Chapter 11
Firm heterogeneity & MDL

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Present structure of Chapter 11

1. Firm Heterogeneity
2. Concept of International Orientation
3. Types of firm heterogeneity
4. Data sources and International Orientation
5. Micro Data Linking (MDL)
6. Methodological issues MDL
7. Measurement International Organization of Production
8. Expanding the international profile

1. Firm Heterogeneity (introduction)

- The deepening of globalisation and its consequences for official statistics:
  - Growing interconnectedness
  - More vertical interdependencies
- Open issues:
  - Changing policy perspectives (it's the import, stupid!)
  - Organizational changes are multidimensional
  - Servitization
  - From 'grossing up' inputs & outputs towards relations & networks (Baldwin, 2016)
  - Scoping to the level of official statistics

Globalisation and official statistics

Globalisation is/leads to (Baldwin, 2016):

- Finer degree of resolution > *granularity of statistics*?
- More sudden and more uncontrollable > *measuring disruptive technologies and its disruptions*
- Denationalization of comparative advantage > *the nation/country is nog longer the unit of analysis*
- Partly rupturing compact G7 workers and G7 firms > *disabling the wage-technology equilibrium*
- Changing role of distance > *increasing differences in costs of moving goods, people and ideas*
- Changing economic policies > *different strategies for developing and developed countries*

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Is MDL the answer on increasing firm heterogeneity?

2. Concept of international orientation

Type of trade activity	Two-way trader			Exporter			Importer			Non-trader
Geo. spread of trade / Ownership	*Intra- and extra-EU*	*Extra-EU only*	*Intra-EU only*	*Intra- and extra-EU*	*Extra-EU only*	*Intra-EU only*	*Intra- and extra-EU*	*Extra-EU only*	*Intra-EU only*	-
Domestically controlled without foreign affiliates										
Domestically controlled with foreign affiliates										
Foreign controlled (with/without for. affiliates)										

The issues of international orientation

- Limited concept of stratifications/breakdowns > *ownership & type of trader (TEC)*
- Missing dimensions in stratification > *services (=type of trader STEC), innovation/R&D (type of innovator), investments (type of investor)*
- For national purposes:
  - Additional characteristics: sustainability, corporate social responsability > *links with SDGs?*
- For international comparisons:
  - Integrating TEC & STEC? > *a more complete type of trader?*
  - Integrating FDI & AMNE > *type of investor?*

3. Types of firm heterogeneity

- Stylized facts on differences in international orientation:
  - Ownership
  - Type of trader
    - More productive, more R&D, more high paid jobs, more employment, etc.
    - Does it hold for additional characteristics of intrest for domestic policy making> *e.g. nationality, life cycle, size, governance structure*
- The generic use of the BR backbone >*which characteristics are to be included in the backbone*

Intermezzo question

Should paragraph 2 (concept of international orientation) be combined with paragraph 3 (types of firm heterogeneity)?

Pro: present text suggests so. See also paragraph 5.
Con: types of heterogeneity <> international orientation

4. Data sources & international orientation

- Business Register
- Trade in goods
- Trade in services
- SBS

- > conceptual issues > *e.g. cross-border transactions manufacturing or ICT enabled services*
- > methodological issues source related > *small samples, coverage, TEC methodology, UCI methodology*

5. Micro Data Linking (MDL)

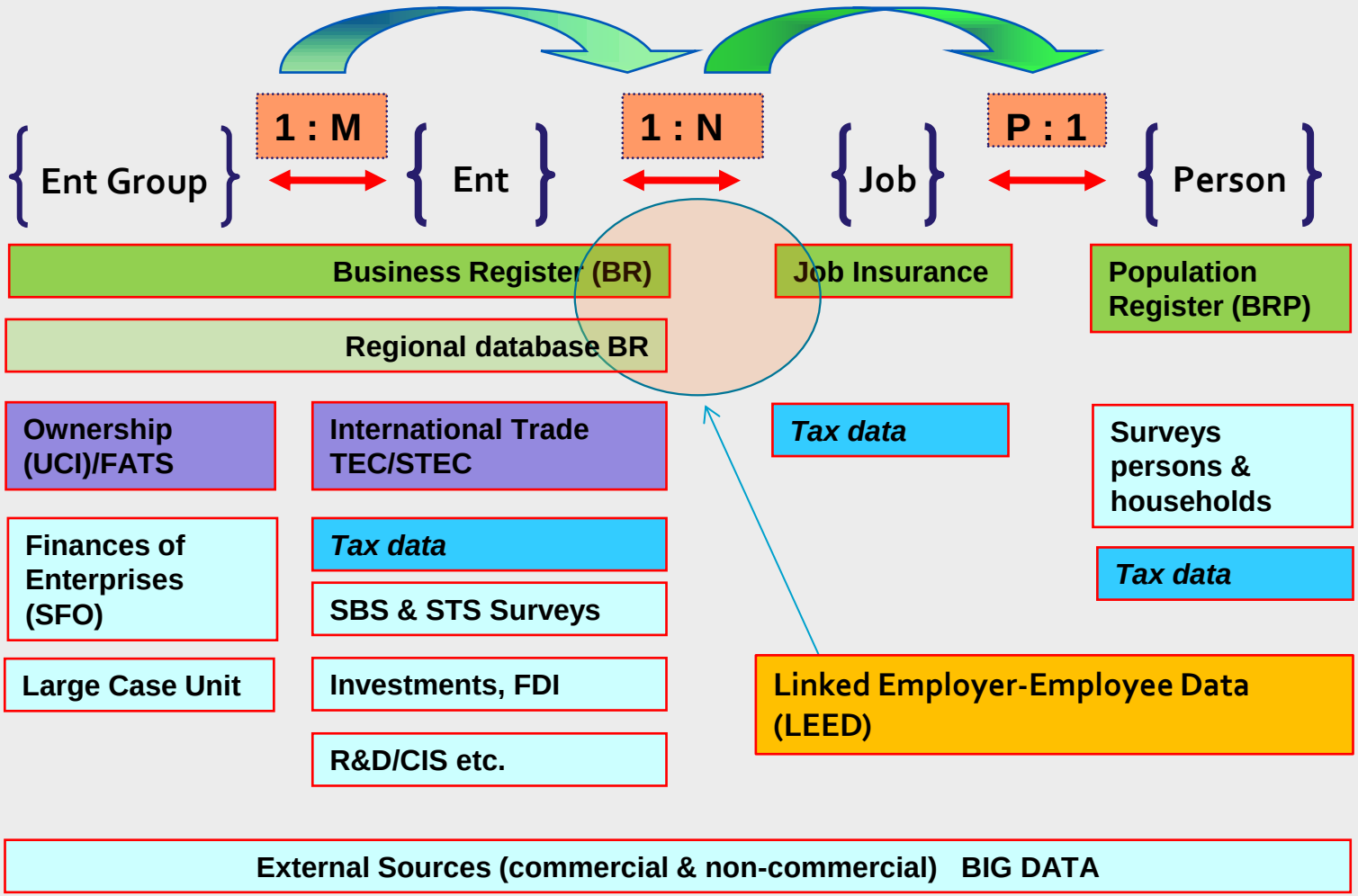
Combining characteristics of the enterprise:

- International orientation of an enterprise
  - Ownership & control (derived from FATS)
  - Type of trader (derived from ITGS)
- Standard ESS characteristics (NACE, size class)

Combining different sources:

- LEED database > social dimension
- TEC database > trade dimension
- FATS/UCI database > ownership dimension

MDL > integration model



MDL > issues

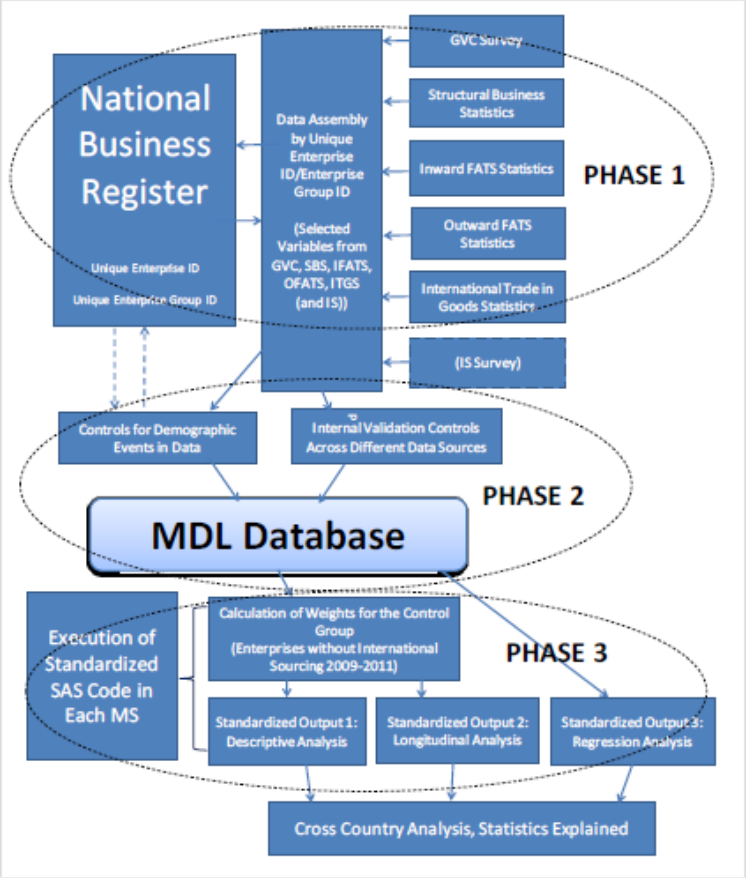
- The backbone should be able to provide harmonised, dynamic information at regional, national and international level > *does it? And what is set in place to accomplish that?*
  - Role of EGR, GLEIF?
  - Enrichment > tax data, branch data ngo, profiling?
- Classification > *structural vs functional typologies?*
- Scope of globalisation > *economic globalisation, i.e. behaviour of enterprises. SBS only? SNA coverage?*
- Measurement > *transactions, cross border flows (offshore/outsource), servitization*

6. Methodological issues MDL

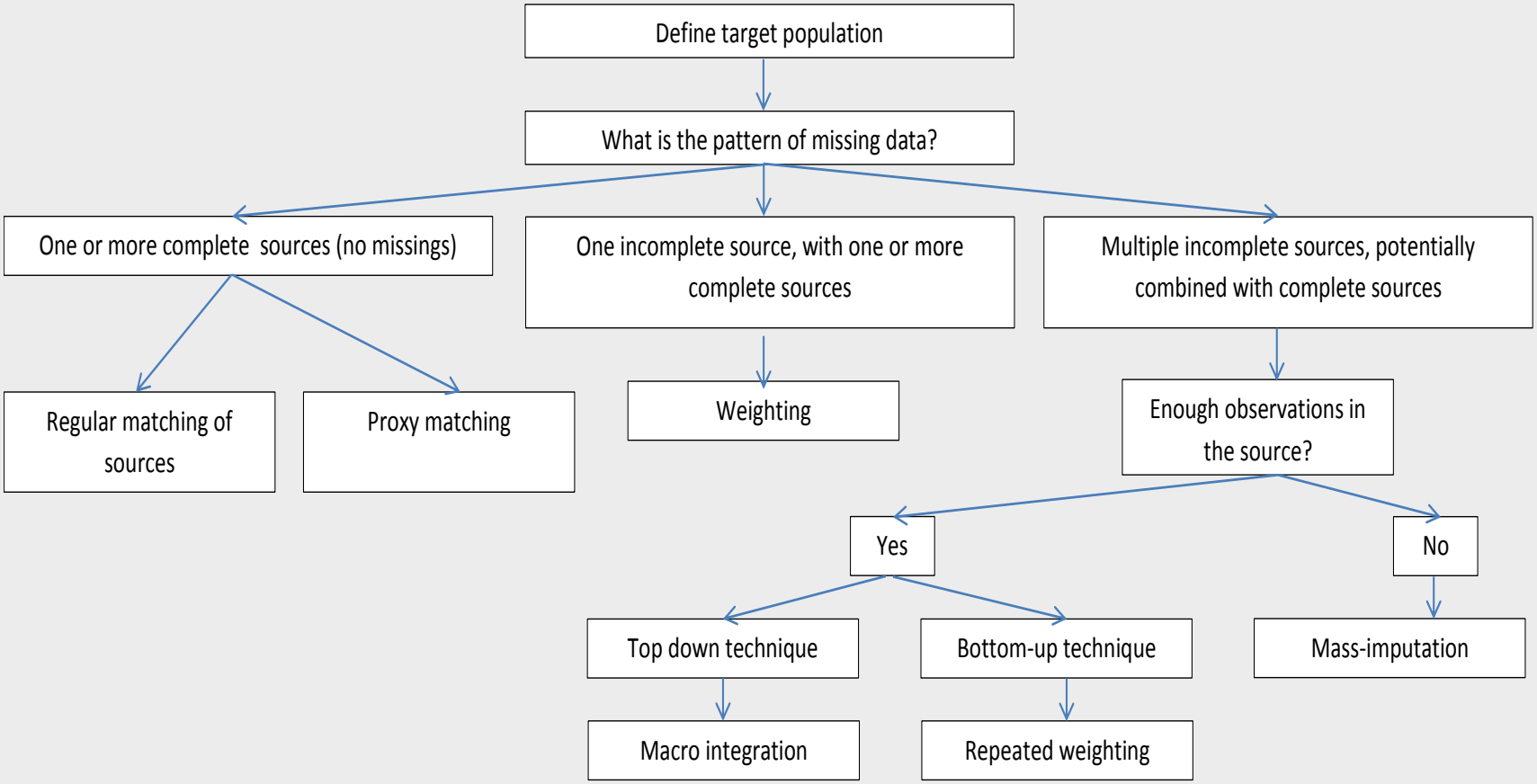
- Originally thought of as a separate paragraph on
  1. Enhancing Business Register
  2. Creating consistency of classifications
  3. And addressing some compilation issues
- Given setup of paragraph 5 a large part of 1. and 2. could be addressed there, whereas 3. fits in some general mehtodology handbooks (references would do). Also parts fit in paragraph 2.
- The work itself: DMDR approach, sampling & weighting, analysis *> to be elaborated (see next examples)*

MDL > DMDR approach (GVC example)

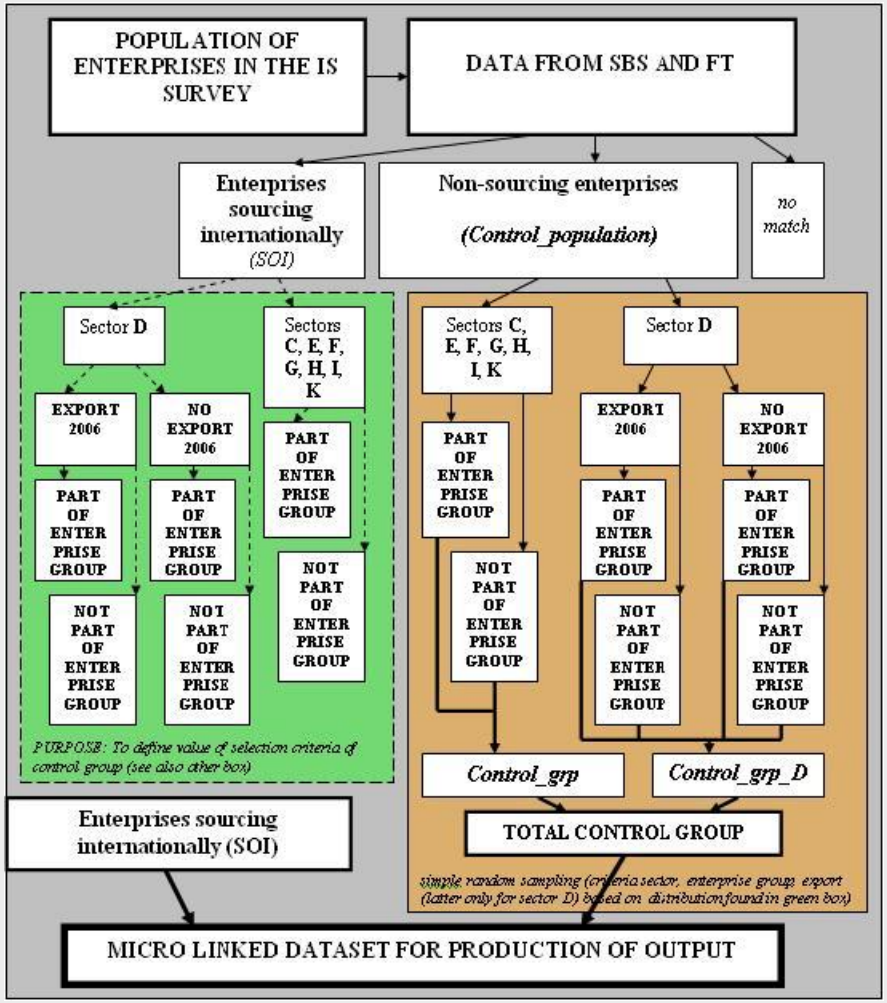
- Distributed Micro Data Research (Bartelsman, Hagsten & Polder, 2017)
  - Harmonised data sets
  - Centrally developed codes & syntax (SAS, R, SPSS)
  - All partners run syntax on their national data → aggregated results sent to coordinator for analysis
  - Micro data does not leave the country
  - Joint European publications



MDL > Sampling & weighting



MDL > small samples/incomplete data



- Treatment group: enterprises sourcing internationally
- Control group: enterprises NOT sourcing internationally
- Random sampling:
  - NACE sector
  - Export (0/1)
  - Enterprise group (0/1)
- Result: comparable groups

7. Measurement of international organization of production

- International sourcing
- Factoryless Goods Producers (FGP) > UN/ECE Guide 2015
- Business Functions

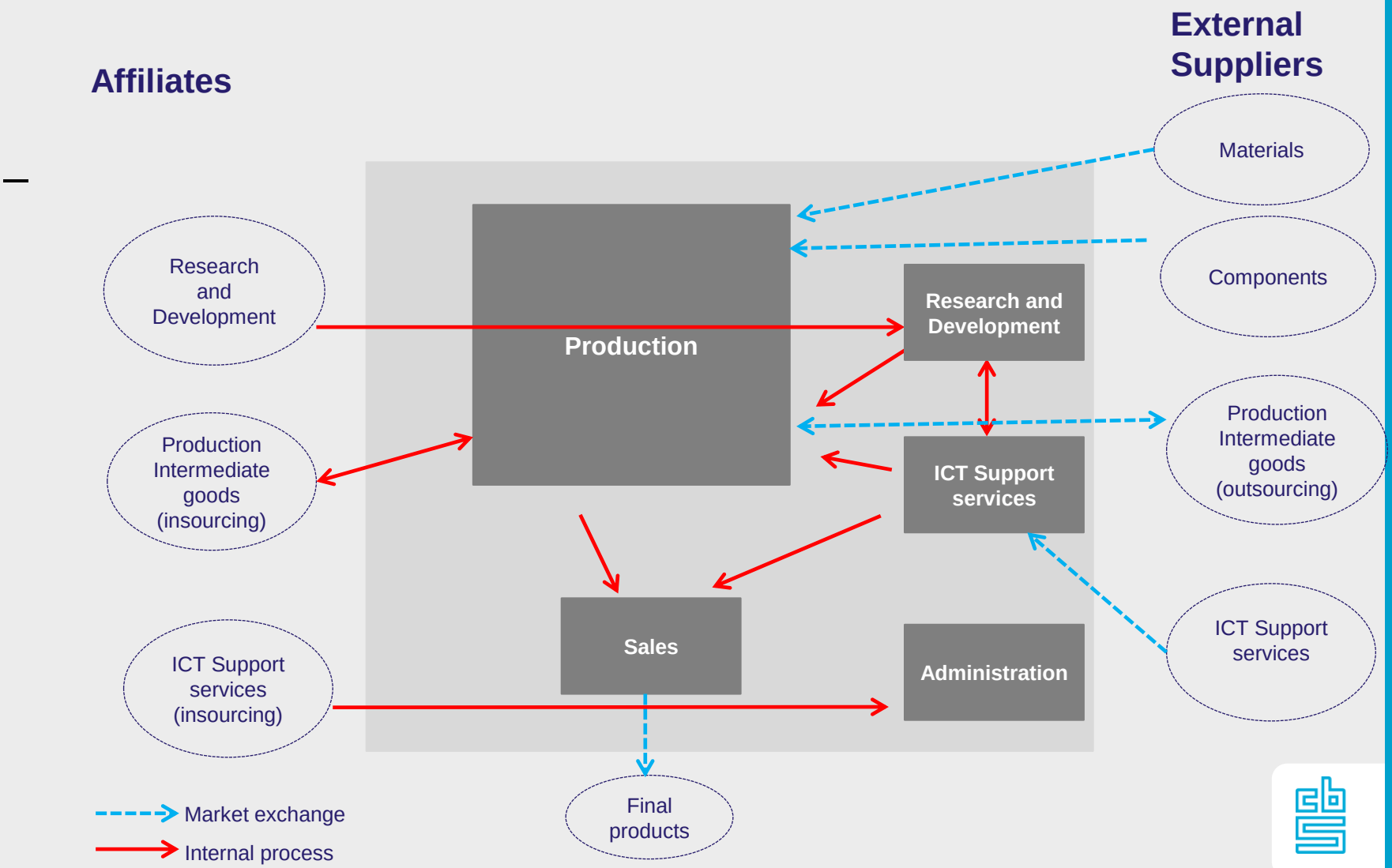
What are Business Functions?

- Aggregation of specific tasks performed within the enterprise corresponding to a specific grouping of products (e.g. CPA classification)
- The level is less aggregated than the activity (NACE) but more aggregated than products or tasks
  - Trade-off: sufficient detail to capture fragmentation process vs. sufficient aggregation to be manageable for data collection
- Business Functions in practice mainly a tool to capture "outsourceable" services elements in the production processes
  - Any business function can be the main activity of an enterprise supplying others and can hence be related to a NACE category, i.e. functions can be related both to CPA and NACE

Typology of Business Functions

Business function	Definition
Core business functions	The core/primary business function of the firm. Generally the production of goods or services intended for the market or third-parties.
Support Business Functions:	
Transport, logistics and distribution support functions	A support function that includes activities related to procurement, transportation, warehousing and the delivery of goods and services to customers.
Marketing, sales, after sales service support function	A support function focusing on market analysis, advertising, selling, retail management, as well as activities related to repair, maintenance and customer services (including help desks and call centres).
IT services and software support functions	Activities related to data processing, software development and the provision of ICT services.
Management, administration, and back-office support functions	Activities associated with the administration of the firm, including legal, finance, accounting and human resources management.
R&D, engineering and related technical services and R&D support functions	This support function includes activities related to experimental development, research, design, engineering and related technical consultancy, technical testing, analysis and certification.
Other business functions	Activities related to building maintenance and security as well as other activities not belonging to specific firm-level business functions.

Flows of Business Functions: make or buy



Definitions of International Sourcing

The total or partial movement of business functions (core or support business functions) currently performed in-house or currently domestically sourced by the resident enterprise to either non-affiliated (external suppliers) or affiliated enterprises located abroad.

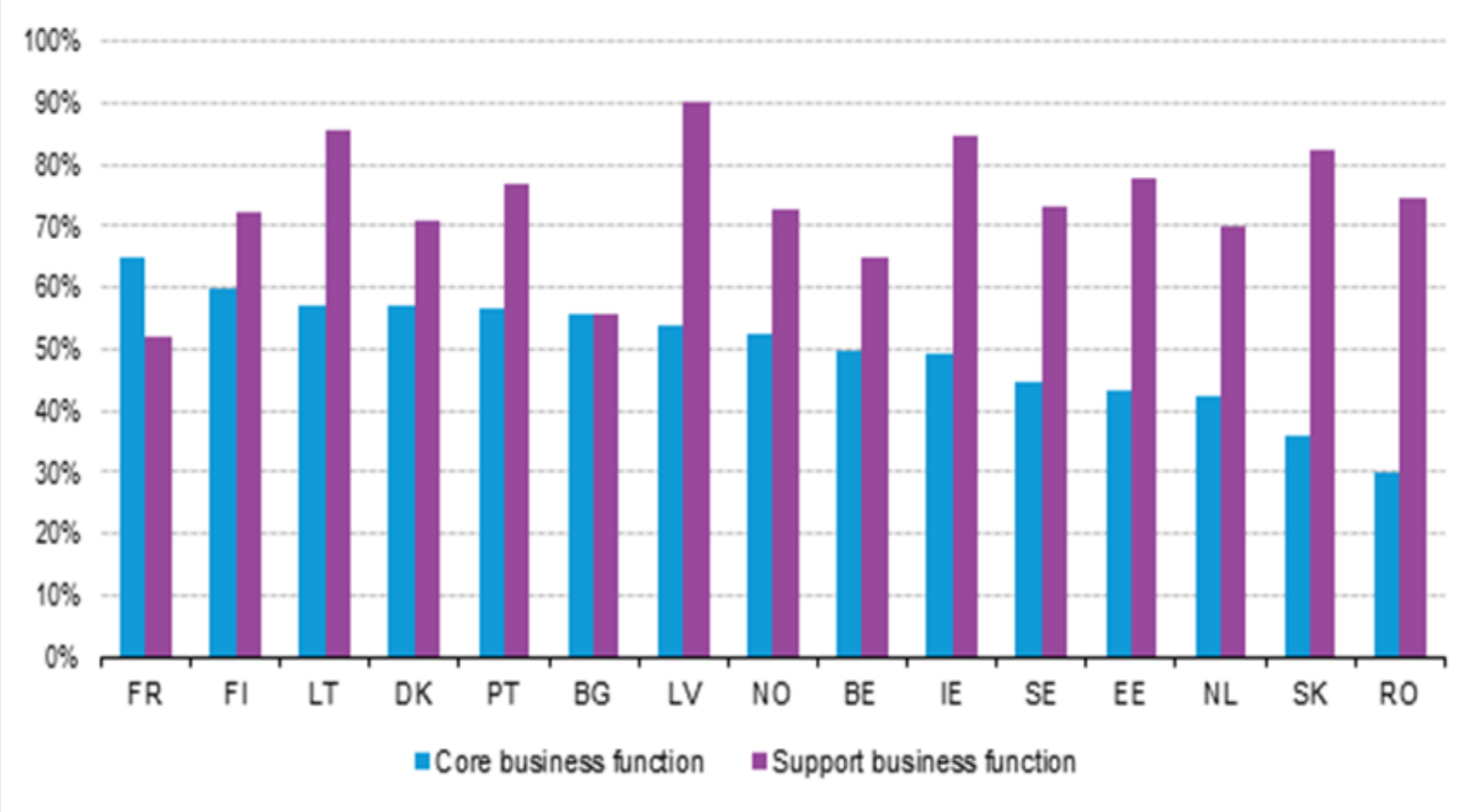
Sourcing options

ORGANIZATION	LOCATION	
	DOMESTIC	INTERNATIONAL
INTERNAL: function within the enterprise or enterprise group	EU terminology: Domestic insourced US terminology: Domestic in-house • Function performed within the enterprise or enterprise group within the compiling country	EU terminology: International insourced US terminology: Offshore in-house Function performed within the enterprise or enterprise group outside the compiling country (by affiliated enterprises)
EXTERNAL: function outside the enterprise or enterprise group	EU terminology: Domestic outsourced US terminology: Domestic outsourced Function performed outside the enterprise or enterprise group by non-affiliated enterprises and within the compiling country	EU terminology: International outsourced US terminology: Offshore outsourced Production outside the enterprise or group and outside the compiling country (by non-affiliated enterprise, e.g., suppliers, service providers, contractors, etc.)

European survey on International Sourcing 2017

- General information
- Domestic employment by business function
- Domestic sourcing of business functions
- International sourcing of business functions
- Motivations and barriers for international sourcing
- Relocation of business functions

International sourcing , EU 2011*



** Percentage of international sourcing enterprises*

Capturing new ways of organising production (FGP)

2.1 How would you describe the main activity of your enterprise at the end of 20xx?

Tick the most characteristic option.

Manufacturing

- produces (completely or partially) goods and owns them [ ]
- produces goods under contract for others, but does not develop or own the rights of the intellectual property of the design of the goods [ ]
- does not produce goods, but contracts-out the production completely, and has developed or owns the intellectual property of the design of the goods [ ]

Construction [ ]

Trade

- buys and resells goods without developing or owning the intellectual property of the design of the goods [ ]
- sells own goods for which they develop and own (or otherwise acquire) the intellectual property of the design of the goods [ ]

Services

- develops, designs and engineers services for clients [ ]
- develops, designs and engineers services for clients, produces the designed goods and owns them [ ]
- develops, designs and produces services for clients, and controls goods' production process performed by others, and owns the intellectual property of the design of the good produced [ ]
- Other services, e.g. transportation [ ]

Other, please specify [ ]

8. Expanding the international profile

- No specific or concrete ideas (yet)
- Paragraph is ‘road ahead’ *> input for ‘research agenda’ (chapter 14)?*
- Issues to include?
  - Integration GVC Survey in FRIBS (Europe)
  - New surveys for extended SUT
  - Exchange & access micro data
  - Pros/cons MDL
  - Lessons learned & results
  - Challenges & future work

The pros of integrated data

1. efficient (re)use of available data
2. no response burden
3. many possible combinations of statistics
4. fits well to increasing application of register data (from tax authorities etc.)
5. micro data does not leave NSI's (p.o.v. NSI)
6. coordinated European approach, comparable results

The cons of integrated data

1. methodological issues due to demographic events (100 % match rate almost impossible & difficult to distinguish organic growth from M&A growth)
2. no direct causal evidence due to linking of different sources
3. raising to population is not straightforward
4. If relatively few observations → outlier effects cause high variances
5. (+/-) preparation stage is essential → changes at later stage in projects are difficult

Lessons learned

Monitoring economic globalisation implies

- Horizontal and vertical integration of statistics
  - Extended national accounts
  - Integrated business statistics
- Analysis & publication of its structure and its impact
  - At national level: combining sources and implementing new concepts
  - At international level: combining existing aggregates (e.g. the main and supplemental indicators as implemented by Eurostat)
- Sharing knowledge, experiences (and one day maybe even micro data), and working together
  - *national: Universities/Planning offices/Central Bank*
  - *international Eurostat/ECB/OECD/UNECE/UNSD*

Results integration approach

- The promotion of the MDL approach as a future tool for statistical production
- The introduction of new concepts & classifications:
  - the 'globalized enterprise' in the ESS
  - the international classification of Business Functions
    - *a better coverage of the services sector*
- Including the International Organisation and Sourcing of Business Functions Survey (ISGVC) in the upcoming European regulation on business statistics (FRIBS) *> 2021*

Challenges & way forward

Opening the ‘black box’ called the enterprise

- More information on *transactions and relations* between enterprises > *chains & networks*
- Better insight in the enterprise organisational structure (business functions) and their adaption to continuously changing markets > *role of services/digital trade*
- A better understanding of the dynamics of enterprise groups
  - intensifying the use of event information in the Business Register
  - matching with commercial data? Thomson M/A? Bureau Van Dijk/ORBIS, etc…

Future work

- Trade in goods & trade in service
  - Same breakdowns TEC/STEC for SBS population
  - Matching goods/services on firm level
  - Finding concordance services/goods classification
    - *Integration SNA & BOP*
- Linking data on finances of enterprises with data on production, employment and performance
  - *Financialisation (see www.fessud.eu)*
- Value chains
  - Position Dutch industries in global prodution chains
  - Import/export and productivity, sourcing

Future work (focus on LEED)

- Digitalisation:
  - Blurring economic activities (Uber, AirBnB, Internet sales)
  - Relocation and job destruction
- Financialisation:
  - Upstream/downstream impact on tasks & skills
- Offshoring & outsourcing:
  - Trade in tasks, changing job content
  - Impact on productivity and income
  - Impact on jobs, skills and personal welfare
- Flexibilisation labour market (regular/flexible, life long learning, inclusieve growth, role self-employed, etc.

Changing official statistics

1. Capturing combined services and manufacturing activities (‘embedded services’, servitization, digital trade)
2. Capturing emerging business models:
   - Factoryless Goods/Services Producers?
   - Blurring (activities, economic sectors)
3. Multilevel modelling is not trivial (who is first: chicken or the egg?) *> causal relations, contextual relations*
4. Network analytical approaches (identification of adjacency relations *> not a statistician’s standard routine*)

Research areas national statistics (NL)

- Role of Internet (measurement Internet sales)
- Blurring industries (AirBnB, Uber)
- Financialisation (see www.fessud.eu)
- General price index and equity inflation
- Productivity and innovation
- GDP and prosperity (enhancing SDG indicators)
- Integration SBS/STS statistics
- Integration TEC/STEC and SNA
- Impact studies for policy measures:
  - *Regression analysis*
  - *Propensity score matching*
  - *Controlled field experiments*