<http://www.ecb.int/press/key/date/2008/html/sp080711.en.html>
8. Report on Industry productivity, DG Economic and Financial Affairs, European Commission http://ec.europa.eu/economy_finance/publications/publication13143_en.pdf
9. The Contribution of the Financial Sector, Miracle or Mirage Speech by Andrew Haldane, Executive Director Financial Stability, Bank of England at the Future of Finance Conference, London 14 July 2010 <http://www.bankofengland.co.uk/publications/Documents/speeches/2010/speech442.pdf>
10. Report on European Economy Review, European Economy Research Letter, DG Economic and Financial Affairs, European Commission
http://ec.europa.eu/economy_finance/publications/publication12236_en.pdf