Linking Trade Statistics and the Business Register in a developing country: the INEC – UNSD project
Theoretical Background

- Global Shift - Peter Dicken (2011, 6th edition)
- Joining, Upgrading and Being Competitive in Global Value Chains – Cattaneo, Gereffi, Miroudot, Taglioni (2013)
Figure 3.3  The basic components of a production circuit
Global Forum on International Trade Statistics and Economic Globalization

Public Sector

State-Owned Enterprises

Small
usually single plant

Large
usually multi-plant

Types of Firms in an Economy

Private Sector

National Firms

Transnational Corporations

Smaller TNCs

‘Global’ Corporations

‘arm’s-length’ transactions
licensing
outsourcing

‘arm’s-length’ transactions
strategic alliances
outsourcing

joint ventures, industrial cooperation agreements, licensing, outsourcing

Figure 3.5 Types of firms in an economy
### Figure 2. New Sourcing Strategies

**Insourcing/outsourcing activities from within the firm vs. a supplier**

<table>
<thead>
<tr>
<th>Producing at home</th>
<th>Sourcing within the firm</th>
<th>Independent supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic in-house production</td>
<td>Vertical integration via foreign direct investment</td>
<td></td>
</tr>
<tr>
<td>Domestic outsourcing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sourcing inputs from a foreign suppliers or outsourcing assembly of final products</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Antràs and Helpman, 2004
Figure 6. A simple value chain with sourcing possibilities and data resources

Internationalization (trade and FDI)
- Intermediate Imports (Comext)
- Inward FDI (BOPS)
- Final Imports (Comext)

Research, Development, and Product Design
- Intermediate Exports (Comext)

Inputs
- Production

Distribution, Sales, and Service
- All Exports (Comext)

Globalization (adds domestic and international sourcing)
- Domestic in-house (R&D Survey, CIS)
- International affiliates (IS/GVC survey)
- Domestic in-house (Industrial input data)
- International affiliates (IS/GVC survey)
- Domestic in-house (Industrial output data)
- International affiliates (IS/GVC survey - primary function)
- Domestic in-house (IER - Sales and Marketing)
- International affiliates (IS/GVC survey - sales function)

Four sourcing options
- Domestic outsourcing (IER survey - R&D activity)
- International outsourcing (IS/GVC survey, R&D function)
- Domestic outsourcing (IER survey - Auxiliary activities)
- International outsourcing (IS/GVC sourcing survey)
- Domestic outsourcing (IER survey - Core activity)
- International outsourcing (IS/GVC survey - primary function)
- Domestic outsourcing (IER - Sales and Marketing)
- International outsourcing (IS/GVC survey - sales function)

Established data source
- Experimental data source
- Missing data source
<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry into the Value Chain</td>
<td>Common way to enter the offshore services value chain is through the establishment of call center operations. Opportunity for low-income countries to enter into the knowledge economy.</td>
</tr>
<tr>
<td>Upgrading within the BPO Segment</td>
<td>Companies expand their BPO services within the segment. Improving and expanding call centers operations or specialization in certain areas.</td>
</tr>
</tbody>
</table>

Recent examples of countries entering the value chain through call centers include El Salvador (Dell, Sykes and Teleperformance), Nicaragua (Sitel), Panama (HP and Caterpillar) and Guatemala (Exxon Mobil, ACS and 24/7 Customer) (Gereffi et al., 2009).

South Africa has been an important destination for BPO services currently employing around 87,000 people and growing at 33% per year. South Africa is actively working in expanding their BPO activities (Everest Group and Letsema Consulting, 2008; Sykes, 2010).
Costa Rica and Global Value Chains

- Costa Rica: Trade Opening, FDI Attraction and Global Production Sharing (Monge, Jan 2011)
- Costa Rica’s Global Value Chains in the Global Economy (Duke University, Jan 2012)
- Latin America’s Prospects for Upgrading in Global Value Chains (Mexico, Mar 2012)
Costa Rica – Policy Questions

- Understand the role Costa Rica currently plays in three high priority GVCs;
- Identify potential upgrading trajectories for Costa Rica to increase the value of its participation in these GVCs; and
- Based on these outcomes, identify the set of public policies that should be implemented to consolidate, increase and strengthen Costa Rica's integration in industrial GVCs
Improving Data Availability – By linking Trade data and Business Register

- Since May 2012, UNSD works with INEC to link the Business Register of Costa Rica (maintained by INEC) with the detailed Customs data (processed by the Customs administration in cooperation with INEC).
- The cooperation has resulted in the creation of a first micro-level dataset for the monthly trade statistics of December 2011-April 2012.
- Improved micro-level dataset on monthly trade statistics for June - December 2012.
UNSD staff visited INEC in April 2013 for a whole week to take stock of progress made and to try together to find solutions for existing problems.

UNSD staff had a full day meeting with the national committee on trade statistics, which includes INEC, Customs, Central Bank and Ministry of Trade.

UNSD invited Costa Rica to Business Register meetings and Trade workshops.
Business Register (DUIE) – Data sources

- Caja Costarricense de Seguro Social (CCSS) (Social Security)
- Grandes Contribuyentes del Ministerio de Hacienda (Finance Ministry)
- Registro Nacional (National Registry)
- Tribunal Supremo de Elecciones (Electoral Authority)
- Base de Exportadores (Exporters database)
- Consumer and construction price indexes
- Special projects
<table>
<thead>
<tr>
<th>Main activity</th>
<th>No. of firms</th>
<th>No. of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Agriculture, forestry and fishing</td>
<td>3,791</td>
<td>87,982</td>
</tr>
<tr>
<td>01 Crop and animal production</td>
<td>3,608</td>
<td>85,069</td>
</tr>
<tr>
<td>02 Forestry and logging</td>
<td>132</td>
<td>1,567</td>
</tr>
<tr>
<td><strong>C</strong> Manufacturing</td>
<td>4,257</td>
<td>144,706</td>
</tr>
<tr>
<td>10 Manufacture of food products</td>
<td>1,078</td>
<td>48,328</td>
</tr>
<tr>
<td>14 Manufacture of wearing apparel</td>
<td>559</td>
<td>7,949</td>
</tr>
<tr>
<td>25 Manufacture of fabricated metal products</td>
<td>441</td>
<td>6,043</td>
</tr>
<tr>
<td>26 Manufacture of computer, electronics</td>
<td>40</td>
<td>6,531</td>
</tr>
<tr>
<td>27 Manufacture of electrical equipment</td>
<td>37</td>
<td>4,477</td>
</tr>
<tr>
<td><strong>G+H</strong> Wholesale and retail trade; Transport, warehousing, and support activities</td>
<td>18,668</td>
<td>201,935</td>
</tr>
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<td>46 Wholesale trade, except motor vehicles</td>
<td>2,471</td>
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</tr>
<tr>
<td><strong>Other activities</strong></td>
<td>19,277</td>
<td>318,907</td>
</tr>
<tr>
<td>Hotel and Restaurants</td>
<td>4,892</td>
<td></td>
</tr>
<tr>
<td>Professional and scientific services</td>
<td>2,472</td>
<td></td>
</tr>
<tr>
<td>Social and Health services</td>
<td>1,871</td>
<td></td>
</tr>
<tr>
<td><strong>Unknown activity</strong></td>
<td>2,988</td>
<td>15,771</td>
</tr>
<tr>
<td><strong>Non-matches</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>48,981</td>
<td>769,301</td>
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</table>
Data Sources are Used for Specific Characteristics - All Countries
Data Sources are Used for Specific Characteristics
- OECD Countries

Percentage of respondents vs Data Source:
- **Percentage of respondents** ranges from 0% to 100%.
- **Data Sources** include:
  - NSO Survey
  - Government Survey
  - Tax Records
  - Social Security Registry
  - Transportation Registry
  - Health Records
  - Customs
  - Local Governments
  - Other sources

Legend:
- Registration Number
- Identification Number
- Contact information
- Enterprise Type
- Enterprise Type
- Enterprise Type
- Industrial Classification
- No. of Employees
- Date of Birth/Closure
- Active Status
- Control Type
- Turnover
- Net Fixed Assets

Graph illustrates the proportion of respondents using different data sources for specific characteristics.
Improving Data Availability – By linking Trade data and Business Register

- Linking variables of the Business Register to the variables of the Trade statistics
- Linking via the enterprise / establishment identification
- Use of statistical units and relationships between statistical units
• Trade data (exports)
  o Year / Month
  o Customs office
  o Commodity code
  o Product Description
  o Country of origin
  o Country of destination
  o Customs Procedure
  o Transportation mode
  o FOB Value
  o Net Weight
  o Gross Weight
  o Legal Unit of exporter

• Business Register
  o Location
  o Number of employees
  o Main activity description
  o Main activity ISIC Rev.4 code
  o Start of operations (year)
  o Production Costs
Data model

Relationships among the units of the Business Register:
Data model

Relationships among the units of the Business Register:

- Enterprise
- Establecimiento
- Legal units

Link between Trade and Business Register
## Results of second linking exercise (June – December 2012)

<table>
<thead>
<tr>
<th></th>
<th>Not linked</th>
<th>Linked</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of records</strong></td>
<td>20,934</td>
<td>355,960</td>
<td>376,894</td>
</tr>
<tr>
<td></td>
<td>5.6%</td>
<td>94.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Value in ‘000 USD</strong></td>
<td>130,354</td>
<td>3,248,470</td>
<td>3,378,824</td>
</tr>
<tr>
<td></td>
<td>3.9%</td>
<td>96.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Number of enterprises</strong></td>
<td>n.a.</td>
<td>1,903</td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>Number of legal units</strong></td>
<td>764</td>
<td>1,958</td>
<td>2,722</td>
</tr>
<tr>
<td><strong>Number of establishments</strong></td>
<td>n.a.</td>
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</tr>
<tr>
<td>Main activity</td>
<td>All Business Register</td>
<td>Exporting enterprise</td>
<td></td>
</tr>
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Trade by Enterprise Analysis

- Profile of Exported Products
  - Major export companies and destinations, by value
  - Concentration of exports
  - Degree of diversification of destinations
  - Share in exports
    - totals
    - by destination
  - Value of exports
    - total
    - By size category exporters
    - By category of "age" of exporting companies
- Exports / Total Production
Trade by Enterprise Analysis

- **Profile of Exporting Enterprises**
  - Major products and destinations, worth
  - Degree of diversification of products and destinations
  - Share in exports
    - by product
    - by destination
  - Total value of exports
  - Frequency of export activity
  - Size (number of employees)
  - Time from start of operations ("age" of the company)
  - Exports / Number of employees
  - Export / Total Sales
Costa Rica’s Position in the Medical Devices GVC

**Research & Product Development**
- Prototype
- Regulatory Approval
- Process Development
- Sustaining Engineering

**Components Manufacturing**
- Software development
- Electronics development
- Precision metal works
- Plastics extrusion & molding
- Weaving/Knitting Textiles

**Assembly / Production**
- Assembly
- Packaging
- Sterilization

**Distribution & Marketing**
- Wholesale distributors
- Doctors & Nurses
- Hospitals (Public/Private)
- Individual Patients

**Post-Sales Services**
- Training
- Consulting
- Maintenance, Repair

**Input Suppliers**
- Resin
- Metals
- Chemicals
- Textiles

**Main Segments: Exports**
- Capital Equip. US$32.5 million
- Therapeutics US$301 million
- Disposables US$575.5 million
- Instruments US$270.5 million

**Number of Firms**

- 0 - 5
- 6 - 10
- 11 - 15
- 16 - 20
Way Forward

• Adding Trade in Services, FATS and FDI

• Reporting Template for Trade by Enterprise Statistics
  – General
  – Country specific

• Linking to Enterprise groups