Linking macro and micro data to produce Distributional Accounts for the non-financial corporations

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IARIW - Bank of Italy conference 2023

Foreword

Increased demand for timely and granular distributional data

$\Downarrow$

Distributional Accounts (DA)

combination of aggregated and timeliness data from National Accounts with micro-data to produce distributional information in line with macroeconomic totals

- **households:** G20 initiative to encourage DA (OECD expert group, ECB developed methodology to incorporate distributional info from HFCS into NA framework)
- **firms:** no similar initiatives

Aim

- Advocating the need for construction of Corporate Distributional Accounts (DCA)

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Studying the feasibility of DCA
using the information available in Italy as a case study

Motivation

Examples of uses of DCAs:

- helping policy maker in targeting policies toward specific groups and in assessing the impact of policies
- in 2020, sharp increase in the leverage and deposits of non-financial corporation sector
  - identifying group of firms that have accumulated too much debt
  - risks on health conditions
  - accumulation for precautionary motives or behavior of specific groups of firms
- understanding distribution of saving in the hands of firms
- forecasting/nowcasting

Method

- It generally requires at least three steps:
  1. analysis of the difference in concepts and definitions between micro and macro estimates
  2. reconciliation of the two sources of information
  3. extrapolation of the information when only NA are available

$$\Downarrow$$

Focus on the first step

Outline

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System of National Accounts (SNA)

Sectoral Accounts: aggregate information on the main results of corporations' economic activity

Economic accounts

- production, value added, operating surplus, investment
  $\Rightarrow$ resources generated internally

Financial accounts

- interactions with the financial system
  $\Rightarrow$ resources obtained through capital market (debt and equity) and from financial intermediaries

Equilibrium between Internal and external funds

Saving + Fin. liabilities = Non fin. assets + Fin. assets

Equilibrium between Internal and external funds

Saving + **Fin. liabilities** = **Non fin. assets** + **Fin. assets**

$\downarrow$ **Self-financing** $\quad$ $\downarrow$ **External financing**

Equilibrium between Internal and external funds

$$\underbrace{\textbf{Saving}}_{\textbf{Self-financing}} + \underbrace{\textbf{Fin. liabilities}}_{\textbf{External financing}} = \textbf{Non fin. assets} + \textbf{Fin. assets}$$

$$\underbrace{\textbf{Saving} - \textbf{Non fin. assets}}_{\substack{\textbf{Net lending/net borrowing} \\ \textbf{from non-fin. account}}} = \underbrace{(\textbf{Fin. assets} - \textbf{Fin. liabilities})}_{\substack{\textbf{Net lending/net borrowing} \\ \textbf{from fin. account}}}$$

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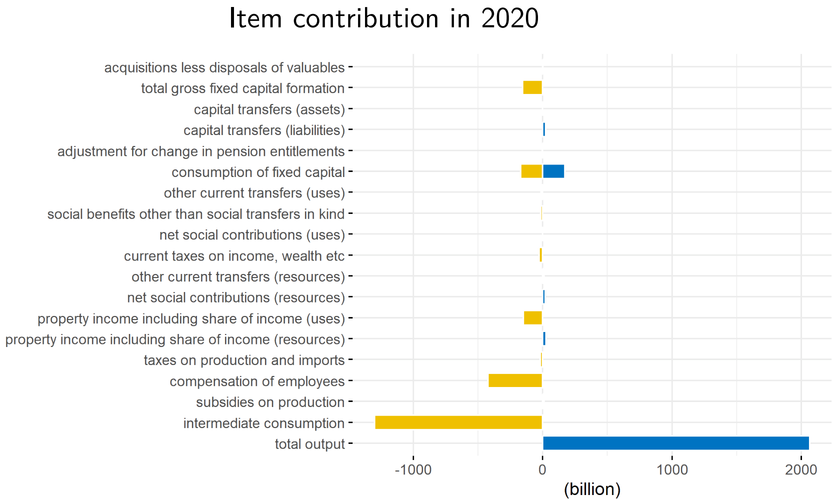
Net lending/net borrowing in the non-fin. account

use of disposable income account	secondary distribution of income account	allocation of primary income account	generation of income account	production account
			values added gross	total output - interm. consump.
		gross operating surplus	+ subsidies on production - compensation of employees - taxes on production and imports	
	gross income	+ Δ property income incl. share of income (res.-uses)		
gross savings	+ Δ net social contributions (res.-uses) + Δ other current transfers (res.-uses) - current taxes on income, wealth etc. - social benefits other than social transfers in kind - adjustment for change in pension entitlements			

Net lending/net borrowing in the non-fin. account



Outline

Survey of Industrial and Service Firms (SISF)

- Annually since 1972 - in spring
- By Banca d'Italia's territorial branches
- Sample: 4,000 firms with $\geq$ 20 employees
  $$\begin{cases} 3,000 \text{ industrial (excl. construction)} \\ 1,000 \text{ non-fin. private service} \end{cases}$$
- Quantitative data (investments, sales, employment, expectations, ...) + special sections
- Stratification according to economic sector, firm size and geographical area $\Rightarrow$ sampling weights

Three register data

SISF linked to:

Central Balance Sheet archive (CBS):

- financial statements of the universe of companies required to file financial statements from fiscal year 1993
- data available 18 months later than the reference year

Credit Register:

- data on loans and guarantees of household and firms towards the banking and financial system
- a customer is reported if the sum to be repaid $\geq$ 30,000 euro (250 if the customer has a bad debt)
- data available after around 40 days

Analytical Credit dataset:

- granular data on loans and guarantees of firms towards banks
- a customer is reported if the sum to be repaid $\geq$ 25,000 euro
- data available after around 30 days

Outline

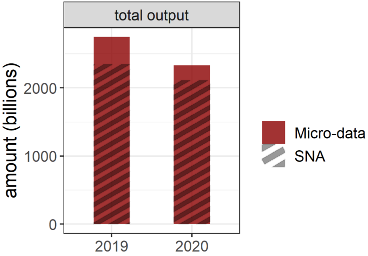
Generic differences

	NA	Survey data
Aim	macroeconomic statistics by institutional sectors	insight into economic behaviour, distribution among firms
Valuation	ESA 2010	firms'assessment
Level of info	macro	granular
Sources	different sources, estimation methods and balancing for consistency	-
Periodicity	quarterly, after around 100 days	annual, after 4 months
Target pop.	non-fin. corporations included quasi-corporations[1] non-observed economy	firms having 20+ workers, industry and non-fin. private services

[1] in Italy, unlimited partnerships and sole proprietorships with at least 5 employees are considered as quasi-corporations, classified as non-fin. corporations

Item-specific differences - Total output

Def. in NA: value of goods/services produced
Micro-data: SISF - turnover
Differences: production = turnover + own-use + changes in (semi-)product inventories + changes in work in progress on orders



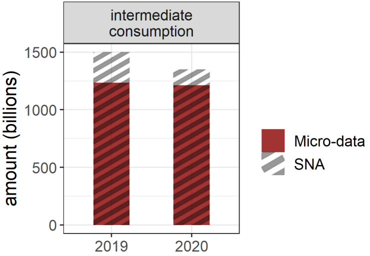
- turnover in SISF > output in SNA by about 300 billion
- turnover in SISF in line with turnover in CBS

Item-specific differences - Intermediate consumption

Def. in NA: value of goods/services consumed as inputs (either transformed or used up), excluding fixed assets

Micro-data: SISF

Differences: none



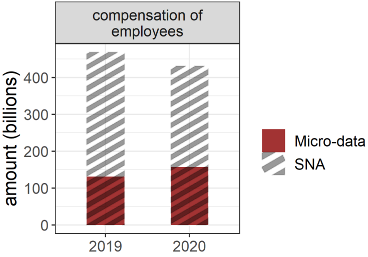
- coverage 90%, difference of 200 billion
- SISF 35% of missing obs
- imputation could rely on panel characteristics or forecast from CBS

Item-specific differences - Compensation of employees

Def. in NA: wages and salaries + employers' social contributions

Micro-data: SISF - total gross annual wages

Differences: in SISF it includes employee social security and fiscal taxes and excludes executives' wages



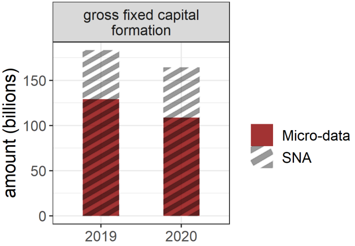
- coverage 1/3, difference of 300 billion
- SISF 35% of missing obs.
- imputation + more complete information

Item-specific differences - Total gross fixed capital formation

Def. in NA: GFCF (value of acquisitions, less disposals, of fixed assets) + changes in inventories + additions to value of non-produced assets

Micro-data: SISF - GFCF

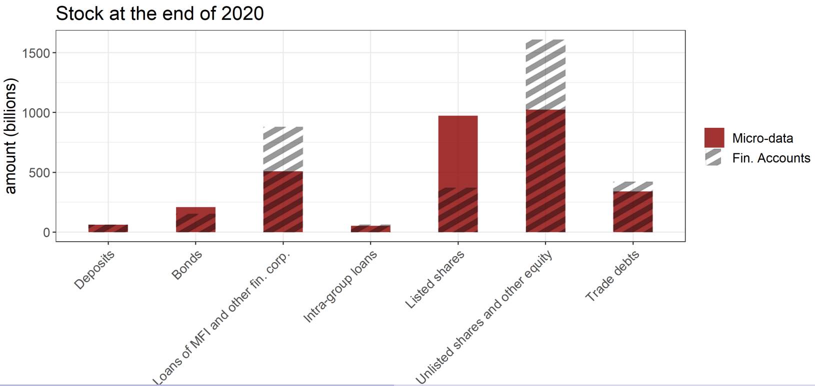
Differences: none



- GFCF = 98% of total gross fixed capital formation
- coverage 2/3, difference of 55 billion

Item-specific differences - Fin. accounts data

Micro-data: administrative records on SISF sample
Differences: no micro-data for loans granted by central government and by non-residents



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Conclusions

1. Increasing demand for distributional information; up to now need addressed for household sector
2. Value of distributional statistics also for non-financial corporation sector (DCA)
3. Analysis of DCA feasibility for the Italian case, for internally generated and external funds
    - analysis of micro-data consistency with macro-data
    - differences in reference population
    - item-specific differences

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Next steps: statistical reconciliation of micro and macro data to cover the gap and extrapolation to create quarterly indicators

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