Measuring Trade in Value Added, and Beyond
Friends of Chair Group on Internationalization
6-8 November 2013, New York

nadim.ahmad@oecd.org

1: THE SECOND UNBUNDLING: GLOBAL VALUE CHAINS
The rise of GVCs: apparel, cars, toys, planes, electronics...


2: THE FOG – THE POTENTIAL FOR MISLEADING POLICIES
Gross trade statistics increasingly ‘multiple count’ flows in intermediates as the production process develops over several countries...

...meaning that gross trade statistics may create ‘misleading perceptions’ and imperfect policies.
For example….

- Where are our export markets?
- What do we specialise in?
- Which sectors create most value and jobs?
- Does protectionism work? Is it counter-productive. Are imports ‘bad’?
  - Are there costs on importers of intermediates, particularly when they are significant exporters.
  - What about those firms further upstream providing inputs to the imports?
- How should we interpret bilateral trade balances?

How can we respond?

- By measuring the value that is added by individual firms in the production process
3: FOGLIGHTS – WHAT STATISTICS ARE NEEDED TO RESPOND TO GVCS

How do we measure TiVA?

• Using a global Input-Output table
OECD Inter-country I-O table

National I-O tables
Production linkage
Final expenditure
Income (Value-added)
Import procurement info

Bilateral Trade Database
by industry and end-use categories (intermediates, capital and consumption goods)

58 countries, 1995-2009, 37 sectors, consistent with SNA

Trade partner shares of published and harmonised database (Goods, China 2008)

Sources: OECD BTDIxE 2012ed, OECD ICIO May 2013
Export partner shares of published and harmonised database (Services, Germany 2008)

Sources: TIS: OECD Trade in Services by partner country, ex = exports, im = imports
OECD ICIO May 2013

OECD Inter-Country I-O model

57 economies + Row, 1995-2009, 37 sectors

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD</td>
<td>All OECD 34 countries</td>
</tr>
<tr>
<td>BRIICS</td>
<td>Brazil, China, India, Indonesia, Russian Federation, South Africa</td>
</tr>
<tr>
<td>Other EU27</td>
<td>Bulgaria, Cyprus, Latvia, Lithuania, Malta, Romania</td>
</tr>
<tr>
<td>Other G20</td>
<td>Argentina, Saudi Arabia</td>
</tr>
<tr>
<td>Other South Eastern Asia</td>
<td>Brunei Darussalam, Cambodia, Malaysia, Philippines, Singapore, Thailand, Viet Nam</td>
</tr>
<tr>
<td>Other Eastern Asia</td>
<td>Chinese Taipei, Hong Kong China</td>
</tr>
<tr>
<td>Other</td>
<td>Rest of the World</td>
</tr>
<tr>
<td>ISIC rev3 Industry</td>
<td>ISIC rev3 Industry</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>01,02,05 Agriculture, hunting, forestry and fishing</td>
<td>40 - 41 Utility</td>
</tr>
<tr>
<td>10 - 14 Mining and quarrying</td>
<td>45 Construction</td>
</tr>
<tr>
<td>15 - 16 Food products, beverages and tobacco</td>
<td>50 - 52 Wholesale and retail trade; repairs</td>
</tr>
<tr>
<td>17 - 19 Textiles, textile products, leather and footwear</td>
<td>55 Hotels and restaurants</td>
</tr>
<tr>
<td>20 Wood and products of wood and cork</td>
<td>60 - 63 Transport and storage</td>
</tr>
<tr>
<td>21 - 22 Pulp, paper, paper products, printing and publishing</td>
<td>64 Post and telecommunications</td>
</tr>
<tr>
<td>23 Coke, refined petroleum products and nuclear fuel</td>
<td>65 - 67 Finance and insurance</td>
</tr>
<tr>
<td>24 Chemicals</td>
<td>70 Real estate activities</td>
</tr>
<tr>
<td>25 Rubber and plastics products</td>
<td>71 Printing of machinery and equipment</td>
</tr>
<tr>
<td>26 Other non-metallic mineral products</td>
<td>72 Computer and related activities</td>
</tr>
<tr>
<td>27 Basic metals</td>
<td>73 Research and development</td>
</tr>
<tr>
<td>28 Fabricated metal products</td>
<td>74 Other Business Activities</td>
</tr>
<tr>
<td>29 Machinery and equipment, nec</td>
<td>75 Public admin. and defence; compulsory social security</td>
</tr>
<tr>
<td>30 Office, accounting and computing machinery</td>
<td>80 Education</td>
</tr>
<tr>
<td>31 Electrical machinery and apparatus, nec</td>
<td>85 Health and social work</td>
</tr>
<tr>
<td>32 Radio, television and communication equipment</td>
<td>90 - 93 Other community, social and personal services</td>
</tr>
<tr>
<td>33 Medical, precision and optical instruments</td>
<td>95 Private households with employed persons</td>
</tr>
<tr>
<td>34 Motor vehicles, trailers and semi-trailers</td>
<td></td>
</tr>
<tr>
<td>35 Other transport equipment</td>
<td></td>
</tr>
<tr>
<td>36 - 37 Manufacturing nec; recycling (include Furniture)</td>
<td></td>
</tr>
</tbody>
</table>

4: DRIVING WITH THE LIGHTS ON
WHAT DOES THE TIVA DATABASE REVEAL?
Exports - % of GDP

Only marginally higher than in 1995

Foreign value added content of gross exports, by industry, % (EXGR_FVASH)

Exports require imports

UK

China

0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
0% 10% 20% 30% 40%
Export dependencies?
VA exports as a per cent of sector value-added

Imported intermediate inputs used in exports, 1995 and 2009
Significant share of total intermediate imports used in exports in many countries

With hubs playing an important role

France: Motor vehicles, 2009

Mexico: Electronics, 2009

Germany: Motor vehicles, 2009

Korea: Electronics, 2009
Foreign value added in Chinese Electrical equipment, by originating region & industry %

- East and S.E. Asia
- Europe
- North America
- Other regions
- South America

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>Chemicals &amp; minerals</td>
<td>Basic metals</td>
<td>Electrical equipment</td>
<td>Transport equipment</td>
<td>Wholesale and retail</td>
<td>Transport &amp; telecoms</td>
<td>Finance &amp; insurance</td>
<td>Business services</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Services matter

Services Value-Added: % of exports, 2009

Foreign

Domestic
Design, R&D, software etc becoming more important - Services content of transport equipment

Significantly for some countries - China
And throughout Factory Asia

In general – the more distant the countries the more likely that gross trade statistics underestimate the relationship.

- Change in trade shares based on Value-Added in United States
5: INCREASING THE LUMINOSITY

WHAT ASSUMPTIONS ARE USED TO CREATE TIVA AND WHAT’S NEEDED TO IMPROVE QUALITY: CHALLENGES FOR NATIONAL STATISTICS
Whilst there are limitations to the widespread calculation of trade in value-added data, the OECD-WTO initiative is to be applauded for providing a more revealing look into global trade and integration and for paving the way for further development in this area.
But it is important to stress

- That this is **a work in progress** and that results are **estimates (with two key assumptions)**
- But they are robust enough to already begin to highlight
  - the need for policies to account for GVCs
- But perhaps more importantly, they highlight
  - the **importance of capacity building and better statistics**
- **Improving data quality is essential**
  - Coherent estimates of trade in goods and services
  - A new approach to Supply-Use Tables?
    - With a focus on **stages and trade** rather than industries, per se, to better reflect firm heterogeneity (particularly MNEs).
    - Import/export intensities, factoryless firms, processors, ownership

What can be done now?

- **Improved GROSS trade data**
  - Import flow matrices
  - Better bilateral trade statistics (integrated with SU tables) and globally consistent
  - Intelligent confidentiality rules (suppress 6 digit not 2 digit HS)
  - Re-export data
  - Second hand goods, scrap and waste.
  - SERVICES – EBOPS 2012.
Examples of current inconsistencies in bilateral trade statistics (Services 2009)

<table>
<thead>
<tr>
<th></th>
<th>Exports to UK</th>
<th>Imports by UK</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>50,479</td>
<td>27,366</td>
<td>23,113</td>
</tr>
<tr>
<td>DEU</td>
<td>28,030</td>
<td>13,235</td>
<td>14,795</td>
</tr>
<tr>
<td>IRL</td>
<td>18,907</td>
<td>6,138</td>
<td>12,769</td>
</tr>
<tr>
<td>ESP</td>
<td>24,511</td>
<td>14,513</td>
<td>9,998</td>
</tr>
<tr>
<td>LUX</td>
<td>8,279</td>
<td>743</td>
<td>7,536</td>
</tr>
<tr>
<td>JPN</td>
<td>11,064</td>
<td>4,443</td>
<td>6,621</td>
</tr>
<tr>
<td>NLD</td>
<td>12,222</td>
<td>6,281</td>
<td>5,941</td>
</tr>
<tr>
<td>BEL</td>
<td>8,619</td>
<td>3,237</td>
<td>5,382</td>
</tr>
<tr>
<td>NOR</td>
<td>7,161</td>
<td>1,852</td>
<td>5,309</td>
</tr>
<tr>
<td>HKG</td>
<td>6,596</td>
<td>1,474</td>
<td>5,122</td>
</tr>
<tr>
<td>GRC</td>
<td>6,211</td>
<td>3,145</td>
<td>3,066</td>
</tr>
<tr>
<td>SWE</td>
<td>5,054</td>
<td>2,711</td>
<td>2,343</td>
</tr>
<tr>
<td>RUS</td>
<td>3,789</td>
<td>2,003</td>
<td>1,786</td>
</tr>
<tr>
<td>KOR</td>
<td>2,148</td>
<td>567</td>
<td>1,581</td>
</tr>
<tr>
<td>CAN</td>
<td>3,376</td>
<td>1,919</td>
<td>1,457</td>
</tr>
<tr>
<td>DKK</td>
<td>3,510</td>
<td>2,172</td>
<td>1,338</td>
</tr>
<tr>
<td>ITA</td>
<td>8,118</td>
<td>6,872</td>
<td>1,246</td>
</tr>
<tr>
<td>PRT</td>
<td>3,358</td>
<td>2,351</td>
<td>1,007</td>
</tr>
</tbody>
</table>

What else can be done.....now?

- Capitalise on existing data to create new indicators on exporting and importing firms
- Beyond TEC: Linking trade registers, business registers and SBS
  - OECD Workshop on linking business and trade statistics: 25-26 October 2012
  - Exploring feasibility of creating new indicators based on export (and import) intensities, ownership and size.
  - And also provides stepping stone for trade in income related to investment
- Changes to classification systems to better reflect globalisation:
  - Factoryless producers (UNECE Task Force on Global Production)
6.1 GOING BEYOND TIVA – ‘STAGES’ AND ‘TASKS’

Extensions

• Trade in jobs and skills
  – But requires
    • Coherent employment and value-added data
      – Also important for productivity estimates
    • And significant improvement in skills data (and occupations)
Jobs in the business sector sustained by foreign final demand, 1995 and 2008

6.2 GOING BEYOND TIVA INVESTMENT
Extensions

- Trade in Income related to Investment: Ownership matters:
  - Because value added does not always stick (compensation for use of knowledge based assets – where increasingly registration is determined by tax environment)
  - And because flows for use of IPPs are often recorded as property income and not trade in services.
  - 30% of total business sector VA in 2009 in the UK generated by foreign owned firms, 15% of GDP. Accounting for the underlying flows could further change trade relationships, even though differences between GNI and GDP are small.
  - In Japan for example Primary income flows (GNI minus GDP) were equivalent to about one-quarter of total TiVA flows.
- Need better FATS data, particularly on value-added and employment.
  - MSITS 2010 Compilers Guide

Trade in Income?

- How important is it?
  - Potentially – Very
    - About 70% of China’s gross exports made by foreign affiliates
    - E.g. between 1995 and 2007, Japanese foreign affiliates increased their employment in China eightfold from just over 100,000 employees to over 1000,000 and by 300,000 (to over 400,000) in Thailand, with similar patterns in other ASEAN countries, such as the Philippines, Malaysia and Indonesia.
    - And Japan’s primary income trade surplus increased by around $100 billion over the period to 2009, more than offsetting the $50 billion reduction in its gross trade surplus over the same period.
Chinese High Tech Exports by Ownership (% of the total)

- Others
- Foreign wholly owned companies
- Sino-Foreign Joint Ventures
- Chinese State Owned

Share of national value added under control of foreign affiliates, 2010

- Manufacturing
- Total services, except finance and insurance
- Total business economy, except finance and insurance

OECD Trade and Agriculture Directorate
Share of national employment under control of foreign affiliates, 2010

Summary – What’s needed

- New thinking on SU tables
- Better gross trade data
- Links to microdata
- Income, Ownership and FATS
Further information

- [www.oecd.org/trade/valueadded](http://www.oecd.org/trade/valueadded)

- Video: [http://www.youtube.com/watch?feature=player_embedded&v=RZKK-oSK41U](http://www.youtube.com/watch?feature=player_embedded&v=RZKK-oSK41U)

- **OECD Workshop on Measuring TiVA**
  **5-6 December 2013**