



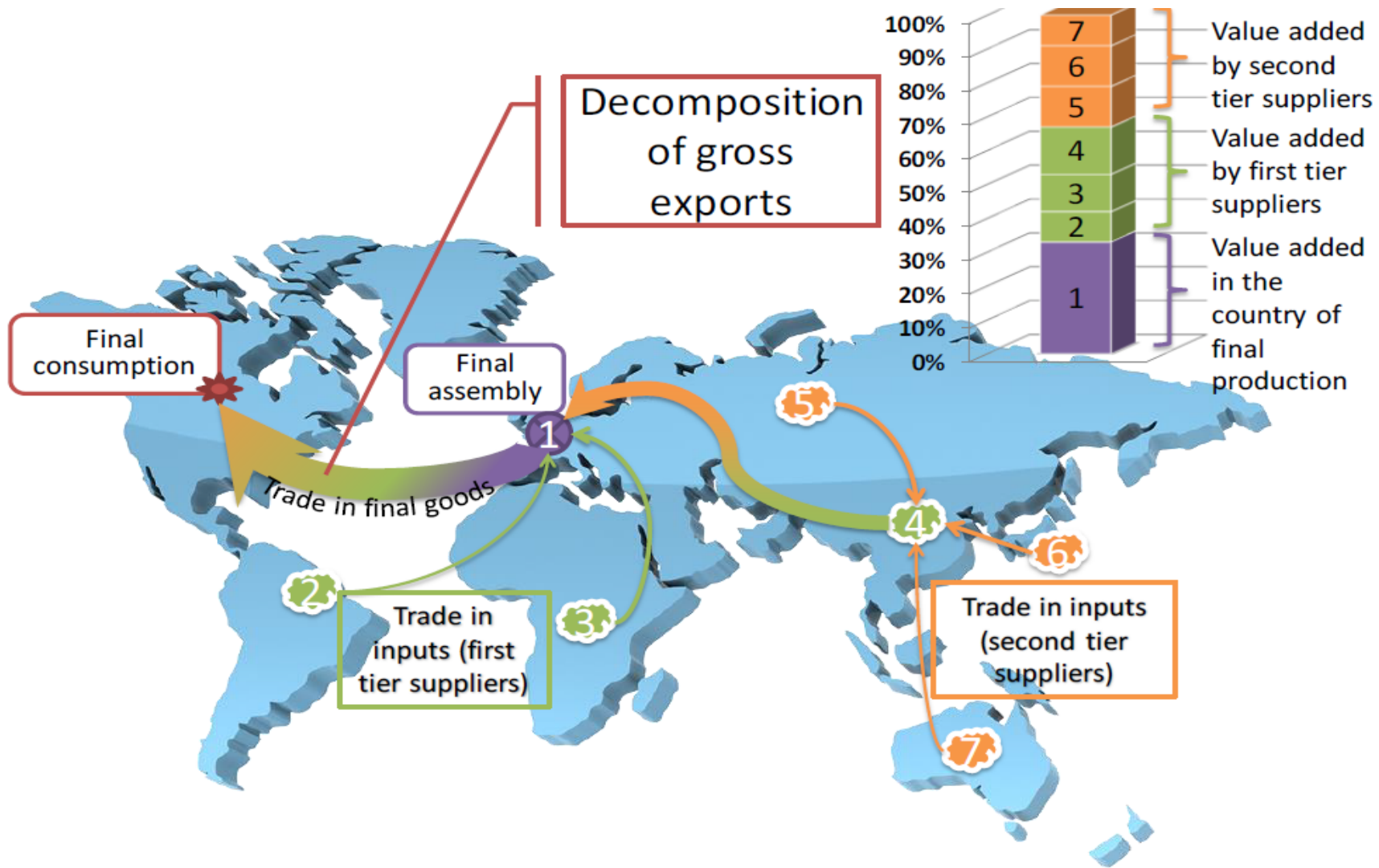
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Global Value Chain Research Going Forward: Some Remarks

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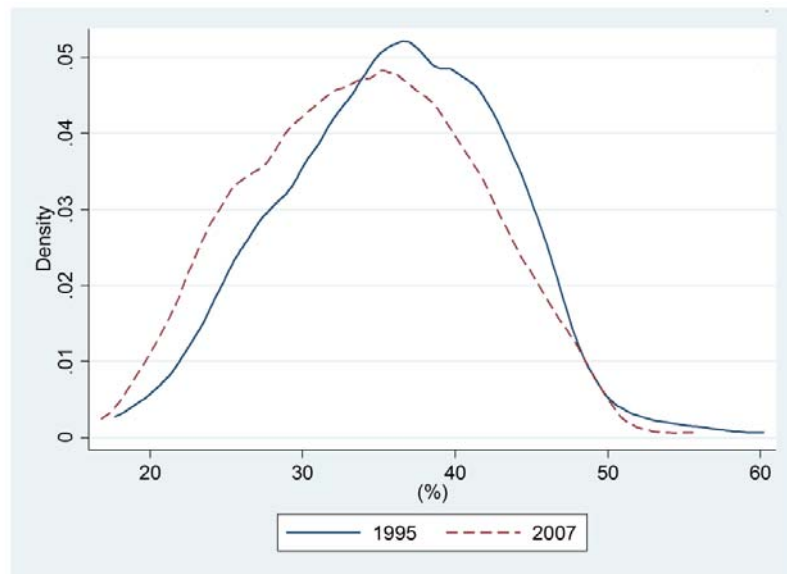
Prepared for Fourth World KLEMS meeting, Madrid, May 23-24, 2016



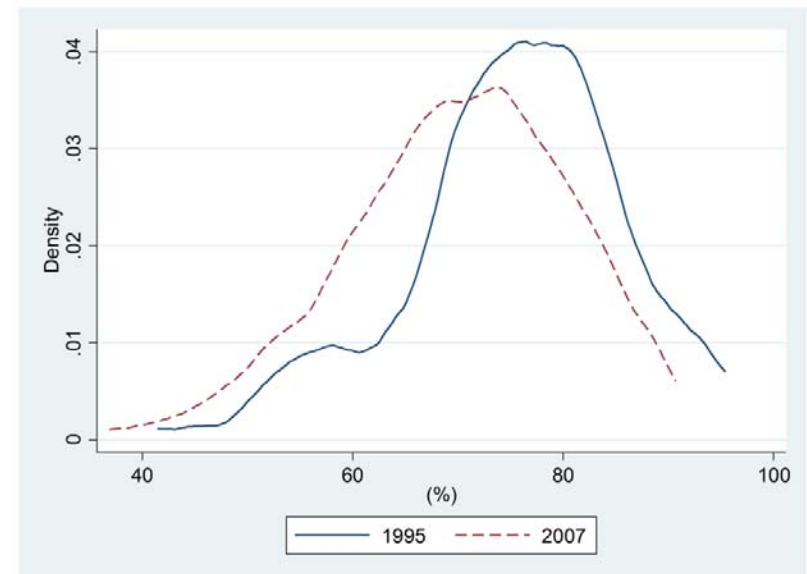


Production is fragmenting (manufacturing goods)

A – Cost share of final production stage



B – Cost share of domestic production stages



Notes: Kernel distribution plots of cost shares in final output. Shares calculated according to Equation (4). Observations have been included for 240 manufactures value chains, identified by 12 manufacturing industries of completion in 20 countries.

Source: Calculations based on WIOD.



Understanding Trade better

Trade in value added rather than in gross terms

- From products (what you sell) to activities (what you do)
 - New perspectives:
 - Where is final consumer of your value added?
 - Which industry/firm is contributing to exporting?
 - What activity is carried out?
- > **Large literature** by now with indicators like domestic value added in exports, and value-added exports (KWW2014; LTdV 2016; JN 2012).



Several databases:

- GTAP (Purdue University et al.)
- Eora (University of Sydney)
- EXIOBASE (University of Leiden et al.)
- WIOD (University of Groningen and WIIW)
- TiVA (OECD)

Database constructors exchange ideas ("Reunion project")

Regional initiatives (IDE-Jetro; APEC; and Eurostat: Figaro)



WIOD (RUG) (1995-2011/4):

- 40 economies
- Update to 2014 (funded by EC–DG ECFIN, publicly available in Fall 2016) (59 industries, ISIC rev. 4, SNA 08)
- *Regional disaggregation* for EU (funded by EC-FP7)
- Satellite data on *occupations* (with OECD)

TiVA (OECD) (1995-2011):

- 61 economies
- Incorporation of firm heterogeneity
- Focus on international income distribution



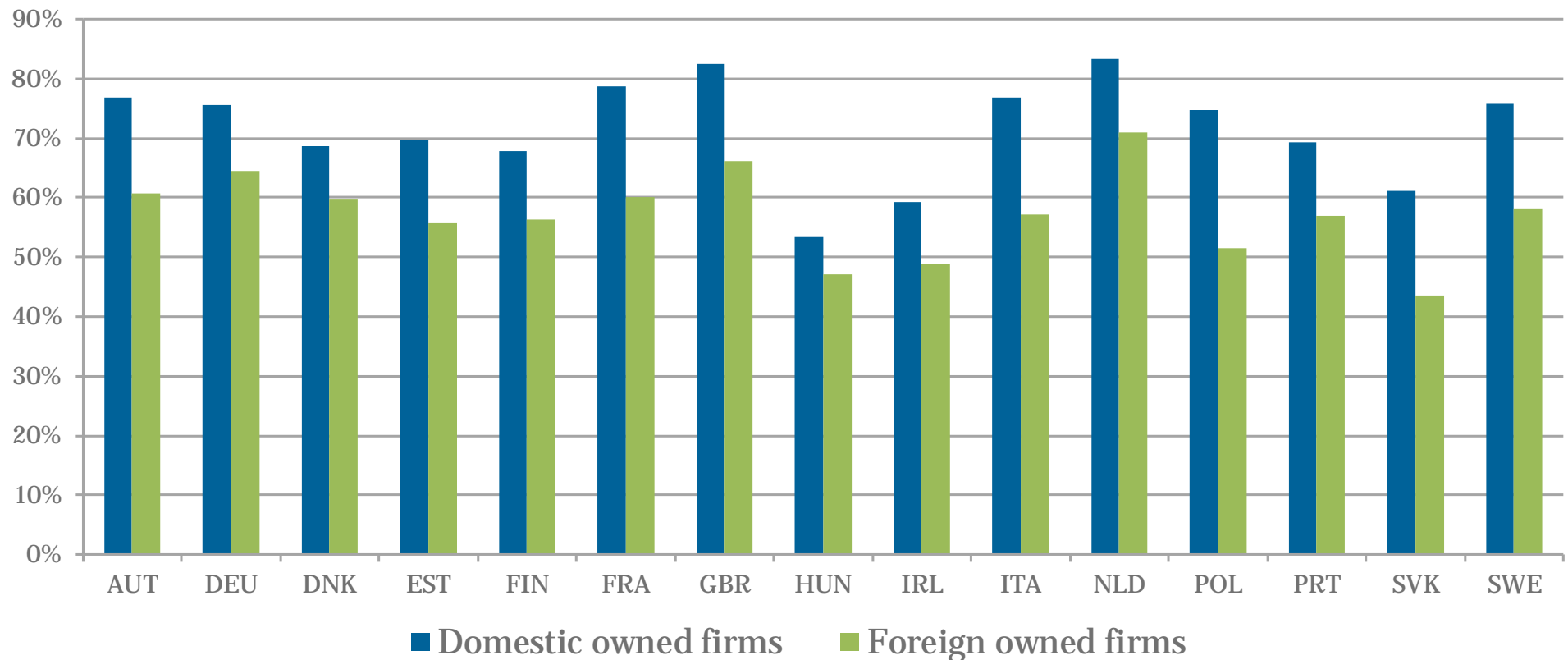
- Groningen and PBL Netherlands Environmental Assessment Agency
- NUTS2 level (240 regions, all EU countries apart from BGR, CRO and ROU and some small countries)
- 2000-2010
- 59 products, 10 industries
- Major sources of data:
 - Regional economic accounts
 - Regional SUTs/IO tables (if available)
 - Transportation data (goods and people)



- **Firm Heterogeneity** Use ratios derived from existing business and trade statistics (output, value added, import and export shares by firm ownership (or firm size, or ...)), to break down industries in national IO tables
- (For prototype, see Strassner et al., BEA paper for this conference)
- **GNI instead of GDP** what part of exported value added by foreign controlled firms actually 'sticks' to an economy (e.g. wages, taxed) and what part of value added accrues to the foreign parent (gross operating surplus)
- (Problem: where does the foreign-owned gross operating surplus go to (the "ultimate investor")?)



Total domestic value added content of exports of foreign owned firms is lower than that of domestic owned firms



Source: Fortanier (March 2016), presentation at Eurostat



Understanding productivity growth: From one stage to multistage production

Traditional KLEMS

- **Gross output of industry = G (factor inputs in domestic industry, intermediate inputs)**
- Challenges: Need for proper measurement of intermediate input prices (incl. imports, intangibles,...).

Alternative, netting out intermediate inputs:

- **Final output of product = F (factor inputs in all industries domestically and abroad)**
- Challenges: data on *source* of intermediates, silent on industry contributions to productivity growth (as in Triplett, 1998)



Table 2 Growth accounting for vertical production of automobiles from Germany.

	Cost shares (%)		Quantities (1995 = 1)		Contribution to final output growth	
	1995	2007	1995	2007	log pts	%
<i>Factors in Germany</i>						
Low-skilled labour	7.3	4.5	1.00	1.05	0.3	0.5
Medium-skilled labour	34.5	24.7	1.00	1.18	4.8	8.2
High-skilled labour	16.4	15.8	1.00	1.44	5.8	9.8
Capital	20.7	22.7	1.00	1.84	13.3	22.4
<i>Factors outside Germany</i>						
Low-skilled labour	4.0	3.8	1.00	1.99	2.7	4.5
Medium-skilled labour	6.1	8.6	1.00	2.05	5.3	8.9
High-skilled labour	2.8	5.3	1.00	3.02	4.5	7.5
Capital	8.3	14.5	1.00	2.57	10.8	18.2
Total factor productivity			1.00	1.13	11.8	20.0
Final output	100.0	100.0	1.00	1.81	59.2	100.0

Note and source: Own calculation based on equations (5) and (6) using data from WIOD, November 2013 release. The shares and volumes for foreign factors are based summations across 39 countries and the rest-of-the-world region. Capital growth is proxied by growth in capital stocks. Input quantities are set to 1 in 1995. Growth rates are in logs. Numbers may not add due to rounding.



Understanding Intangibles better

Traditional approach is to measure the investment in intangibles and impute a return (input perspective).

GVC approach starts from final output and traces the distribution of the gains (output approach). E.g. the returns to investment in R&D and branding are part of the price paid for a final car.

Idea: trace the type of workers involved in production. Additional database on hours worked and wages of workers by occupation.



Table 1. Functions in the German transport equipment GVC

	1995	2008	2008 - 1995
<i>All HQ activities, of which:</i>	52.4	49.8	-2.7
Management	6.5	6.4	-0.2
Back office	17.1	11.9	-5.2
R&D	15.6	17.3	1.6
Logistics	4.5	5.9	1.4
Marketing	8.7	8.3	-0.4
<i>Production activities</i>	31.0	21.8	-9.2
Total value added by workers in Germany	83.5	71.6	-11.9
Total value added by workers abroad	16.5	28.4	11.9

Source: preliminary computations by De Vries and Timmer

Notes: Decomposition of final output of the transport equipment manufacturing industry in Germany (ISIC rev. 3 industries 34 and 35) based on equation (4). Numbers may not sum due to rounding.

Sources: Authors' calculations based on World Input-Output Database (November 2013 release) and occupation database.



- GVC approach (macro) is a useful extension of, and complement to, traditional KLEMS
- UN/OECD/Eurostat (SEIGA) initiative Handbook
“Accounting for Global Value Chains: A System of Extended National Accounts and Integrated Business Statistics”
- Much progress to be made by integrating micro-data and macro-data (UNECE TF on Global Production, the OECD expert group on Extended Supply and Use tables.)
- Promising so far.