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Part IV: Integrated Business and Trade Statistics - Micro Approach

Danish experience with Micro Data Linking

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What do we mean by 'MDL'?

Linking statistical units from different data sets and statistical domains at the relevant unit level (e.g. enterprise) with a view to fulfil a user's needs or gain new insights

Combining relevant variables from the those data sets (e.g. FTEs and value added from SBS with exports from ITGS) for as many units as possible in those data sets

Validating the correctness of the links of the units from the different data sets or registers involved

Why do we develop MDL?

Bridges the 'stove pipe' nature of different statistical domains and systems developed over time – enabling a more holistic view at unit level

Adequate and flexible method for addressing some of the most salient issues among policy makers and researches

- Question is not "what do *countries* trade?" but "what kind of *enterprises* trade?" (size, activity, ownership etc.)
- Firm heterogenity: Firm characteristics and impact on performance
- Global Value Chains and the involvement of domestic enterprises in GVCs

Increases the value of existing data with no new response burden

Supports cross border analysis/comparison without data exchange

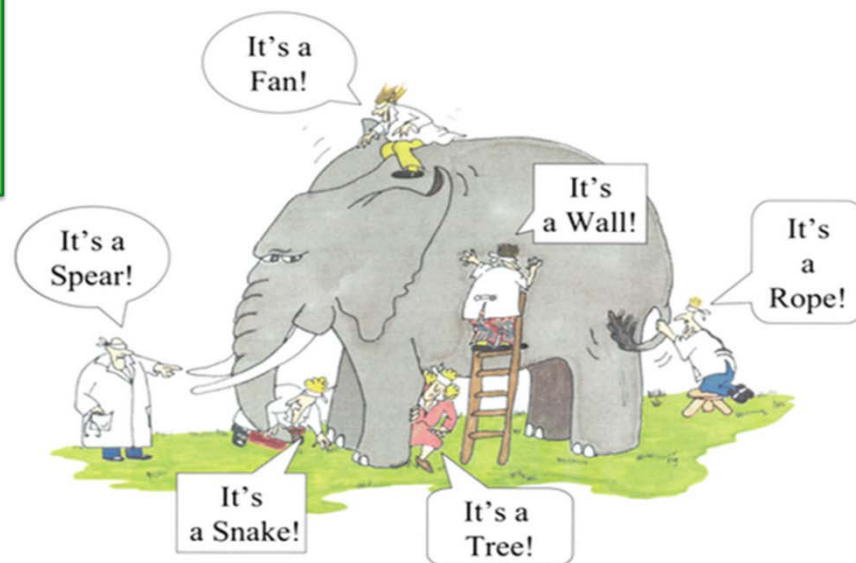# 'Stove pipe' hampers new insights

Structural Business Statistics

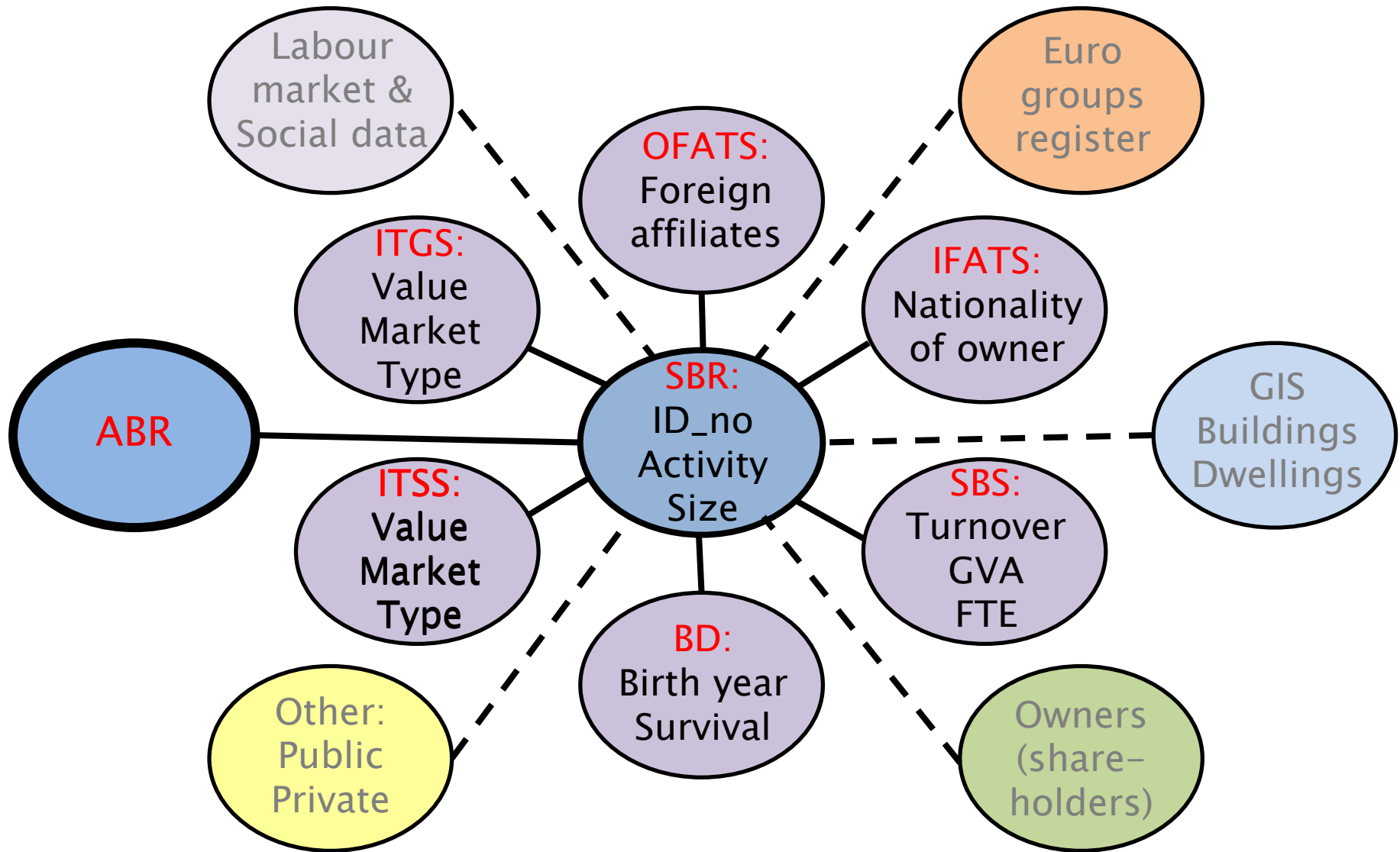International Trade in Goods Statistics

Community Innovation Survey

Research and Development Statistics

Foreign Affiliates Statistics (FATS)

SBR, statistical domains – and beyond

Methodological issues with MDL

- **Unit consistency: Identity across domains**
- **Data consistency**
- **Longitudinality:** Effects from demographic events
- **Coordination of samples:** Coherence vs. burden
- **Completeness:** Need for better imputation methods
- **Output consistency:** With already published figures
- **Possible extensions:**
  - Linked employer/employee data (LEED) & other social data
  - New data sources (e.g. XBRL)
  - …

Why account for firm heterogeneity ?

Enterprises are not homogeneous but highly heterogeneous even within narrowly defined sectors. They may respond to exogenous shocks in very different ways or they perform differently. In some cases, one may find more similarities between firms across than within countries.

- Size (Small vs large enterprises)
- Group relation (SMEs_independent | SMEs_dependent |)
- Ownership (foreign |domestic_with affiliates| domestic without affiliates)
- Trading status (exporter/importer | non-exporter)
- Type of product
- Export market
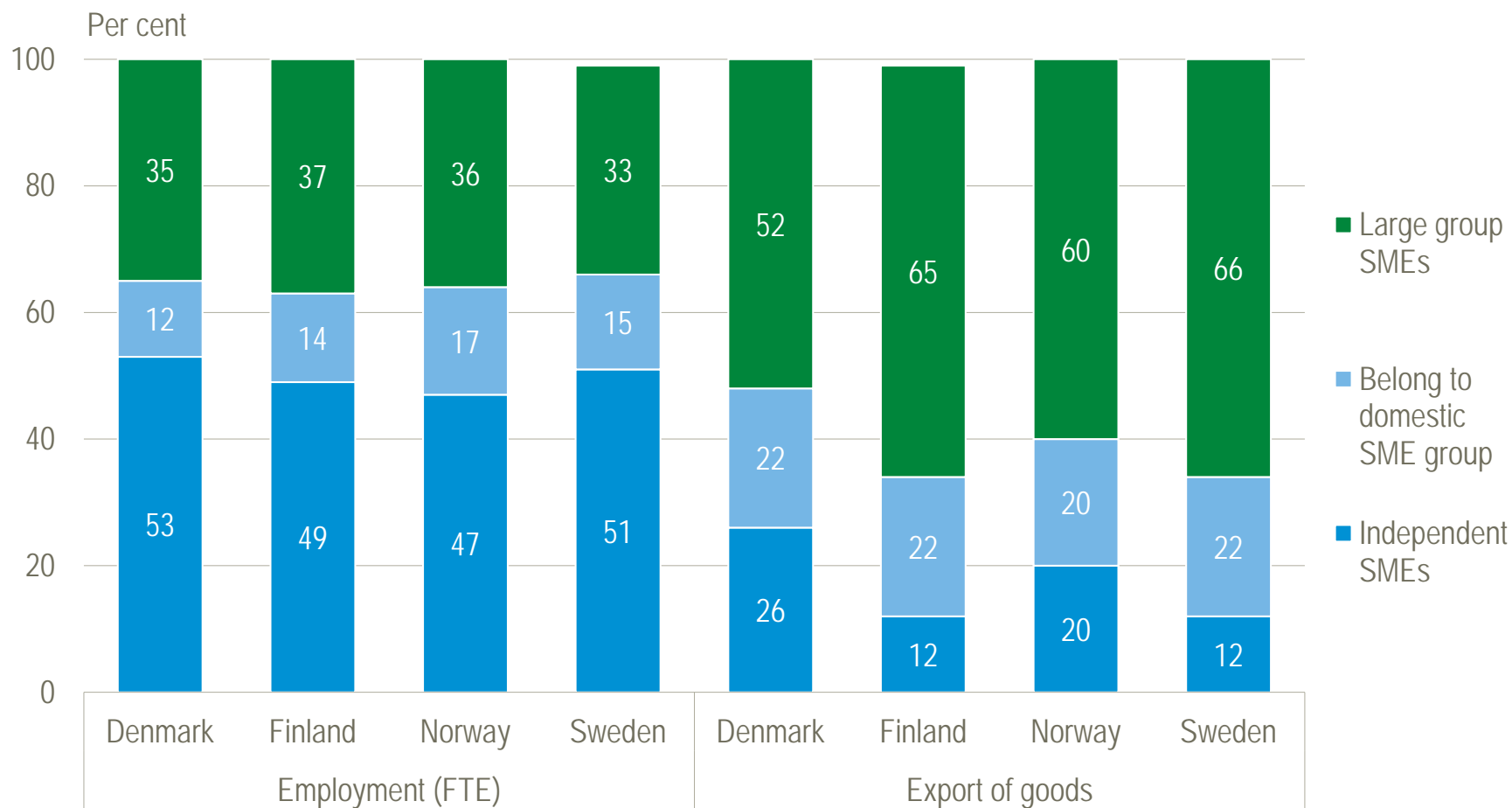- Business function/international sourcing

Examples: From MDL to macro output

- Practical illustration: The joint project between the statistical offices in the Nordic countries and OECD:
  - Establishing a database in each NSI with harmonised set of variables
  - Using distributed micro data linking research set up (centralised developed syntax)
  - Tailor made input for OECDs TiVA database
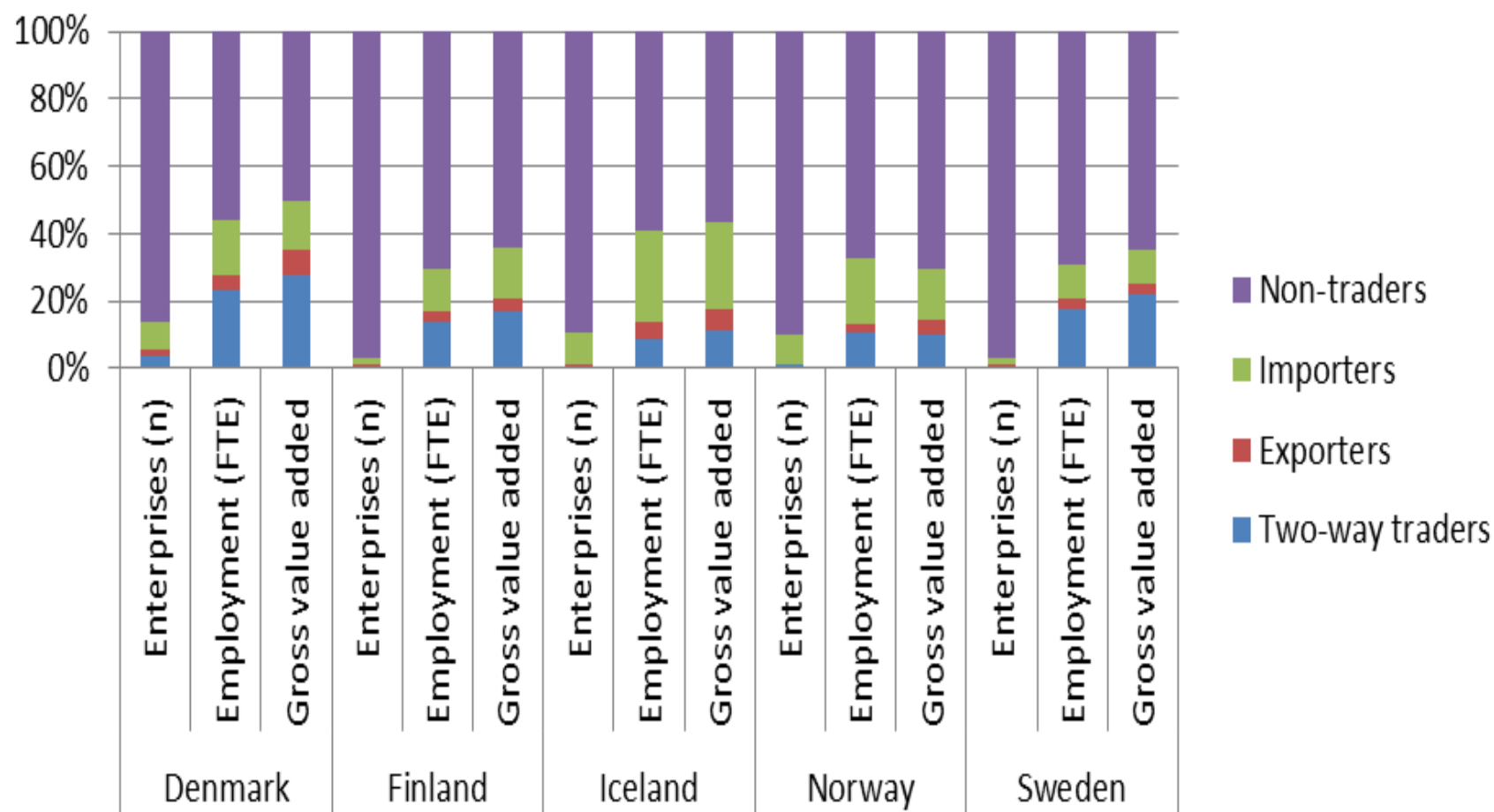 - Publication of results in the Nordic countries

1) Employment and exports by SMEs
Size class-group affiliation status (2014)

Per cent

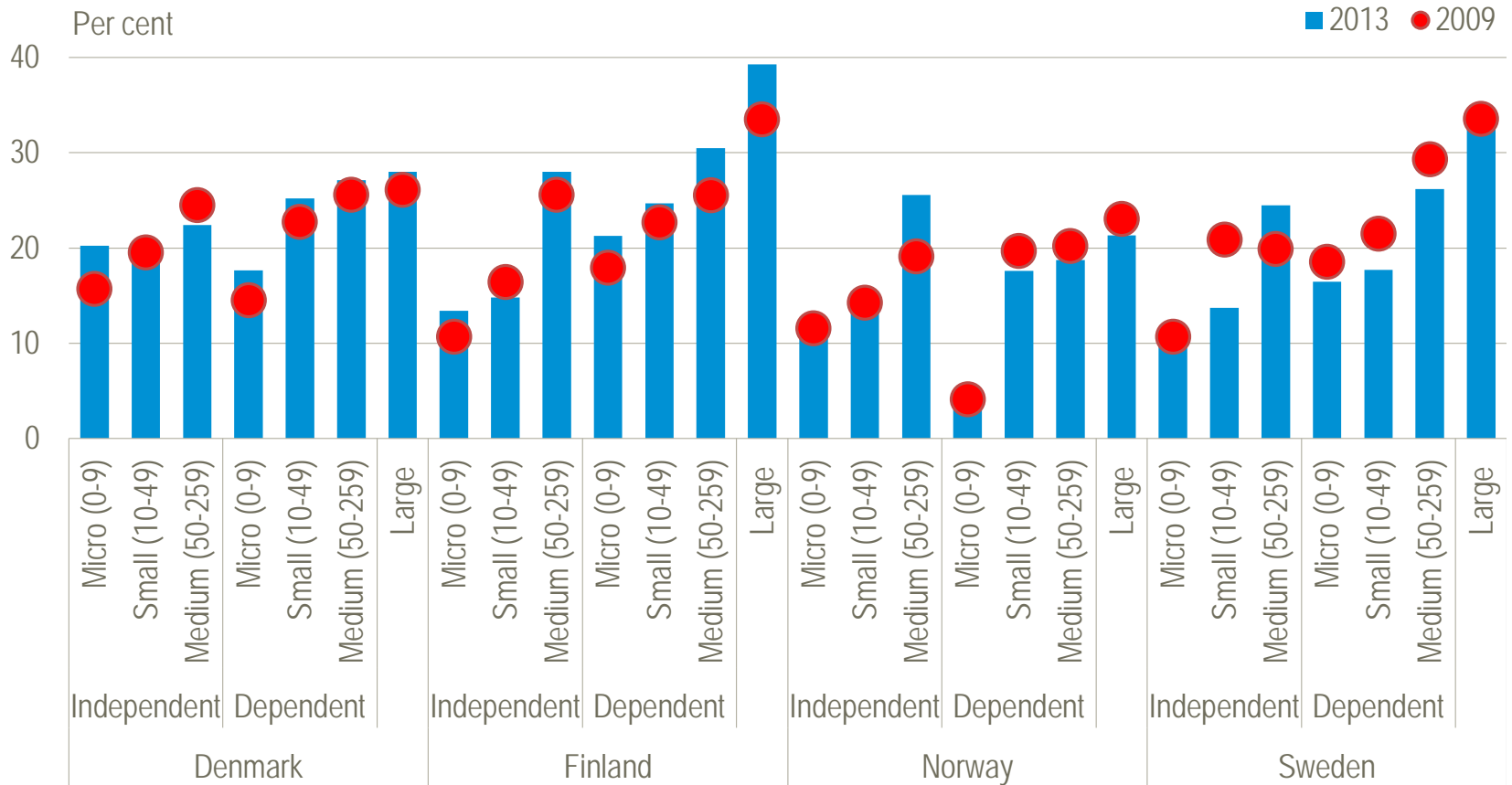|	Denmark	Finland	Norway	Sweden	Denmark	Finland	Norway	Sweden
Large group SMEs	35	37	36	33	52	65	60	66
Belong to domestic SME group	12	14	17	15	22	22	20	22
Independent SMEs	53	49	47	51	26	12	20	12
	Employment (FTE)				Export of goods			

2) No. of enterprises, employment and value added by enterprise type (2013)

3) Share of employment embodied in exports, by type of enterprise, as percent of total employment (2013)

Per cent

Legend: Direct exports, Indirect exports

	Non-MNEs	Domestic MNEs	Foreign-owned MNEs
Denmark Indirect	13	16	15
Denmark Direct	13	36	26
Finland Indirect	16	11	8
Finland Direct	10	27	22
Norway Indirect	13	10	14
Norway Direct	11	31	22
Sweden Indirect	16	11	12
Sweden Direct	13	39	27

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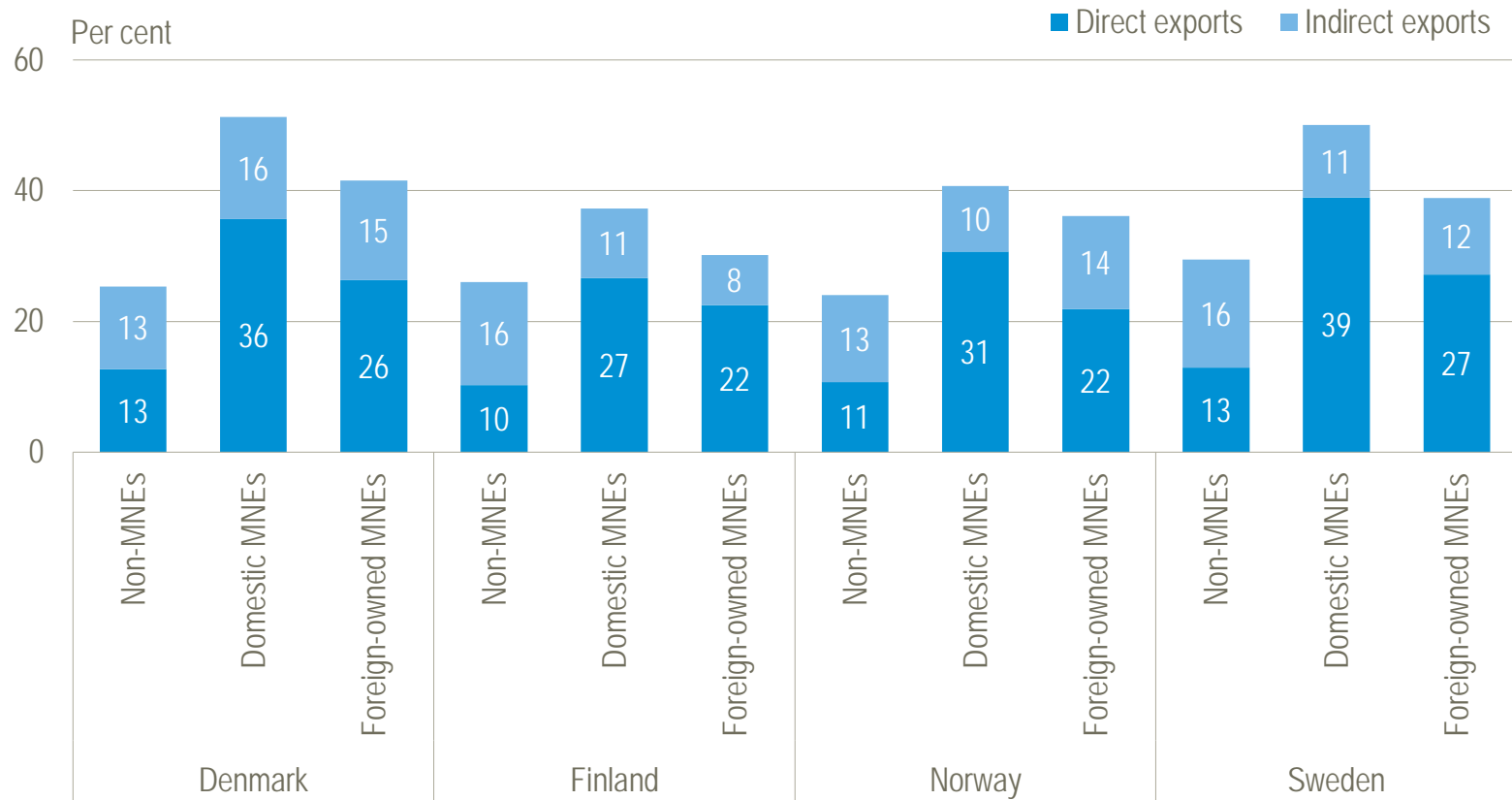
4) Import content of export goods, by size class and type of dependency (2009-2013)

Access for researchers to micro data

- Most micro data in Statistics Denmark are accessible in anonymised form for approved researchers (including analysts, policy makers etc.)

- Access is not free, but is used to a very large extent

- Market sensitive enterprise data are subject to a one year waiting period before release

- Users can integrate own data with our data

- The application and project description to must approved by Statistics Denmark before access is granted

- Users have remote access to micro data, but only tabular results can be downloaded

- If a researcher breaches the rules for access the whole research institution is suspended

Business Statistics Datawarehouse

- 5-year project with the aim of establishing a unique database containing the most important business statistics variables at micro level for all enterprises.

- Co-funded by the Ministry of Research and Higher Education as 'national research infrastructure'

- To be developed in close cooperation with Universities and Business Schools in DK and the National Bank

- Will ensure that variables from different statistics can be linked to the same uniquely identified statistical unit (the enterprise) across the different statistics and over time

- Will be accessible for researchers through the existing set-up for researchers' access at Statistics Denmark.

- Among areas with greatly improved research possibilities are Entrepreneurship and Firm Survival, Productivity dynamics and industry performance and Global Value Chain dynamics

- Vision: To offer researchers the same services re business data as they already have re social data

Thank you for your attention!

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