MEASURING PUBLIC PROCUREMENT OF R&D AND INNOVATION

Silvia Appelt
Economist - Economic Analysis and Statistics Division
OECD Directorate for Science, Technology and Industry

Demand-driven innovation through public procurement:
Pre-commercial Procurement and Public Procurement of Innovative Solutions, Berlin 21-22 March 2013
OECD project on the measurement of public procurement of R&D and innovation

• Partnership agreement with DG ENTR (2012-2013)
• Under auspices of OECD Working Party of NESTI
• **Objectives**
  – Statistical framework for measuring R&D&I procurement
  – Scope for using available or adapted data sources
  – Different user needs and purposes of measurement (administrative, statistical, policy and analytical)

→ **Policy-relevant, internationally comparable indicators**
→ **New empirical evidence on impact R&D&I procurement**

*National Experts on Science and Technology Indicators*
Data sources on public procurement and PPI

Measurement framework
(Key concepts, definitions, measurement approaches)

1. National accounts data
   - Value R&D&I related goods and services “used” by public sector units
   - (+) Existing statistics → useful benchmark
   - (−) Relevant data

2. National R&D&I survey data
   - Value R&D contracts (funder, performer), link between PP and innovation
   - (+) Frascati/OSLO Manual framework
   - (−) Relevant data, type of respondent

3. Administrative procurement data
   - Value of government contracts related to R&D&I (product codes, keywords)
   - (+) Rich data sets → econometric analysis
   - (−) Comparability (reporting, R&D def)

Frascati Manual (R&D)  OSLO Manual (Innovation)
1. Measurement of R&D&I procurement

National Accounts Statistics - Government expenditures on procurement, 2010; excluding social transfers in kind, % of GDP

Source: OECD, based on National Accounts at a Glance, 2011.
2. Measurement of R&D&I procurement
Relying on national R&D and innovation surveys

• Estimates of R&D procurement
  – Survey of R&D performers (GERD*):
    e.g. CAN, USA, UK, ESP
  – Survey of R&D funders (GBAORD**):
    e.g. CAN, CHE, new developments: OECD/NESTI data
    collection on modes of public funding of R&D
    Beginning of 7th review in 2013.

* Gross domestic expenditure on R&D and innovation, ** Government budget appropriations or outlays on R&D
Example Canada: federal government as source of R&D funds for Canadian firms.

Source: OECD calculations on data from Statistics Canada, 2012
Contrasting budget and performer R&D data: The case of Canada (CAD$million)

Fed funds source indicates funds twice as large as the business data.

Both sources indicate that procurement accounts for ~25% of federally-funded R&D performed domestically by Canadian business.

Federal funds for R&D received by domestic R&D performers:

- **Federal R&D expenditures**
  - Contracts: 229
  - Grants: 734

- **Business R&D survey, intramural R&D funded by Federal govt.**
  - Contracts: 322
  - Grants: 101

Source: Statistics Canada (2012).
2. Measurement of R&D&I procurement
Relying on national R&D and innovation surveys

- Business innovation surveys linking PP and I
  \[ \rightarrow R&D \text{ is only one element of innovation} \]
  - Qs on “supply to government”: e.g. AUS, CAN, UK
  - Qs on role of policies: e.g. CHN, KOR
  - Qs about role of procurement in driving innovation, e.g. DEU, new developments \( \rightarrow \) CIS 2012

    Covered: Innovation in firms
3. Measurement of R&D&I procurement
Based on administrative procurement data

• Comparative analysis of US federal and EU procurement data to assess potential for:
  – New statistical indicators of PP of R&D&I
  – new empirical evidence on the impact of PP of R&D&I
→ potentially to be extended to other countries

• Strategy to identify R&D&I:
  – Product code classifications (PSC, CPV)
  – Innovation-related keywords in contract descriptions: RESEARCH, DEVELOP, R&D, INNOVAT...
US federal procurement data system (FPDS) – product breakdown

U.S. federal government procurement estimates, 2000-11
All contract actions by 1-digit PSC classification, USD billions

Source: OECD, based on FPDS-NG. Data extracted in September 2012
US FPDS: R&D procurement by broad sector – business vs. total

U.S. federal government procurement estimates, 2011
R&D contract value by 4-digit PSC classification, USD billions

Source: OECD, based on FPDS-NG. Data extracted in September 2012
**The allocation of European procurement expenditures, by product code**

Top twenty 2-digit CPV product codes, by contract value (EUR Billion)

<table>
<thead>
<tr>
<th>Product Code</th>
<th>2006</th>
<th>2011</th>
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<tbody>
<tr>
<td>Construction work</td>
<td></td>
<td>70</td>
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<tr>
<td>Medical equipments, pharmaceuticals and personal care</td>
<td></td>
<td>111</td>
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<tr>
<td>Petroleum products, fuel, electricity and other sources of energy</td>
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<td></td>
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<tr>
<td>Transport services (excl Waste transport)</td>
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<tr>
<td>Sewage, refuse, cleaning and environmental services</td>
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<tr>
<td>Architectural, construction, engineering and inspection services</td>
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<tr>
<td>Financial and insurance services</td>
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<tr>
<td>Transport equipment and auxiliary products to transport services</td>
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<tr>
<td>Repair and maintenance services</td>
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<tr>
<td>Business services: law, marketing, consulting, recruitment,</td>
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<tr>
<td>Construction structures and materials; auxiliary products</td>
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<tr>
<td>IT services: consulting, software development, Internet and</td>
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<tr>
<td>Health and social work services</td>
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<tr>
<td>Electrical machinery, apparatus, equipment and</td>
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<tr>
<td>Hotel, restaurant and retail trade services</td>
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<tr>
<td>Office and computing machinery, equipment and supplies</td>
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<tr>
<td>Software package and information systems</td>
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<tr>
<td>Postal and telecommunications services</td>
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<tr>
<td>Supporting and auxiliary transport services; travel agencies</td>
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<tr>
<td>Administration, defence and social security services</td>
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*Source: OECD analysis of TED data. No imputation applied to missing award values.*

**R&D Codes, 2011:**

€387 m. (1.2%)
Proportion of U.S. federal contract actions including innovation-related tokens, 2000-2011
Percentage, by top-ranking 4-digit PSC codes

Source: OECD analysis of FPDS data. Data include modifications.
Content-based approach: EU TED

The “innovation” content of European procurement actions, 2006-2010(11)
Percentage of actions, by 2-digit CPV product code (top 20)

Source: OECD analysis of TED data. Sample with contract descriptions available excludes Italy and 2011 contract award data for all countries but Ireland, Malta and the United Kingdom.
Concluding remarks

• Key issue: availability of relevant data
• Indicators experimental in nature
  – Currently limited scope for international comparisons
  – Potential for analytical uses within relevant population
• On-going activities/potential next steps:
  – Industry sector breakdowns (CPV→NAICS)
  – Refine text analysis (semantic analysis)
  – Link admin procurement data to innovation survey (ZEW) and R&D micro data (OECD)
Thanks

For further information on the project:

silvia.appelt@oecd.org
fernando.galindo-rueda@oecd.org