Strengthening Efficiency and Competitiveness in the European Knowledge Economies (SEEK)

Conference 2012: The Green Growth Challenge

Seek Project:

The Division of Tasks, Offshoring and the Competitiveness of Europe's Knowledge Economy

Motivation

- The division of labour has always been a driver of economic growth.
- Revolutionary progress in information and communication technologies (ICT) has enabled the break-up of the production process at finer and unprecedented levels.
- From 1995 to 2005, offshoring in the manufacturing industries has increased by approx. 23 per cent in the UK and 30 per cent in Germany.
- In 2010, 44 per cent of German manufacturing firms and 26 per cent of service sector companies received intermediate inputs from abroad.
- This has great impact on employment structures across Europe's modern economies.
- Jobs will be reallocated around the globe, tasks will be distributed according to their separability from each other and ultimately their tradability.
- Detecting the possibilities for a new reallocation of labour at the firm, country and world level is a key to future growth in modern economies; understanding the effects on workers is crucial to the people living in them.

Research Questions

- How can we model the process of bundling and unbundling of tasks?
- What is the distribution and relative importance of tasks across occupations, sectors and countries? How does this change over time?
- How does this distribution change in response to offshoring? How is relative labour demand affected? How do wages change?
- Do the possibilities and effects of offshoring differ across countries (Germany vs. United Kingdom)? Do size, sector structure, language, etc. matter?
- How do firms reorganise employment, given new opportunities to use advanced ICT?

Data

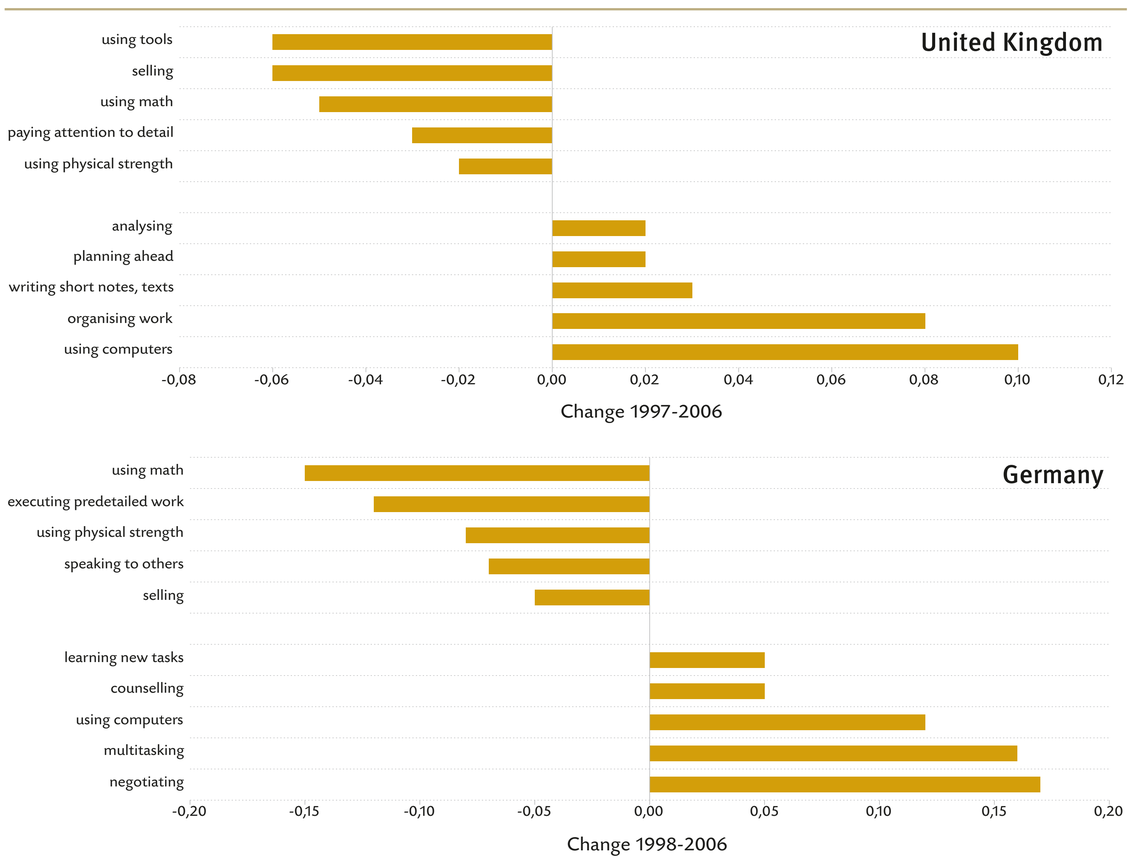
- **Data on the task content of occupations, sectors, countries:**
  - United Kingdom: British Skill Survey (BSS)
  - Germany: BIBB/IAB Survey
  - Both datasets hold detailed information on what individuals actually do at their jobs. The surveys ask for the importance of certain tasks, e.g. researching or using physical strength.
  - We can use data for two time periods: 1997 and 2006.
- **Data on offshoring**
  - Offshoring indices at the sector level can be calculated using Input-Output tables provided by the OECD.
  - The import matrices are used to determine the amount of intermediate imports from a given foreign industry that are used in the same industry's production at home. Dividing these imports by total industry output yields a measure of offshoring.
- **Firm level data on ICT usage**
  - The ZEW ICT survey provides detailed information on the use of ICT by firms as well as on their international involvement through exports and foreign sourcing.
- **Further data:**
  - For more precise calculations of income and employment shares, administrative income data for both Germany and the UK is available.

Methods

- **Theory**
  - To inform subsequent empirical analysis, we develop a theoretical extension of Borghans and ter Weel (2006, EJ).
  - This model explains the trade-off between bundling and specialisation of jobs.
  - The extension will incorporate the important level of the firm and the region.
- **Empirics**
  - Descriptive analysis of task content: Consolidate data from different sources; find appropriate scaling and normalisation of survey answers on job-tasks. Show relative importance of tasks across and within occupations, sectors, countries.
  - Substantiate the descriptive analysis by linear regression analysis clarifying the importance of each dimension in the distribution of tasks.
  - Clarify the impact of offshoring. Estimate relative labour demand equations. Estimate wage equations. Incorporate several interactions between worker and job characteristics or between such characteristics and offshoring.
  - Analyse firm-level international involvement and ICT usage by various (panel-) regression methods.

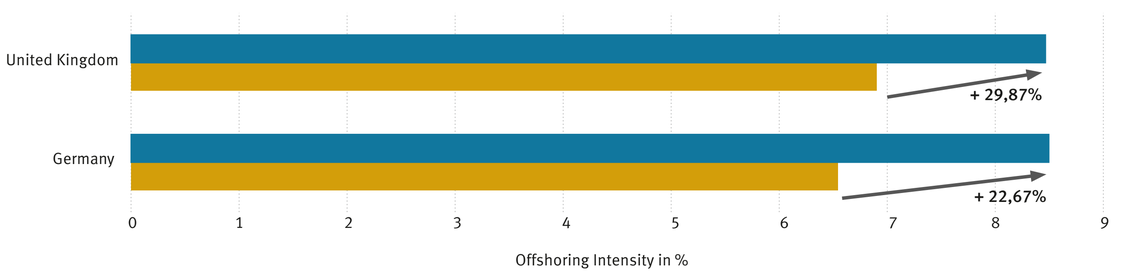
Some Descriptive Statistics

Importance of Tasks



- There is a clear pattern of a task shift towards more complex, less offshorable tasks.
- More manual tasks, or tasks where computerisation is profitable, become less important.
- This suggests a strong role of offshoring in the set of driving forces behind this trend.
- This project structurally analyses this link.

Offshoring Intensity – Change 1998-2006



Source: Calculations by project team based on data described above

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