From Perception to Research and Decision Making:
Trade in value added and GVC indicators

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Workshop

Global Value Chains:
Perception, Reality and Measurement

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Discussion plan

• New data and achievements for international trade analysis
• Trade in value added and GVC indicators: stylized facts
• Some caveats
• Policy recommendations
Welcome to new data!

- Over the past few decades, dramatic changes have taken place in the way international trade occurs between countries.

- The shortcomings of gross trade statistics, as well as their inconsistency with the System of National Accounts standards, have been well recognized (Hummels and others, 2001; Ando and Kimura, 2003; Koopman and others, 2008 and 2011; Breda and others, 2008; and Bems and Johnson, 2012).

  - Case studies of global value chains in industries such as electronics, apparel, and motor vehicles have provided detailed examples of the discrepancy between gross and value-added trade (see for instance Dedrick et al. 2008 for the Apple iPod).

  - The same also for revealed comparative advantages.
Achievements on international trade analysis

• Important steps forward thanks to new sources and indicators
• The new data reshape our understanding of international trade:
  ✓ where values are created,
  ✓ the role of vertical supply links in export growth,
  ✓ and how comparative advantages of countries are affected by supply links over time.

This discussion focuses on:

• Trade in value added: value that is added by a country in the production of any good or service that is exported.
• GVC: “...a system of value-added sources and destinations within a globally integrated production network (Koopman et al., 2011)
The key sources for research on GVCs and value-added trade

<table>
<thead>
<tr>
<th>Name of dataset</th>
<th>Key features</th>
<th>Selected research using this data</th>
</tr>
</thead>
</table>

*Source: Johnson, 2014*
Key facts about differences between gross and value-added exports (Johnson, 2014)

- Differences are large and growing over time, currently around 25 percent.
- Manufacturing trade looks more important (relative to services) in gross than value-added terms.
- Differences are heterogeneous across countries, with value-added exports ranging from 50 percent (Taiwan) to 90 percent (Russia) of gross exports.
- Differences are changing unevenly over time across countries and partners, with fast-growing emerging markets seeing larger declines in value-added relative to gross exports.

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Some key indicators

To what extent countries are involved in a vertically fragmented production?

• **GVC participation index:** the sum of domestic value added exported in intermediates re-exported to third countries (IV) and value-added from foreign countries embodied in gross exports (FV) as a ratio to total exports

What is the position of the country/industry in the value chain?

• **GVC position index:** the ratio of IV and FV. It measures the level of involvement of a country (or industry) in vertically fragmented production (*upstream or downstream in GVC*).
A simple exercise

I have taken data from 3 databases (TiVA, WIOD and GTAP) and calculated the GVC position and participation indicators.
GVCs- Position and Participation Indices (TiVA data, 1995-2009 average)

Source: Author’s calculation on TiVA data
GVCs- Position and Participation Indices (WIOD data, 1995-2009 average)

Source: Author’s calculation on WIOD data
GVCs- Position and Participation Indices (GTAP data, 2004)

Source: Author’s calculation on GTAP database
A simple exercise -2

Indicators from different databases have different values but present common trends:

**GVC position index**: Russia, USA, Japan and Brazil have the highest level of position (upstream)

**GVC participation index**: Large countries show a low level of participation, while small countries have a high rate
GVCs- Position and Participation Indices at industry level

Electronic Equipment (30 & 32)

Source: Koopman et al. (2011), calculations based on GTAP database  Silvia Nenci, Roma Tre University
Country specialization: Value-added-adjusted Revealed Comparative Advantage Indicators, 2004

Source: Koopman et al. (2011), calculations based on GTAP database
Main caveats

• Significant inconsistencies in aggregate bilateral trade data
• Construction of global input-output table based on strong assumptions (i.e. same combination of inputs by firms; proportion of foreign intermediates equal to ratio of imports to total domestic demand)
• Data gaps (particularly acute for services)
• High level of industry aggregation that risks of misleading interpretation
• **Shortcoming in the explanatory power of current indicators**
New challenges to scholars and policy experts

How can we interpret a given value of GVC participation of a country?

How can we interpret the position of a country/industry compared to another one?

How can policy makers read these indicators?

What kind of policy prescription can be drawn from these indicators?
Interpreting results: the case of Italy

<table>
<thead>
<tr>
<th>Reference country / Indicator</th>
<th>Degree of participation in global value chains (in % of country total exports)</th>
<th>Relative position in global value chain (ratio)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central and Eastern Europe</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulgaria</td>
<td>47.8</td>
<td>0.58</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>62.4</td>
<td>0.58</td>
</tr>
<tr>
<td>Hungary</td>
<td>56.6</td>
<td>0.42</td>
</tr>
<tr>
<td>Lithuania</td>
<td>50.2</td>
<td>0.53</td>
</tr>
<tr>
<td>Poland</td>
<td>48.3</td>
<td>0.73</td>
</tr>
<tr>
<td>Romania</td>
<td>46.1</td>
<td>1.01</td>
</tr>
<tr>
<td><strong>Euro area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>55.8</td>
<td>0.77</td>
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<tr>
<td>Germany</td>
<td>49.5</td>
<td>0.86</td>
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<tr>
<td>France</td>
<td>45.9</td>
<td>0.85</td>
</tr>
<tr>
<td>Italy</td>
<td>41.8</td>
<td><strong>1.08</strong></td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>62.2</td>
<td>0.40</td>
</tr>
<tr>
<td><strong>Other countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>46.1</td>
<td>0.41</td>
</tr>
<tr>
<td>Japan</td>
<td>47.7</td>
<td>2.23</td>
</tr>
<tr>
<td>United States</td>
<td>39.8</td>
<td>2.53</td>
</tr>
</tbody>
</table>

*Source: Iossifov, 2014, (TiVA data)*
Interpreting results the case of Italy

Source: Author’s calculation on TiVA data
How can we interpret the supposed Italian “upstreamness”?

• This is a quite surprising result if you know the productive structure of our country!

• The most upstream firms are supposed to be big and, generally, multinationals: in Italy only 9% of firms have got more than 500 employees and only 0.6% of manufacturing firms are foreign owned (Giunta, 2014);

• Empirical analyses confirm that the majority of Italian firms are placed in the middle of the so called “smiling curve” (Razzolini and Vanoni, 2011);

• Between 1999 and 2008 the FVA content of Italian exports increased progressively (Cappariello and Felettigh, 2013). That seems to be not coherent with the upstreamness outcome.

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The Smile Curve: Good and Bad Stages in the Value Chain

Source: Baldwin, 2012
Concerns & Questions

• Concerns remain about:
  - The actual interpretation of these indicators
  - The use of them for policymaking

• Questions to be answered:
  - What does it actually mean for a country/industry to be classified as «upstream/downstream» using these indicators?
  - What should policy makers do to change the status of a country/industry and towards what direction?
Policy recommendations

• Adopting common concepts and definitions and use of compatible compilation methods.

• Improving quality and reliability of trade in value added data and a higher level of industry disaggregation in order to create additional insights into the economic and social characteristics of global value chains

• Providing access to data for researchers and comparable data at least at regional level,

• Enhancing data collection for countries actually not covered (such as Africa and Western Asia)

• Combining micro with macro, quantitative with quality data in order to have a more comprehensive interpretation of GVCs indicators helping both scholars and policy makers.
Thanks