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MICROPROD

Raising EU Productivity: Lessons from Improved Micro Data

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Supply and demand-oriented economic policies to boost robust growth in Europe
Addressing the social and economic challenges in Europe

Deliverable 1.9

Data dissemination via CompNet III

WP 1 – Firm-level data and productivity measurement

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PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	



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History of the changes

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Key word list

Productivity, Intangibles, Global Integration, Micro-Aggregated Data

Definitions and acronyms

Acronyms	Definitions
MDI	Micro Data Infrastructure
MMD	Micro Moments Database
NCB	National Central Bank
NSI	National Statistical Institute
TFP	Total Factor Productivity

1. Introduction

1.1. General context

The surge and current disruptions of global production networks, innovation in production technologies and in general new modes of generating economic output are receiving increasing attention by researchers, policy makers and the public. Heterogeneity in firms' ability to take advantage of the new production possibilities requires reliable and cross-country harmonized microdata. Using newly combined firm-level data, MICROPROD aims to better understand the micro- and macro-level determinants of observed production and productivity patterns and improve productivity measurement.

1.2. Deliverable objectives

Over the last three years, insights resulting from the MICROPROD project have been shared and disseminated via the existing CompNet infrastructure. This has allowed a broader impact on research and policy. In particular, the new data and productivity concepts generated by MICROPROD have been implemented in the data collection process for the annual update of CompNet's micro-based dataset. While the underlying source datasets used in MICROPROD cannot be made available due to data confidentiality, key indicators are being disseminated via the CompNet Micro Moments Database (MMD), which is an internationally harmonized research database of statistical moments at various levels of aggregation collected from firm-level data in a large group of EU countries.

The collaboration between MICROPROD and CompNet has ensured longevity of the results generated within MICROPROD and external quality control, since the new data and productivity concepts will be utilized and tested by users of the freely available CompNet dataset.

The data dissemination was split in three deliverables due in month 10, month 22 and month 34 of the project duration, respectively. This deliverable 1.9 ("Data dissemination via CompNet III") represents the third round of data dissemination.

2. Methodological approach

The CompNet dataset comprises a broad set of micro-aggregated measures based on firm level data, nationally available in each of the institutes participating in the network as data provider, i.e. national statistical institutes (NSI), national central banks (NCB) and research institutes.

To address confidentiality the construction of indicators follows the so called "distributed micro-data approach" (Bartelsman et al. 2004). In this approach, a common code is used to extract relevant information from existing firm-level datasets available within each national central bank or national statistical institute. The protocol computes indicators at the firm-level and then collapses the information to a given level of aggregation.

The data encompass various characteristics of the respective indicator's distribution at different levels of aggregation, for example at the sectoral level and country level, as well as parameters of joint distributions.

3. Summary of activities and research findings

The 9th CompNet Vintage, which is currently in construction, will contain various novelties in terms of coverage of years, countries and available aggregation levels.

Most notably, the 9th CompNet Vintage updates the existing database by recent years. For more than half of all countries, the dataset will cover the years up to 2020 and thus the onset of the Covid19 epidemic. This allows to study the effect of among others nation-wide or local lockdowns and supply chain disruptions for various types of firms.

A major novelty of the 9th vintage is that it will comprise data for four additional countries (United Kingdom, Latvia, Estonia and Malta) for a total of 23 countries. With CompNet's variety of trade indicators, the inclusion of the United Kingdom allows to study the effect of the Brexit for various types of UK based firms.

The previous CompNet datasets provided micro-aggregated information on the country, industry (1- and 2-digit) and regional (NUTS1) level. In addition to these standard aggregation levels, the 9th CompNet vintage will feature information on firm characteristics by knowledge intensity as well as by firm demographics. The classification of firms by knowledge intensity / technology follows Eurostat and is based on the industry level (NACE 2-digits) R&D intensity (manufacturing) and share of tertiary educated persons (services), respectively¹. While the distinction between more and less knowledge and technology intensive industries provides another proxy for industry level intangible intensity, the distribution of firm characteristics provided by CompNet adds important information about firm heterogeneity within these sectors. As a further layer, CompNet will provide information on the distribution of firm characteristics by firm age. This allows researchers to study differences in the distribution of firm performance for start-ups versus incumbents and changes to these distribution over time, shedding light on the evolution of business dynamics.

In order to provide more insights on business dynamism and the reallocation process, the 9th vintage will expand the transition matrices to capture movements of firms across the size, productivity, wage and sales distribution. The transition matrices allow researchers not only to study the permeability of the above-mentioned distributional hierarchy and its evolution over time, but also provides information on the characteristics of firms with different growth performances over the respective period.

Additional novelties were included also in the structural estimation procedures. More in detail, in the new vintage both revenue and production function are estimated, following the latest developments in the literature (De Ridder et al. 2021, De Loecker et al. 2021). In total, the dataset estimates two specifications of revenue function and 4 specifications of production functions, including the most advanced state of the art in terms of estimation techniques as well as simpler non-parametric results. On the computation side, the algorithm has been improved to provide more reliable and robust output. As a result, estimates of productivity (TFP), market power, returns to scale and marginal (revenue) product of each production input are more robust and include adjustments to previous estimation procedures that have been established by the scientific literature.

¹ https://ec.europa.eu/eurostat/cache/metadata/en/htec_esms.htm

4. Conclusions and future steps

The CompNet dataset is built to generate a minimum common denominator of firm-level based variables, which are available for the greatest number of European countries: this creates a limit to the depth of the dataset given the uneven availability of firm level data across countries. To push further the overall frontier of comparable micro based indicators in Europe we have set up in MICROPROD a prototype Micro Data-Infrastructure (MDI). The MDI has established pilot studies with selected National Statistical Institutes (NSIs) who have an advanced technical and firm level data infrastructure. Analytical modules to run policy or research projects can be adjusted and run on the data in a more flexible and frequent way, providing a tremendous potential. This allows us to dig deeper into topics such as technology use, innovation inputs and outputs and integration into global value chains (see MICROPROD deliverable 1.2 and 1.3). This infrastructure is aimed at providing researchers with (i) tools to run common code at multiple sites, even if the details of the data, the technical infrastructure and confidentiality practices differ across NSIs, and (ii) a set of analytical tools that simplify research design to study productivity dynamics. Ultimately, the objective is to extend such pilot to the whole of the EU, pushing further the frontier of micro data availability in the continent for research and policy output.

5. Publications resulting from the work described

The 9th CompNet vintage is currently in construction. Harmonized data collection protocols, to collect aggregate data from the respective NSOs or NCBs are expected to be finalized by end of July. The full dataset will be first provided to CompNet members in early fall and eventually be made available to external researchers as well upon request: URL: <https://www.comp-net.org/data/>

6. Bibliographical references

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