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GVC Research Going Forward: Introductory Remarks

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Joint ECB and CNB conference “Productivity and External Rebalancing”, Prague, April 22, 2016

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Global Input-Output Databases

Several post-2010 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)

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Progress in WIOD and TiVA

WIOD:

- Update to 2014 (funded by EC–DG ECFIN, most probably publicly available in Fall 2016)
- Regional disaggregation for EU (funded by EC-FP7)
- Satellite data on occupations (with OECD)

TiVA:

- Incorporation of firm heterogeneity
- Focus on international income distribution

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WIOD: Update to 2014

- 2000 -2014
- More industry detail (59 industries, ISIC rev. 4)
- Croatia, Switzerland and Norway added
- Majority of countries: SNA08
  - Problematic, in particular because of changed treatment of processing trade activities. Linking to bilateral trade data more complicated;
  - More conceptual work to be done.

Illustrations: see Marcel Timmer's presentation earlier today

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WIOD: Regional Disaggregation

- 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)

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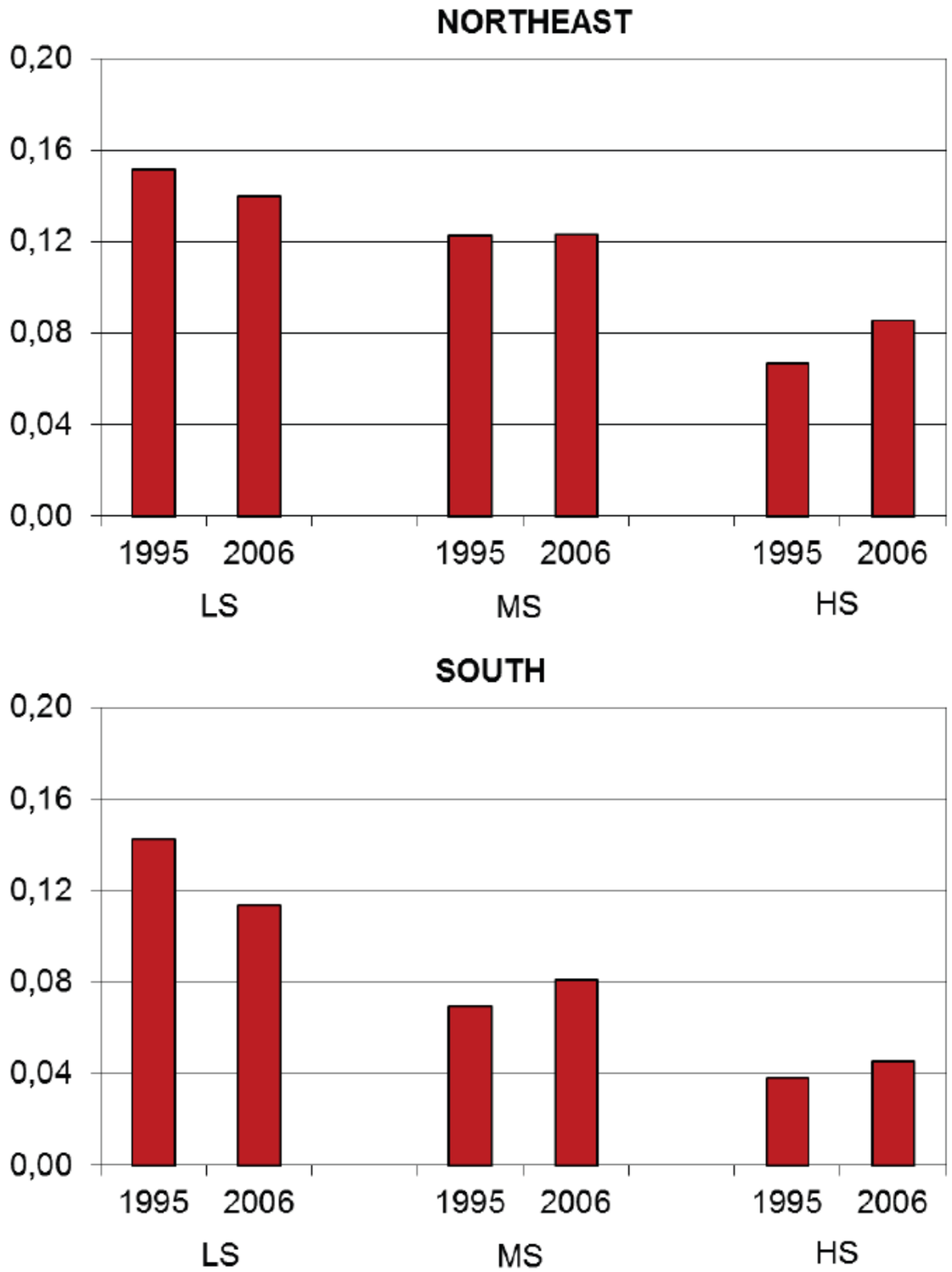
Regions in GVCs: Illustration

Italian Macro-Regions

External dependence index: Share of workers employed in production processes of final products of which the last stage of production does not take place in the region itself.

Source: pilot study by Luca Cherubini (Bank of Italy) and Bart Los, based on data from WIOD and Irpet.



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WIOD: Data on Occupations

- To better understand the nature of specialisation taken place in various countries, one needs information on **activities/tasks**

- Additional database constructed with **occupation of workers** (hours and wages), see De Vries and Timmer, mimeo, 2015.

- Based on 4-digit occupation description (ISCO 1988) from *LFS and SES* for EU, *OES* for US (cross walks for SOC 2000 and 2010) and *Population census* plus *wage structure surveys* for Japan.

- Division of occupations into
  - **Head Office**: R&D, Management, Logistics, Marketing, and Back office occupations
  - **Production occupations**: other including fabrication of intermediates and assembly.

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Occupations in GVCs: Illustration

Table 1. Functions in the German transport equipment GVC

	1995	2008	2008 - 1995
All HQ activities, of which:	*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
Production activities	*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.

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TiVA: Firm Heterogeneity

Use ratios derived from existing business and trade statistics (FATS, SBS, TEC, STEC) to break down industries in national IO tables

- Use micro-databases to derive output, value added, import and export shares by firm ownership (or firm size, or ...), and apply these shares to split the columns and rows of national input-output (I/O) or supply and use (S/U) tables

- Next use balancing algorithms with prior that intermediate input requirements per unit of gross output are identical across firm categories with an industry and that they deliver to the same users

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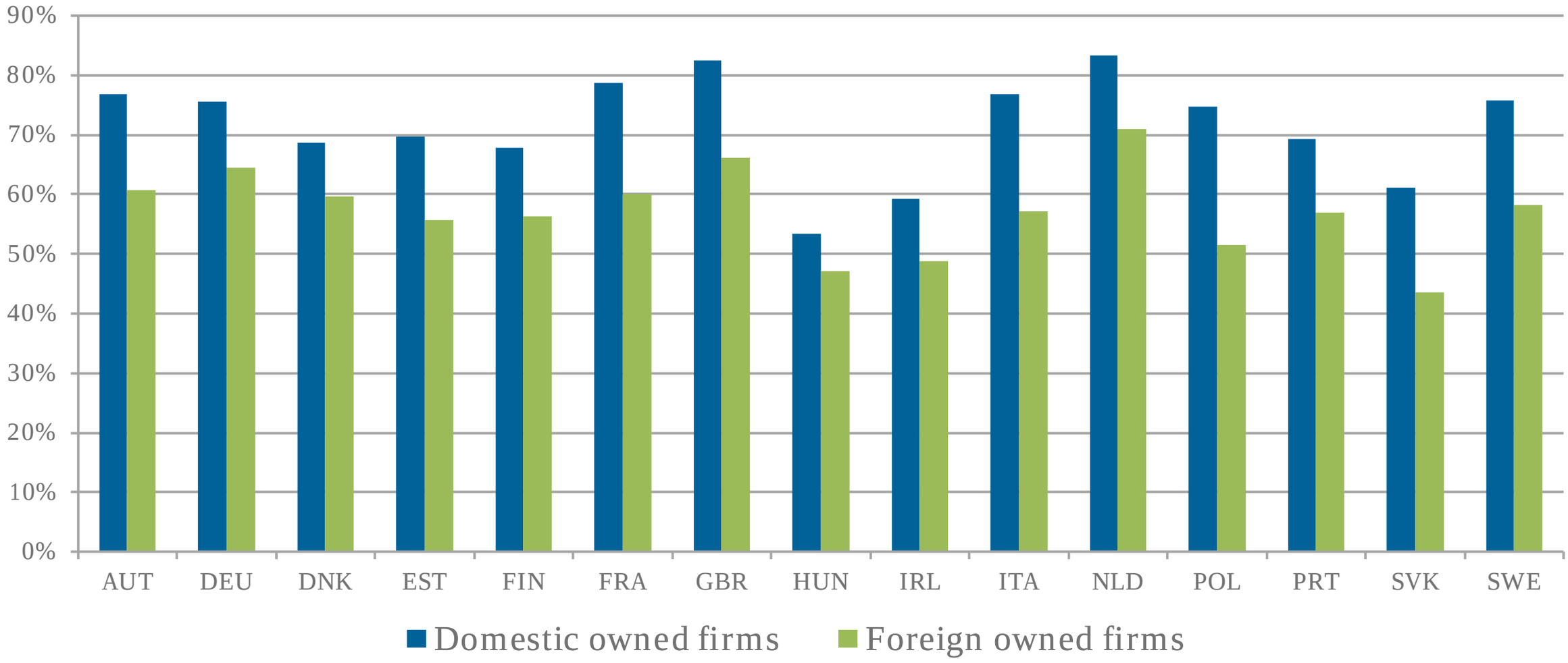
Firm Heterogeneity: Illustration

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

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TiVA: International Income Distribution

- Approach: focus on FDI income flows, to identify 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)
  - Conceptually, this represents a (partial) move to a GNI based view of GVCs
- Problem: where does the foreign-owned gross operating surplus go to (the “ultimate investor”)?

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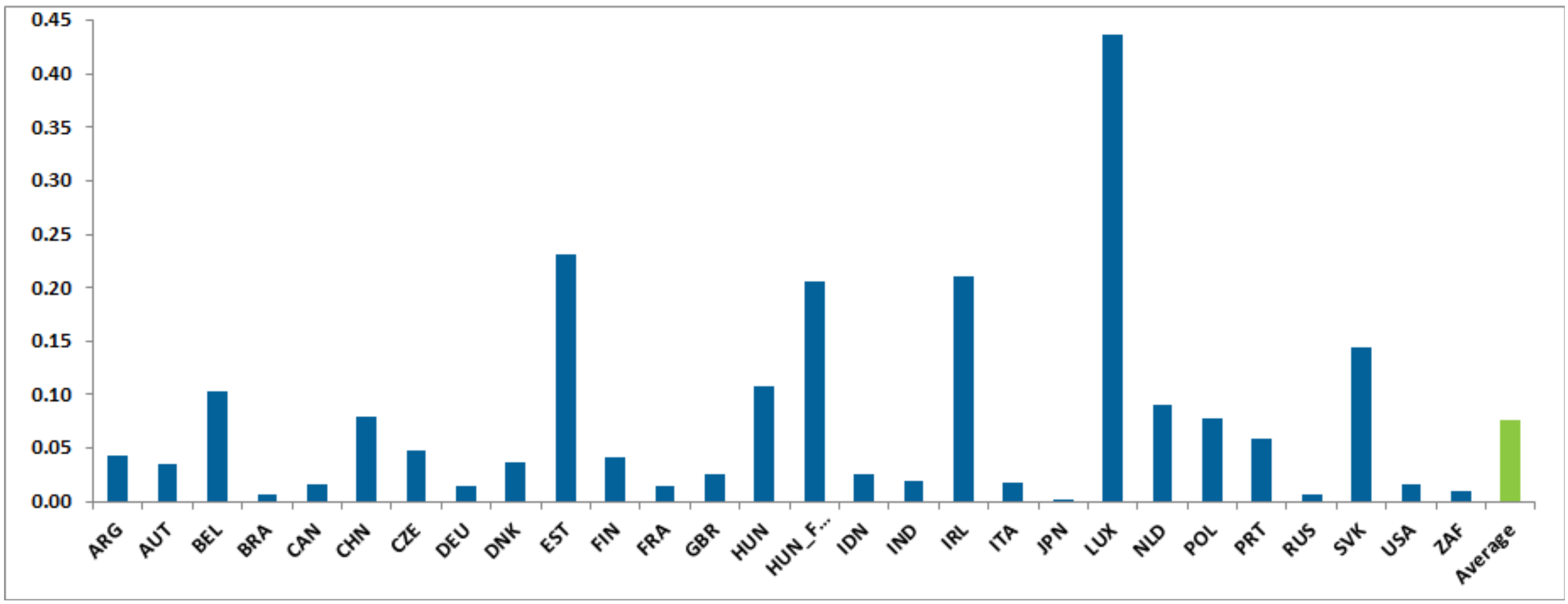
Income Distribution: Illustration

Adjustment in DDVA associated with FDI income payments, as % of total DDVA in exports



Documentation: Mehigan, Borga and Fortanier (2016) 'Integration of FDI Statistics in TiVA: Results and Data Challenges' OECD: Paris (COM/STD/WPTGS/DAF/WGIIS(2016)1

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Concluding observations

- Much progress to be made by integrating micro-data and macro-data
- Still, lots of improvements welcome regarding data that currently go into the production of global input-output tables:
  - Internal consistency bilateral trade data
  - Trade in services data (e.g. royalties)
  - Consistency between National Accounts statistics and bilateral trade data
  - Product and industry detail in NAS and SUTs
- Important role for international organizations