Towards better measuring the international organization of enterprises:

The concept of Business Functions

UN Expert Group on International Trade and Economic Globalisation Statistics
United Nations, New York
Peter Bøegh Nielsen
Statistics Denmark
Today’s Presentation

• **Business Functions**
  - Background
  - Definitions

• **Survey on International Organisation and Sourcing**
  - Background and design
  - Survey results

• **The Road ahead**
  - Possible sources for measuring BF
  - Proposal for revised list of BF
A changing economic environment

• **Globalisation** driven by
  ▪ Increased liberalisation of international trade and movement of capital (and individuals)
  ▪ Technological development lowering costs of transportation, travel and communication
  ▪ Rising importance of emerging economies (due to economic reform, demographics)

• **Fragmentation** of production driven by
  ▪ ICT technologies enabling storing and transferring of know-how and services

• The **interaction** of the two creates
  ▪ New ways of organising the production process across borders (international sourcing / offshoring)
Statistics measuring economic globalisation

- Trade statistics (goods and services)
- Balance of Payments statistics
- FDI statistics
- FATS/AMNE statistics
- TiVA
- International Sourcing statistics (including Business Functions concept)
What are Business Functions?

- Aggregation of specific tasks performed within the enterprise corresponding to a specific grouping of products (e.g. CPA classification)
- The level is less aggregated than the activity (NACE) but more aggregated than products or tasks
  - Trade-off: sufficient detail to capture fragmentation process vs. sufficient aggregation to be manageable for data collection
- Business Functions in practice mainly a tool to capture “outsourceable” services elements in the production processes
  - Any business function can be the main activity of an enterprise supplying others and can hence be related to a NACE category, i.e. functions can be related both to CPA and NACE
## Typology of Business Functions

<table>
<thead>
<tr>
<th>Business function</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core business functions</strong></td>
<td>The core/primary business function of the firm. Generally the production of goods or services intended for the market or third-parties.</td>
</tr>
<tr>
<td><strong>Support Business Functions:</strong></td>
<td></td>
</tr>
<tr>
<td>Transport, logistics and distribution support functions</td>
<td>A support function that includes activities related to procurement, transportation, warehousing and the delivery of goods and services to customers.</td>
</tr>
<tr>
<td>Marketing, sales, after sales service support function</td>
<td>A support function focusing on market analysis, advertising, selling, retail management, as well as activities related to repair, maintenance and customer services (including help desks and call centres).</td>
</tr>
<tr>
<td>IT services and software support functions</td>
<td>Activities related to data processing, software development and the provision of ICT services.</td>
</tr>
<tr>
<td>Management, administration, and back-office support functions</td>
<td>Activities associated with the administration of the firm, including legal, finance, accounting and human resources management.</td>
</tr>
<tr>
<td>R&amp;D, engineering and related technical services and R&amp;D support functions</td>
<td>This support function includes activities related to experimental development, research, design, engineering and related technical consultancy, technical testing, analysis and certification.</td>
</tr>
<tr>
<td>Other business functions</td>
<td>Activities related to building maintenance and security as well as other activities not belonging to specific firm-level business functions.</td>
</tr>
</tbody>
</table>
Flows of Business Functions: Make (internally or within group) or buy decisions

- Research and Development
- Production
- Intermediate goods (insourcing)
- ICT Support services (insourcing)
- Sales
- Final products
- Administration

External Suppliers
- Materials
- Components
- Production Intermediate goods (outsourcing)
- ICT Support services

Affiliates

- ICT Support services

Market exchange
Internal process
Use of Business Functions in statistics

- European Statistical System:
  - Survey on International Sourcing (2007)
  - Survey on international organization and sourcing of business functions (2012)
- Statistics Canada:
  - Survey of Innovation and Business Strategy (2009 and 2012)
- USA:
  - National Organizations Survey (2010)
- Korea:
  - Pilot: Automobile industry
## Correspondance list of Business Functions

<table>
<thead>
<tr>
<th>Core business function</th>
<th>Primary business function</th>
<th>Provision of services</th>
<th>Core business function</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core business function</td>
<td>Core business function</td>
<td>Provision of services</td>
<td>Core business function</td>
<td>Can be goods or services, includes intermediate inputs</td>
</tr>
<tr>
<td>Distribution and logistics</td>
<td>Distribution and logistics</td>
<td>Transportation, logistics, and distribution</td>
<td>Distribution and logistics</td>
<td>Manufacturing services</td>
</tr>
<tr>
<td>Marketing, sales and after sales services, including help desks and call centers</td>
<td>Customer and after-sales service</td>
<td>Call centers and help centers</td>
<td>Customer contact (call) centres</td>
<td>Includes any dedicated customer contact function, including sales, help desk, and customer service; ICT enabled</td>
</tr>
<tr>
<td>Sales and marketing</td>
<td>Marketing, sales and after sales service</td>
<td>Marketing, sales and after sales service (except call centres)</td>
<td>These tend to be higher wage activities that could require market proximity; not likely to be ICT-enabled</td>
<td></td>
</tr>
<tr>
<td>ICT services</td>
<td>ICT services</td>
<td>Information technology systems</td>
<td>Data processing</td>
<td>Data processing</td>
</tr>
<tr>
<td>Administrative and management functions</td>
<td>Administrative and management functions</td>
<td>Management, administration, and back office functions</td>
<td>Administrative and back office functions</td>
<td>Increasingly ICT-enabled, less routine</td>
</tr>
<tr>
<td>Legal services</td>
<td>Accounting and bookkeeping</td>
<td>Human resource management</td>
<td>Management</td>
<td>It is useful from an analytical perspective to separate high wage enterprise management from routine administrative and back office work</td>
</tr>
<tr>
<td>Engineering and related technical services</td>
<td>R&amp;D, engineering and related technical services</td>
<td>Research and Development of Products, Services, or Technology</td>
<td>Engineering and related technical services</td>
<td>Increasingly ICT-enabled</td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td>Research and development (R&amp;D)</td>
<td>Research and development (R&amp;D)</td>
<td>Research and development (R&amp;D)</td>
<td>Increasingly ICT-enabled</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>Facilities Maintenance</td>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

**Proposed Business Function List (grey different from 2012 Eurostat IS/GVC survey)**
Today’s Presentation

• **Business Functions**
  - Background
  - Definitions

• **Survey on International Organisation and Sourcing**
  - Background and design
  - Survey results

• **The Road ahead**
  - Possible sources for measuring BF
  - Proposal for revised list of BF
Policy issues addressed

How many jobs are moved across borders? Which type of jobs and in which sectors?

Is there a risk of “hollowing out“ skill based activities?

To which destinations are mainly sourced?

What is the impact of international sourcing on the competitiveness of European firms?

What are the overall employment impacts – in terms of job losses or gains?
Modules in the IS/GVC survey 2012

General information

Employment in domestic enterprises broken down by business functions

International sourcing and relocation of business functions 2009–2011

International organisation of activities in the enterprises’ foreign affiliates 2011

Activities contracted to supplying enterprises abroad 2009–2011
Employment broken down by business function
Enterprises with 100+ employees 2011

[Bar chart showing employment distribution by business function across different sectors and size categories.]
Mainly manufacturing enterprises sourcing internationally

Enterprises sourcing internationally 2009-2011 by main sector. Share of total no. of enterprises with 100 or more employees
Job losses due to international sourcing
2009 - 2011

(% of number of persons employed in enterprises with 100+ employees)
Employment development by function sourced internationally
Denmark, 2000-2007

Median values of full-time equivalent number of employees

- Median values of full-time equivalent number of employees
Net job effect of international sourcing of minor scale in Denmark

- Net job effect: 15,000
- Lost jobs due to international sourcing: 25,000
- Jobs created due to international sourcing: 10,000
- Jobs created in Denmark due to received sourcing tasks from abroad: 5,000

Mainly from foreign enterprises
# International Sourcing dimensions

<table>
<thead>
<tr>
<th>ORGANIZATION/CONTROL</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DOMESTIC</td>
</tr>
<tr>
<td><strong>INTERNAL:</strong></td>
<td>EU terminology:</td>
</tr>
<tr>
<td>function within the</td>
<td>Domestic insourced</td>
</tr>
<tr>
<td>enterprise or</td>
<td></td>
</tr>
<tr>
<td>enterprise group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EU terminology:</td>
</tr>
<tr>
<td></td>
<td>Domestic in-house</td>
</tr>
<tr>
<td></td>
<td>Function performed within the enterprise or enterprise group within the compiling country</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EXTERNAL:</strong></td>
<td>EU terminology:</td>
</tr>
<tr>
<td>function outside the</td>
<td>Domestic outsourced</td>
</tr>
<tr>
<td>enterprise or</td>
<td></td>
</tr>
<tr>
<td>enterprise group</td>
<td>EU terminology:</td>
</tr>
<tr>
<td></td>
<td>Domestic outsourced</td>
</tr>
<tr>
<td></td>
<td>Function performed outside the enterprise or enterprise group by non-affiliated enterprises and within the compiling country</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Enterprises insourcing and outsourcing.
Percent of total number of enterprises sourcing Internationally. 2011
Foreign owned enterprises source more frequently
Support functions sourced most frequently

(% of enterprises sourcing internationally*, 2009-2011)

* Enterprises may source both core and support functions.
Type of Business Function influences choice of destination

Destination shares of Danish enterprises sourcing internationally*, 2009-2011. Selected functions

* Enterprises may source more than one function and to more than one destination.
Today’s Presentation

• **Business Functions**
  - Background
  - Definitions

• **Survey on International Organisation and Sourcing**
  - Background and design
  - Survey results

• **The Road ahead**
  - Possible sources for measuring BF
  - Proposal for revised list of BF
Possible sources for capturing Business Functions

• Dedicated surveys

• Utilising existing employment statistics:
  ▪ Use occupational classification of employees to identify the organisation of enterprises by

• Utilising existing business statistics at micro level:
  ▪ Use activity classification of (foreign/domestic) affiliates to understand the organisation of enterprise groups (Business Functions defined by main activity of affiliate)
  ▪ Use trade information to identify international sourcing of business functions (especially support services)
Can occupations be used to identify Business Functions?

<table>
<thead>
<tr>
<th>Business function</th>
<th>Examples of occupations (ISCO 2008)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core business functions</strong></td>
<td>Food processing and related trades workers; Wood processing and papermaking plant operators; Assemblers; Garment and related trades workers.</td>
</tr>
<tr>
<td><strong>Support Business Functions:</strong></td>
<td></td>
</tr>
<tr>
<td>Transport, logistics and distribution support functions</td>
<td>Material-recording and transport clerks; Heavy truck and bus drivers; Transport and storage labourers.</td>
</tr>
<tr>
<td>Marketing, sales, after sales service support function</td>
<td>Sales, marketing and development managers; Sales, marketing and public relations professionals; Cashiers and ticket clerks; Client information workers; Machinery mechanics and repairers.</td>
</tr>
<tr>
<td>IT services and software support functions</td>
<td>Software and applications developers and analysts; Database and network professionals; Information and communications technology technicians.</td>
</tr>
<tr>
<td>Management, administration, and back-office support</td>
<td>Managing directors and chief executives; General office clerks; Administrative and specialised secretaries.</td>
</tr>
<tr>
<td>functions</td>
<td></td>
</tr>
<tr>
<td>R&amp;D, engineering and related technical services and</td>
<td>Mathematicians, actuaries and statisticians; Architects, planners, surveyors and designers; Engineering professionals; Life science technicians and related associate professionals; Ship and aircraft controllers and technicians.</td>
</tr>
<tr>
<td>R&amp;D support functions</td>
<td></td>
</tr>
<tr>
<td>Other business functions</td>
<td>Domestic, hotel and office cleaners and helpers; Protective services workers; Armed forces officers; legislators and senior officials; religious professionals.</td>
</tr>
</tbody>
</table>
Employment in Manufacturing in Denmark broken down by Business Functions

Survey population

Survey results 2011

Core business function

Distribution and logistics

Marketing, sales, and after sales services incl. help desk an call centers

ICT-services

Administrative and management functions

FUI and Engineering and related technical services

Other Business functions
Employment in Trade in Denmark broken down by Business Functions

Survey population vs Survey results 2011

- Core business function
- Distribution and logistics
- Marketing, sales, and after sales services incl. help desk and call centers
- ICT-services
- Administrative and management functions
- FUI and related technical services
- Other Business functions

Per cent
How widespread is international sourcing across activities?

No. of economic activities (2-digit NACE divisions)
Have we got the list of Business Functions right?

### Business functions sourced internationally.

**Share of all functions sourced**

<table>
<thead>
<tr>
<th></th>
<th>Core function</th>
<th>Distribution &amp; logistics support functions</th>
<th>Sales &amp; marketing support functions</th>
<th>ICT services support functions</th>
<th>Administrative support functions</th>
<th>R&amp;D, engineering support functions</th>
<th>Other support functions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All activities</strong></td>
<td>28</td>
<td>10</td>
<td>11</td>
<td>21</td>
<td>18</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>All activities &gt; 1 instance of IS</strong></td>
<td>29</td>
<td>10</td>
<td>11</td>
<td>18</td>
<td>18</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td><strong>Top 20 activities with International Sourcing</strong></td>
<td>35</td>
<td>11</td>
<td>9</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td><strong>Top 10 activities with International Sourcing</strong></td>
<td>34</td>
<td>9</td>
<td>7</td>
<td>17</td>
<td>16</td>
<td>11</td>
<td>5</td>
</tr>
</tbody>
</table>
Proposal for revised list of Business Functions

- Starting point: keeping the existing list but disaggregate five and add one new functions
- Create a distinct business function category for R&D separated from Engineering
- Split Marketing, sales and after sales services into:
  - sales and marketing (higher wage, proximate-to-market) and
  - customer contact (lower wage, offshorable)
- Split Administrative and management functions into:
  - administrative and back-office functions (ICT-enabled and routine) and
  - management functions (higher wage, less routine)
- Split ICT services into:
  - Data processing (ICT-enabled and routine)
  - Other ICT services (ICT-enabled and less routine)
- Split Distribution and logistics into:
  - transportation services (not ICT-enabled) and
  - distribution and logistics services (mainly ICT-enabled).
- Create a new category for manufacturing services
Draft European proposal for a standardised list of Business Functions

- **Core business function**
  - 1.1 Production of goods (for the market)
  - 1.2 Production of services (for the market)

- **Support business functions**
  - 2. Transport and distribution support functions
    - Transport services
    - Distribution, logistics and warehousing services
  - 3. Marketing, sales and after sales services
    - Customer contact (call) centres
    - Marketing, sales and after sales services
  - 4. ICT services
    - IT services
    - Software services
    - Network services
  - 5. Administrative and management functions
    - Administrative and back office functions, incl. HR, education and training services
  - 6. Engineering and related technical services and R&D
    - Engineering and related technical services
    - Research & Development
  - 7. Other support functions
    - Ancillary manufacturing services
    - Ancillary maintenance and repair services
Thank you!