When Linder meets Hirschman: Domestic inter-industry linkages and Global Value Chains in Business Services

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ITSG Conference
10-11 December 2015
Outline

- Global Structural Change and Tertiarisation of Global Value Chains:
  - Trade-in-tasks versus trade-in-goods
  - Empirical trends of GVC in *business services* (BS)
  - Institutional stands on the benefits of GVC for *developing economies*
- Joining manufacturing or business services GVC: is it the same business?
- Our conjecture - reprising classics on trade and development, Hirschman (1958) and Linder (1961)
- WIOD (World Input Output Data)
- Econometric strategy and results
- Discussion: Hirschman and Linder on BS GVC in developed and developing countries
Global structural change and tertiarisation of GVCs

- The ‘Old‘ debate on tertiarisation (Fisher (1935); Clark (1940); Fourastié (1949)) suggests that:
  - Growth of services is an indicator of a further stage of development following industrialisation
  - A symptom of an increasing income– and consumption– capacity
  - Traditionally considered non-tradable
- Is this true also for the increased international fragmentation of production in (business) services (R&D; ICT; engineering, technical consultancy and other business services)?
- Evidence in developing countries shows that this is not always the case (Bah, 2011; Rodrik, 2015)
GVC: ‘Not wine for cloth anymore‘ (Grossman and Rossi-Hansberg (2008))

- International comparative advantage now resides in **tasks** rather than **products** (Grossman and Rossi-Hansberg (2008, 2012); Baldwin and Nicoud (2014))
- Trade theory explains this in terms of labour cost and factor endowments (OECD (2013); Backer and Miroudot (2013); Costinot and Vogel (2013)) and is concerned with the effects of GVC on labour markets and wages in participating (developed) countries (Antras et al. (2006); Grossman and Rossi-Hansberg (2006); Timmer et al. (2013))
- ‘**Second unbundling**‘ of globalisation, radically transformed the terms of international competition and shifted the barycentre of global headquarters and periphery (Baldwin (2012); Baldwin and Lopez-Gonzalez (2014))
- Only a few scholars concerned with implications in terms of GVC **governance asymmetries** between developed and developing countries, based on country (and single firms) case-studies(Kaplinsky (2000, 2013); Schmitz and Strambach (2009))
Comparing Gross Exports and VA

Figure: Shares of World Gross Export and VA in Export by macro-sector

Figure 2 - Share of Gross Exports by Category

Figure 3 - Share of Value Added by Category
Geographical distribution of the offshore services
GVC (Gereffi and Fernandez-Stark (2010))

45% of the industry market

Same number of call centers employees than India

2012 Data CGGC
Source: CGGC based on Everest & Datamonitor
Global Demand of Offshore services by activity

Figure 5. Global Demand of Offshore Services by Activity

Source: (OECD, 2008)
Notes: (e) Global offshore services market, 2005-2010 ($bn)
Introduction

Heterogeneous patterns of structural change in developing countries

Figure: Comparing patterns of structural change

Figure 3. Comparing fitted curves

Note: The fitted curves for each group are obtained by regressing sectoral output shares on log of GDP per capita as in Equation (1).
A third globalisation unbundling?

- GVC scholars consider joining a (service) GVC as a **new opportunity for development**: (Gereffi and Fernandez-Stark (2010); OECD (2013); Baldwin and Lopez-Gonzalez (2014))
  - What are the theoretical and empirical bases for such a claim?
  - Do these apply to both developed and developing contexts?
  - Joining manufacturing and BS GVC: Is it the same business?

- Interestingly, both **trade-in-tasks theory** (Baldwin and Nicoud (2014)) and **product space theory** (Hausmann et al. (2008)) on sophistication and growth are silent on services.
Hirschman linkages

- Local development theories (Jones, 1976) focus on the ‘inducement mechanisms‘ coming from ‘high–linkages‘ sectors

- What are them? ‘The input-provision, derived demand, or backward linkage effects, i.e. every non primary economic activity, will induce attempts to supply through domestic production the inputs needed in that activity. The output-utilization or forward linkage effects, i.e., every activity that does not by its nature cater exclusively to final demands, will induce attempts to utilize its outputs as inputs in some new activities (Hirschmann, 1958)

- Business service firms tend to emerge and concentrate where their clients are (Meliciani and Savona, 2014), despite prophecies of ‘flat world‘ (Friedman, 2005; Duranton and Puga, 2005; Leamer, 2007)
The Linder Hypothesis

- Burenstam-Linder (1961) challenged traditional trade theories: traditional factors endowments’ differences are only weakly able to explain trade in manufactured goods, more so in raw materials.
- This depends on whether a country reaches a certain level of domestic ‘representative demand‘ in a particular manufactured good.
- Countries with a similar structure of final demand and per capita income levels - tend to have similar structures of trade specialisation.
Our Hypothesis

- BS emerge mainly as a result of prior (high-tech) manufacturing intermediate demand (*Hirschman* backward linkages) Meliciani and Savona (2014):
  - So, countries specialised in BS highly-demanding sectors would tend to **trade-specialise in BS and/or more likely to participate in BS GVC** (modified *Linder hypothesis* for intermediate demand)
  - Ultimately, participation in BS GVC is more likely to be determined by the **structure of intermediate demand** for BS, rather than price or factor endowments or, indeed, foreign demand only

- Implications for the effects of participation in BS GVC in developing countries, **where a core manufacturing base** allowing building of basic capabilities in BS is often absent
WIOD (World Input Output data)

- WIOD: 40 countries + a Rest of World grouping across 35 sectors from 1995 to 2011; Balanced Inter-Country Input-Output (ICIO) tables (domestic and international inter-linkages between and within countries) plus Socio-Economic Accounts (SEA)
- Allows to decompose output according to where value added ultimately originates
  - originating and destination sector of value added
  - disentangle the composition of this value added along skills (low, medium and high) as well as capital (using the Socio-Economic Accounts) through which we can calculate average wages
WIOD (World Input Output data)

- Two key measures in the literature to capture GVC:
  - **Value added in Exports** - VAE (Koopman et al. (2010)) identifies the industry origin of the value added embodied in gross exports. **GVC engagement measured as either** (1) **foreign value added content of exports** (backward participation); or (2) **the domestic value added that is sold to other countries for these to produce exports** (forward participation)
  - **Value added in Final Demand** - VAC (Also known as GVC income in Los et al. (2012); Timmer et al. (2013)) captures the origin of value added embodied in final demand whether this is through final or government consumption as well as GFCF
- We use a modified version of the Koopman indicator, PLUS technology indicators on both patents and ICT use per capita drawn from CANA data base (cross-country analyses of national systems, growth and development)
Econometric specification

We estimate the following equation:

\( \text{DBSV AE}_{i,t} = \alpha_1 \text{DBSV AE}_{i,t-1} + \alpha_2 \text{DDEM}_{i,t} + \alpha_3 \text{DBSV AET}_{i,t} + \alpha_4 \text{DDEMT}_{i,t} + \alpha_5 W_{i,t} + \alpha_6 H C_{i,t} + \alpha_7 T E C H_{i,t} + \alpha_i + \alpha_t + \nu_{i,t} \)
Proxies

- DBSVAE = Domestic Business Services Value Added in Export (log) = \( V(I - A)^{-1} \times EXP \) (where we only consider the BS row)
- DDEM1 = Domestic Manufacturing VA in Final Demand (log) = \( V(I - A)^{-1} \times C \) (only the sum of the manufacturing rows)
- DDEM2 = Domestic BS VA in Final Demand (log) = \( V(I - A)^{-1} \times C \) (only the BS row)
- DBSVAET = Domestic BS VA in Export of distance weighted trade partners (log)
- DDEMT = Domestic BS and Manufacturing VA in Final Demand of distance weighted trade partners (log)
- \( W \) = Hourly wage of High skilled workers (log)
- \( HC \) = Share of direct VA attributed to high skilled labour returns in Total (log)
- \( TECH \) = Patents per capita (log) and Internet users per 100 people (log)
- \( \alpha_i = countryFE \)
- \( \alpha_t = timeFE \)
**BS GVCs in developed and emerging countries**

**Figure**: Share of Domestic BS VA in Exp versus domestic BS VA in Exp of distance weighted trade partners (log) in developed and emerging countries
BS GVCs and domestic manufacturing linkages in developed and emerging countries

Figure: Share of Domestic BS VA in Exp versus domestic manufacturing VA in final demand (log)
Econometric strategy

- We employ a modified version of the Arellano-Bond Generalised Methods of Moments to get consistent and unbiased coefficients rather than a traditional FE estimator.
- We use a Blundell-Bond (1998) estimator, which allows to increase the quality of first-differences instruments (usually low in the A-B estimator).
- The system GMM gives consistent estimates provided that there is no second order serial correlation among the errors, condition tested and verified.
- We estimate a robust version of B-B with heteroscedastic errors and we allow domestic demand variables to be endogenous.
- We include a ‘pseudo-spatial lag’ of the core variables for trade partners, weighted in term of distance.
- Year and country dummies included.
## System GMM estimates for all countries

\[
V(I - A)^{-1} \ast EXP
\]

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<th>Variables</th>
<th>Man</th>
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<td>0.076**</td>
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<td>VA HS labour/TOT</td>
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# System GMM estimates for developing countries

**GVC in BS:** $V(I - A)^{-1} \ast EXP$

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<td>Patents per capita</td>
<td>0.038</td>
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<td>HW HS labour</td>
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<td>VA HS labour/TOT</td>
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<td>0.353**</td>
<td>0.314**</td>
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<td>Cons</td>
<td>0.696</td>
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## System GMM estimates for advanced countries

\[ \text{GVC in BS: } V(I - A)^{-1} \ast EXP \]

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<td>Patents per capita</td>
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<td>HW HS labour</td>
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<td>Internet user/100</td>
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<td>VA HS labour/TOT</td>
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<td>0.015</td>
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<td>Cons</td>
<td>-1.816**</td>
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<td>-0.02</td>
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* * p<0.1; ** p<0.05; *** p<0.01
Summary of empirical evidence

Domestic sectoral specialisation and structure of intermediate demand

- Strong and significant effect of domestic manufacturing value added, which dominates over BS value added when included together.
- This pattern is verified in the context of emerging countries, confirming that developing domestic capabilities in sectors vertically integrated with BS is even more important for development.
- In the absence of such capabilities, having neighbor partners with high levels of manufacturing (BS) value added in consumption will have a displacing effect.
Summary of empirical evidence

Sectoral specialisation of trade partners

- Interestingly, BS presence in GVC seems to be ‘displaced’ by a core domestic BS and manufacturing specialisation in neighbour trade partners
- whereas close trade partners with high BS value added in exports seem to favour the entry in BS value chains (spillover effect?).

Human capital and technology

While labour cost has the expected sign, domestic human capital strongly affects the BS participation in GVC. ICT use per capita also significantly affects it, whereas patents intensity is not significant in the conservative GMM estimation.
Implications for GVC theorizing?

- Hirschman linkages between core manufacturing and BS strongly matter for the development of capabilities to enter in BS GVC

- The structure of domestic final and intermediate demand (in a Linder-like framework) compete with traditional cost and price effects in explaining participation in BS GVC

- These mechanisms (except for the positive spillovers effects coming from BS trade-specialisation of close partners) occur in developing and transition countries too, challenging most of the debate on the potential benefits of BS GVC as a development strategy in the absence of a core of backward linked industries

- Results challenge the critiques by Hausmann et al. (2008) on the absence of ‘beneficiation‘ when BS are involved
The ‘hype on GVC‘ as a development strategy: open questions and new challenges

- How would country-specific Hirschman linkages and innovation trajectories shape the geography and patterns of GVC?
- How to ensure complementarities between ‘local‘ and ‘global‘ industrial policies?
- To what extent the GVC model would ensure ‘inclusiveness‘ and long-term capabilities accumulation?
- How sustainable is the development of capabilities for technological upgrading when it is decoupled from local/domestic accumulation in highly Hirschman-linked sectors?


References II


References


Kaplinsky, R. (2013). Global value chain, where they came from, where they are going and why this is important. Technical report, The Open University IKD Working Paper 68.

References


