Micro foundations of macro data: increasing data quality and exploiting the "true wealth" of NSIs

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For decades ...

- … the main outputs of National statistical offices (NSIs) have been macrodata and the attention of policy makers was on macroconomics

- … NSIs calculated macrodata starting from microdata collected through statistical surveys or derived from administrative processes,

- … but microdata were just considered as raw materials useful to produce the final results, more than the "true wealth" of NSIs

- … and managing microdata was an issue

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A different world

- The power of computers and of statistical and econometric tools make the management of huge data sets very easy

- Micro-datasets are daily generated by all kinds of economic and social activities and can be exploited for commercial and analytical purposes

- The focus moved towards structural economic policy

- NSIs and NCBs have seen that the demand for microdata is growing very quickly

Are we doing what users expect from us?

- ▪ National accounts

- ▪ Short-term economic statistics

- ▪ Structural economic analysis

- ▪ Statistical business registers

- ▪ Opportunities and risks for NSIs and NCBs

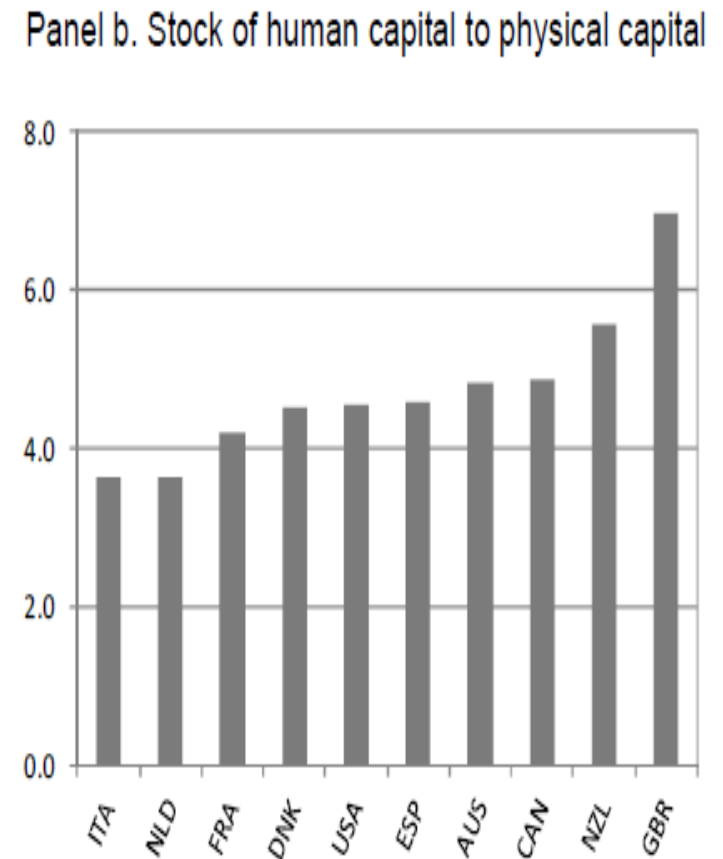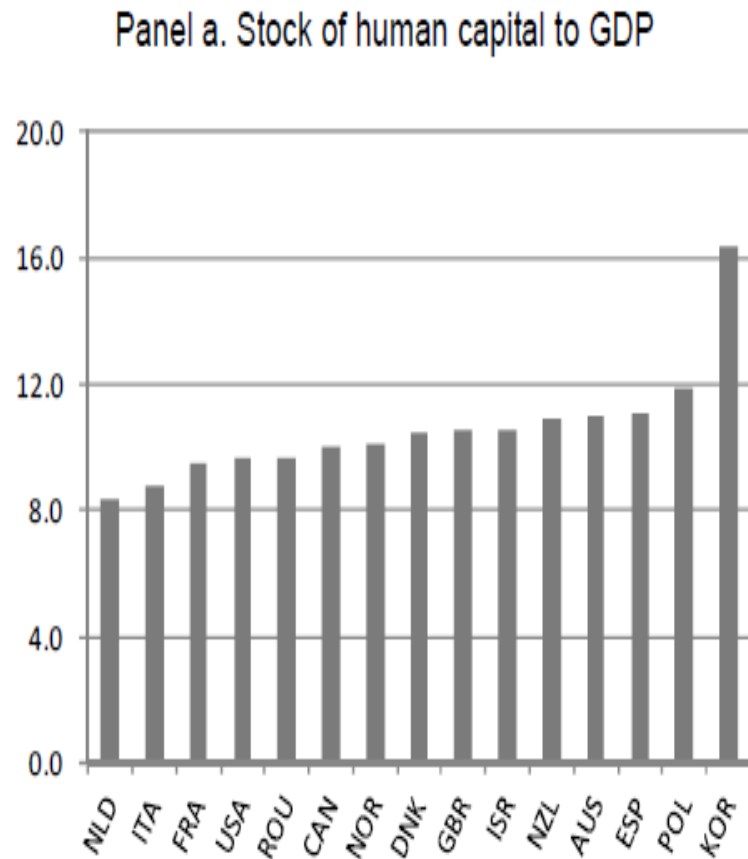- ▪ Competition between NSIs and other national producers

National accounts

- Integrating microdata to produce national accounts

- Non-observed economy:
  - Under-reporting
  - Cross-checks of balance sheets
- National accounts from SBS and fiscal data
  - Large enterprises
  - Small enterprises
- Households accounts (SSF report)
- Social accounting matrices
- Human capital (Jorgenson-Fraumeni)

Human capital

Figure 1 – Micro-level based estimates of human capital stock ratios to GDP and physical capital

Panel a. Stock of human capital to GDP

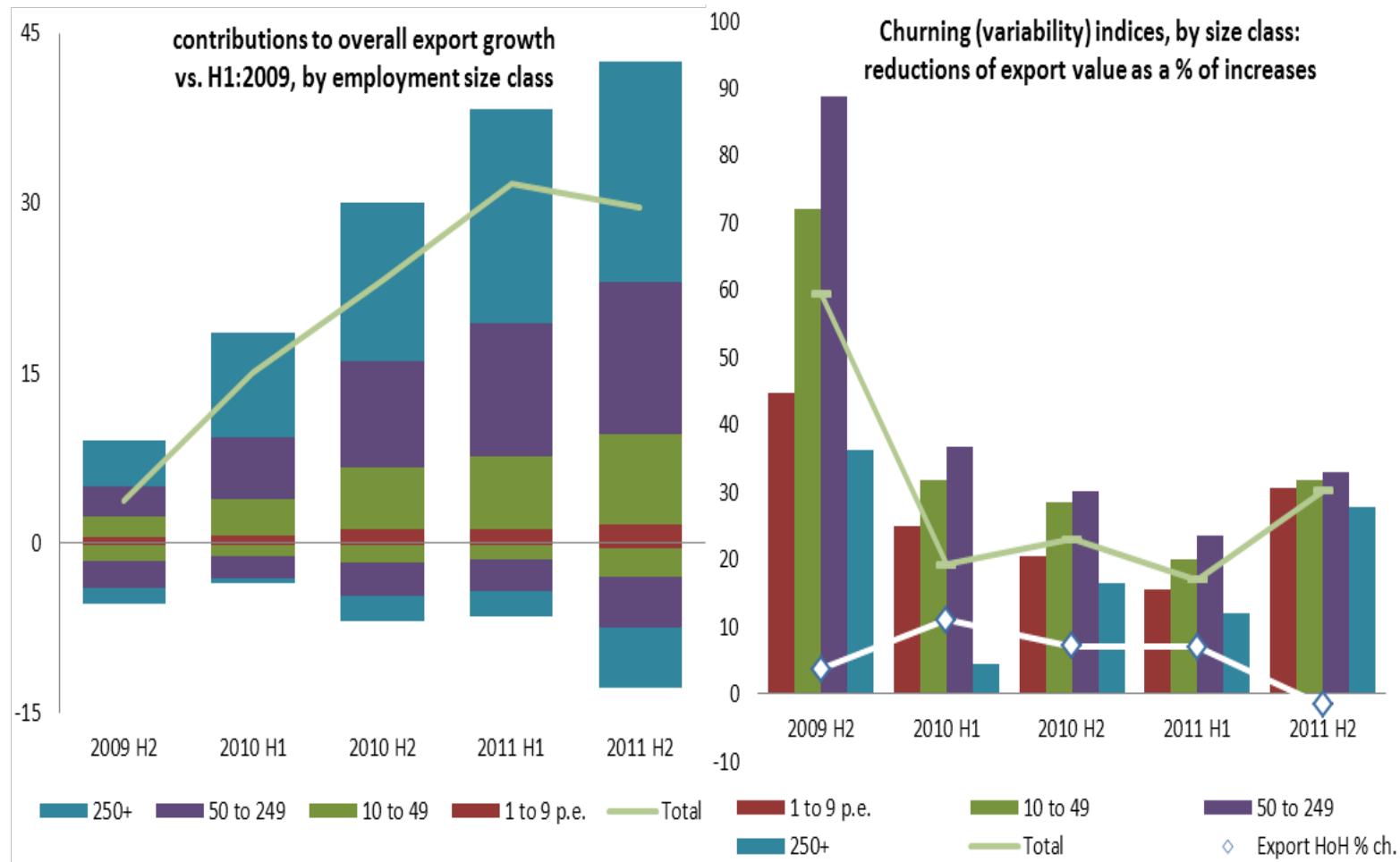Panel b. Stock of human capital to physical capital

Short-term economic statistics

- Analysis of inflation: impact of change in VAT
  - 240.000 price observations per month
  - the translation to consumers of the VAT rise from 20% to 21% was only partial
  - a macro based analysis would have led to the opposite result or would have been inconclusive
- Infra-annual data on export by characteristics of enterprises
  - 43.000 units (2,2 million persons employed) over 2008-2011
  - the overall increase of 29.7% in export value reflected a contribution of 42.5 percentage points from enterprises with rising exports and a drainage of 12.8 points from enterprises with shrinking exports
  - economic profiles of winners and losers

Figure 2 – Export growth and contribution by employment size class of enterprises
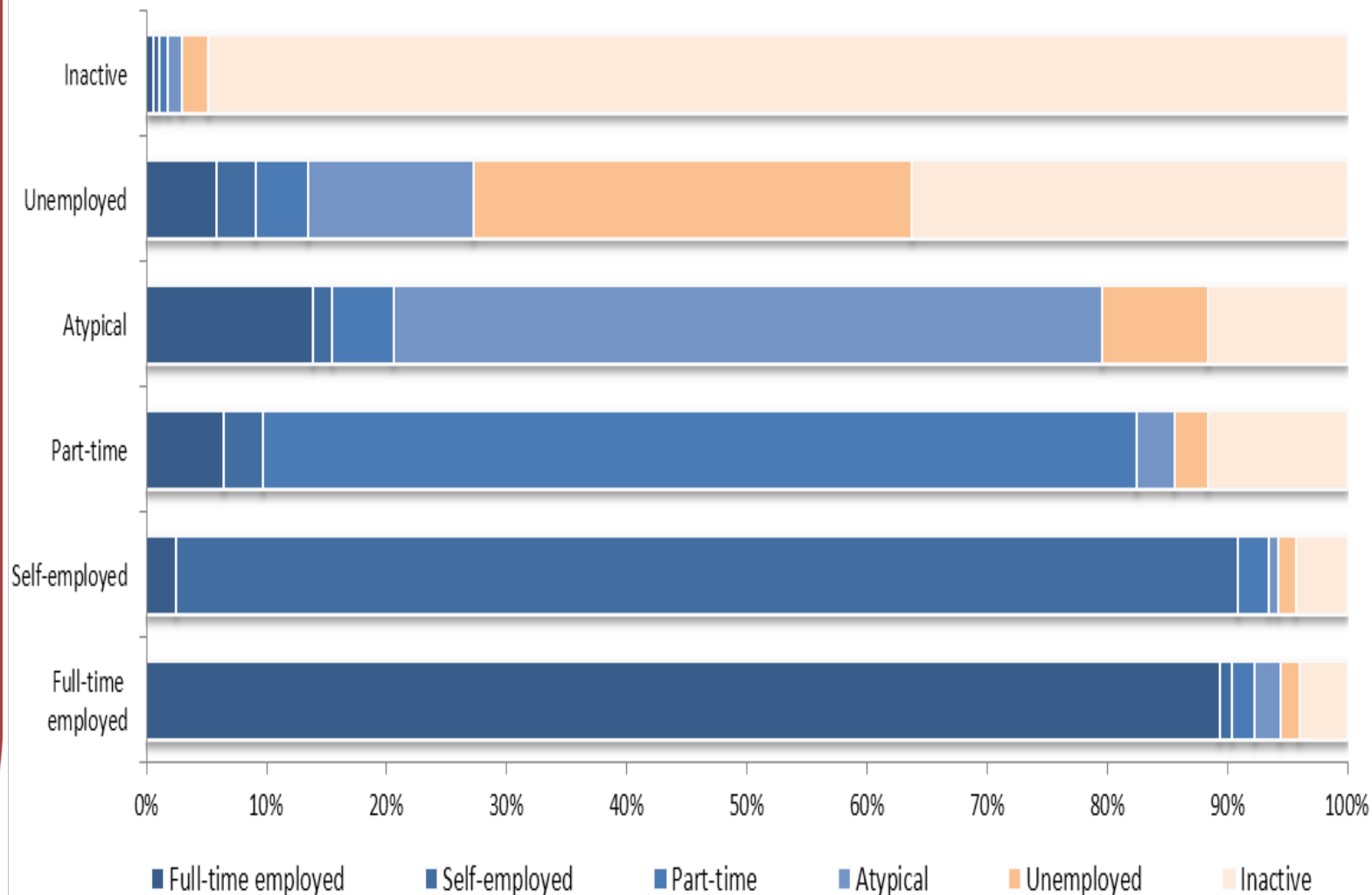
Structural economic analysis

- EU Programme for the Modernisation of European Enterprise and Trade Statistic – MEETS

- BLU-ETS project

  - improvements on business data concerning collection, accessibility and re-use across the EU

  - ways to reduce response burden and to enhance the usability of administrative data for statistical purposes, increase the added value of existing data (small-area estimation, disclosure techniques, remote access)

- ESSLIMIT project, covering different sources (ICT, CIS, SBS, foreign trade surveys, etc.) to explore innovation patterns and enterprise dynamics, and producing multi-source annual indicators

- Labour force longitudinal data

Structural economic analysis

Figure 3. Exit flows by working condition – Q1:2009 – Q1:2010 (percentage composition)
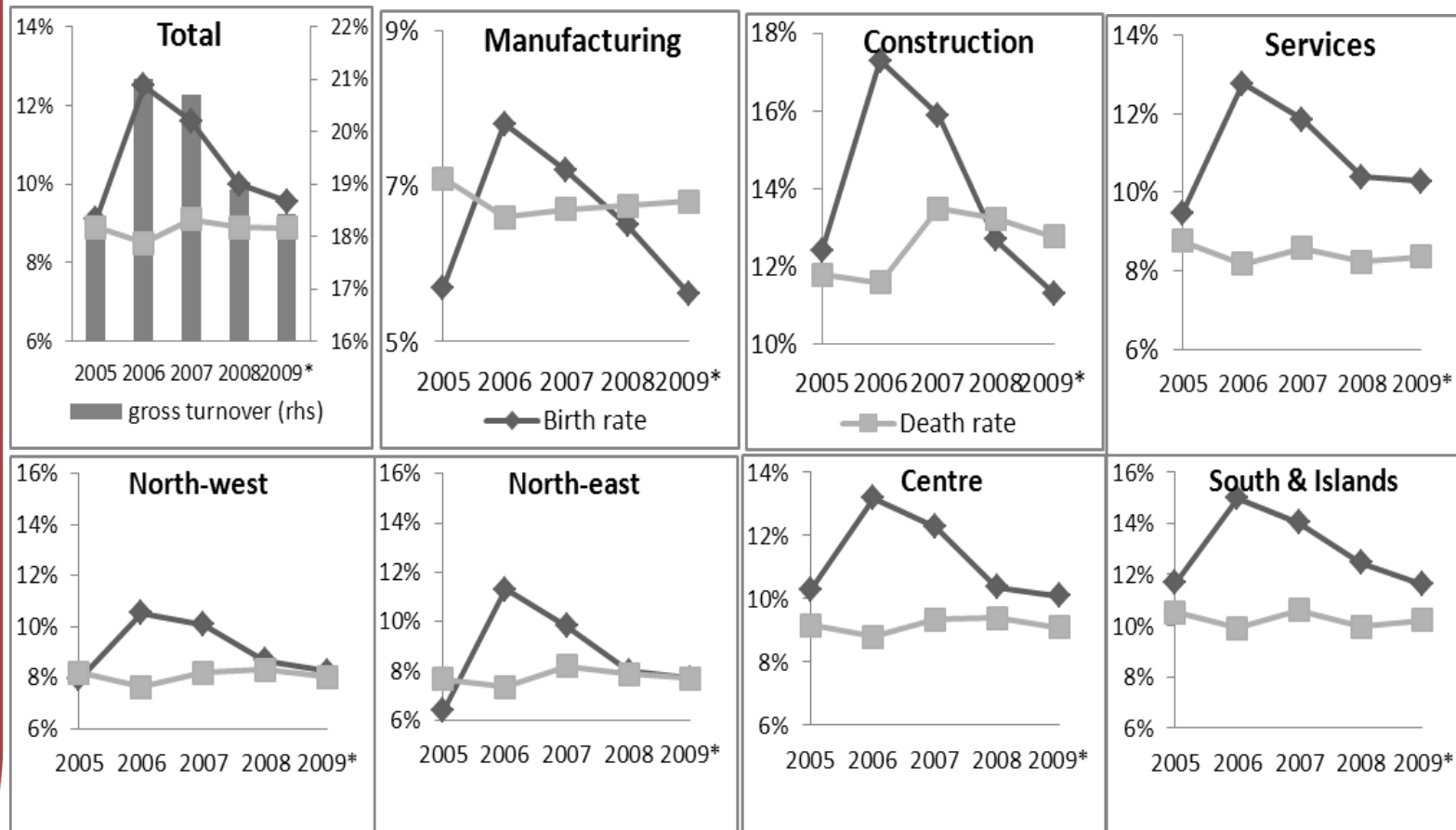
Statistical business registers

- Active Enterprises Statistical Archive - ASIA
  - Analysis of the impact of crisis on enterprises birth rates, which shrunk from 12.5% in 2006 to 9.6% in 2009, while death rates stayed roughly stable just below 9%
  - Differences in demographic patterns by region
  - Performance of enterprises by characteristics (gazelles, high-growth, sex of the owner, etc.)

- Euro Groups Register (EGR) project
  - structural economic information on enterprises part of multinational groups with an interest in Europe
  - statistics on globalization, starting from trade between foreign affiliates (FATS) and on foreign direct investments
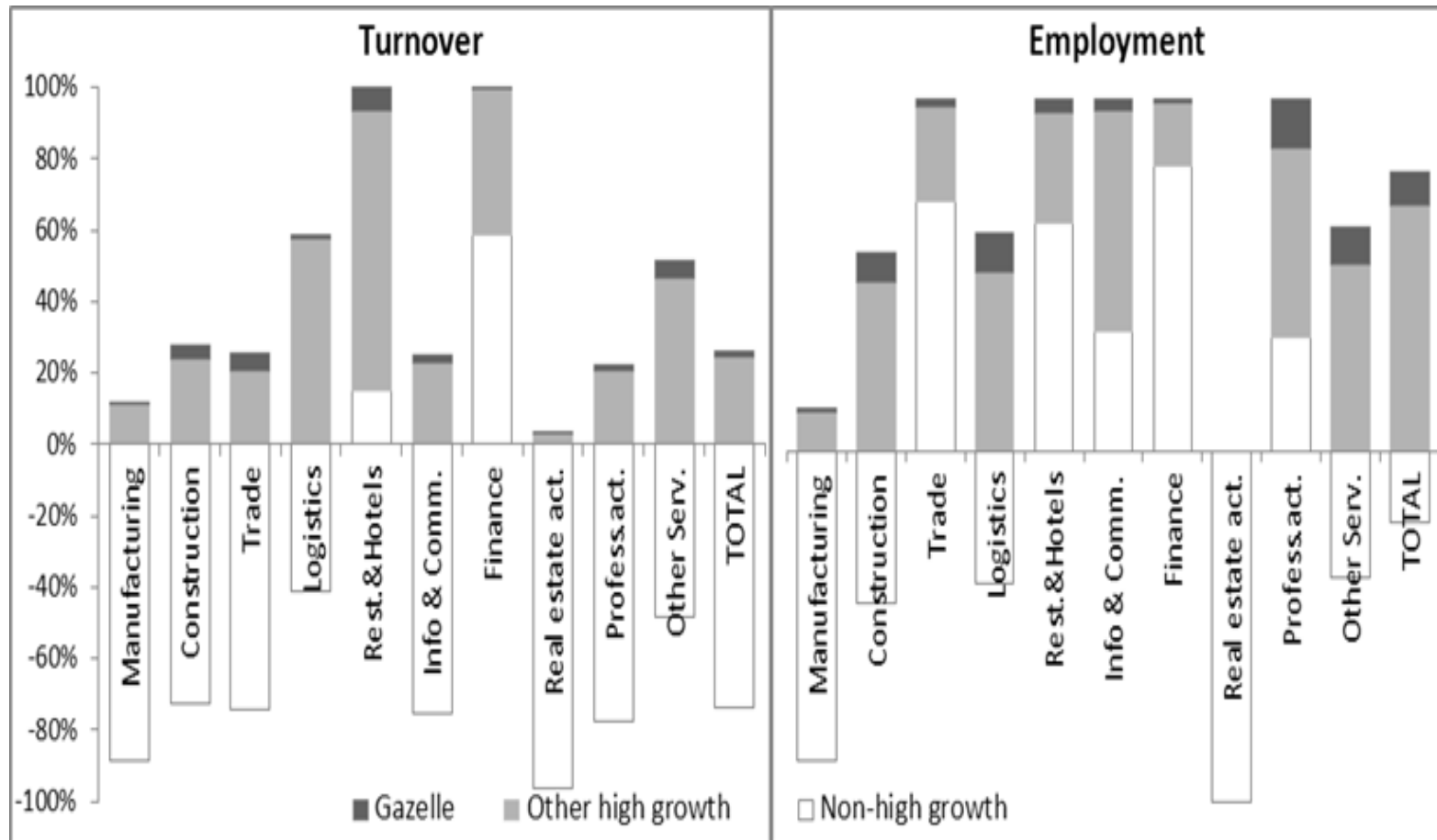
Statistical business registers

Figure 4 –Birth and death rates of Italian enterprises with employees by sector and location of HQ in the years 2005-2009 – main sectors of activity and NUTS1 areas

Statistical business registers

Figure 5 – Percentage of firms with turnover and employment growth by group: high growth (including gazelles) and other active firms; years 2006 to 2009; total and main industries

Opportunities

- Over the last decade NSIs have made a special effort to increase the access to microdata for research purposes
  - ➢ Micro-data sets
  - ➢ Standard files of microdata
  - ➢ ADELE safe center
- New opportunities
  - ➢ Istat – Bank of Italy - Kessler Foundation project to establish a national Data Archive for research
  - ➢ European project for remote access to microdata centers for research purposes
  - ➢ Revision of Regulation 223/2009
  - ➢ Exchange of microdata between countries
  - ➢ European "vision" for statistical production
  - ➢ Role of international organisations (OECD)

Risks and limitations

- Legal barriers at national and international levels
  - General Data Protection European Regulation
  - Changes in national legislations

- Differences in ESS and ESCB
  - Limitations to free circulation of microdata within the ESS
  - Limitations to free circulation of non-anomysed data between NSIs and NCBs

Conclusions and the way forward

- Remove legal barriers at national and international levels for the exchange and the use of microdata for statistical and research purposes

- Establish national data archives (NSIs and NCBs could be partners)

- Foster the exploitation of microdata through EU research projects

- Foster the co-operation with the academia to identify innovative indicators

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Conclusions and the way forward

- Develop models to assess the impact of policies on different population groups (micro-simulation models)

- New system for international trade statistics to replace Intrastat

- Jointly design the sample of households surveys carried out by ESS and ESCB to maximise the usefulness of results

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Products based on microdata will save the NSIs vis-à-vis other statistical producers in the "Petabyte era"

Invest on your true-wealth

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