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Background note for the 29th meeting of the OECD Network for Farm-Level Analysis:

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Synergies and gaps between farm and non-farm micro-level data for sustainable rural development

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The availability of high-quality microdata is essential for monitoring and assessing countries' performance towards achieving the SDGs. In line with the OECD's evidence-based principles for rural policy, the availability of environmental and social data at the micro-level, alongside economic data, is indispensable for monitoring economies' performance towards achieving sustainable and inclusive growth (OECD, 2019). Comparable cross-sectional and longitudinal micro-level data are important for understanding the progress and drivers of productivity and innovation, but the main focus of micro-level data remains solely on economic aspects. In addition, there are strong synergies and complementarities between farm and non-farm micro-level data that could be exploited to enhance our understanding of the socio-economic performance of agriculture sector and rural areas.

For instance, in the European Union (EU), the Farm Accountancy Data Network (FADN) and the Competitiveness Research Network (CompNet) collect comprehensive data on outputs, economic value added, and labour and capital inputs for farms and businesses (CompNet Task Force, 2014). Both datasets are collected from national statistical institutes and government organisations, and provide valuable information on the economic performance of rural regions at the micro-level, using regional classification. The FADN is the only harmonised micro-level database which covers nearly 90 percent of the total utilised agricultural area (UAA) and total agricultural production in the EU. The data is collected by National Data Providers in each Member State (MS), and covers physical, structural, economic, and financial indicators.

The CompNet network was originally founded by the European System of Central Banks in 2012. The dataset includes a set of micro-aggregated variables computed by National Data Providers. Firm-level data are aggregated and harmonized to facilitate cross-country comparability for 19 European countries. Several levels of aggregations are available, such as: country level, NUTS2 level, macro-sector, size-class, and 2-digits industries. The dataset focuses on competitiveness and productivity, and includes variables on market power, finance, labour, productivity, energy, research and development, and trade. The longest time span covered by the CompNet dataset is from 1999 to 2019 for Finland, while the shortest time span covers the period from 2009 to 2018 for Switzerland. The dataset covers all non-financial corporation sector, including manufacture of food products, but excludes the agricultural sector. Thus, combining the FADN and CompNet at the territorial level could improve our assessment of the economic performance of rural areas.

Figure 1 below provides an illustrative and example of cross-sectional and longitudinal micro-level information available in farm, business and households datasets in the EU and the synergies and gaps between them.

Figure 1. Information included in farm, business and households' datasets in the EU
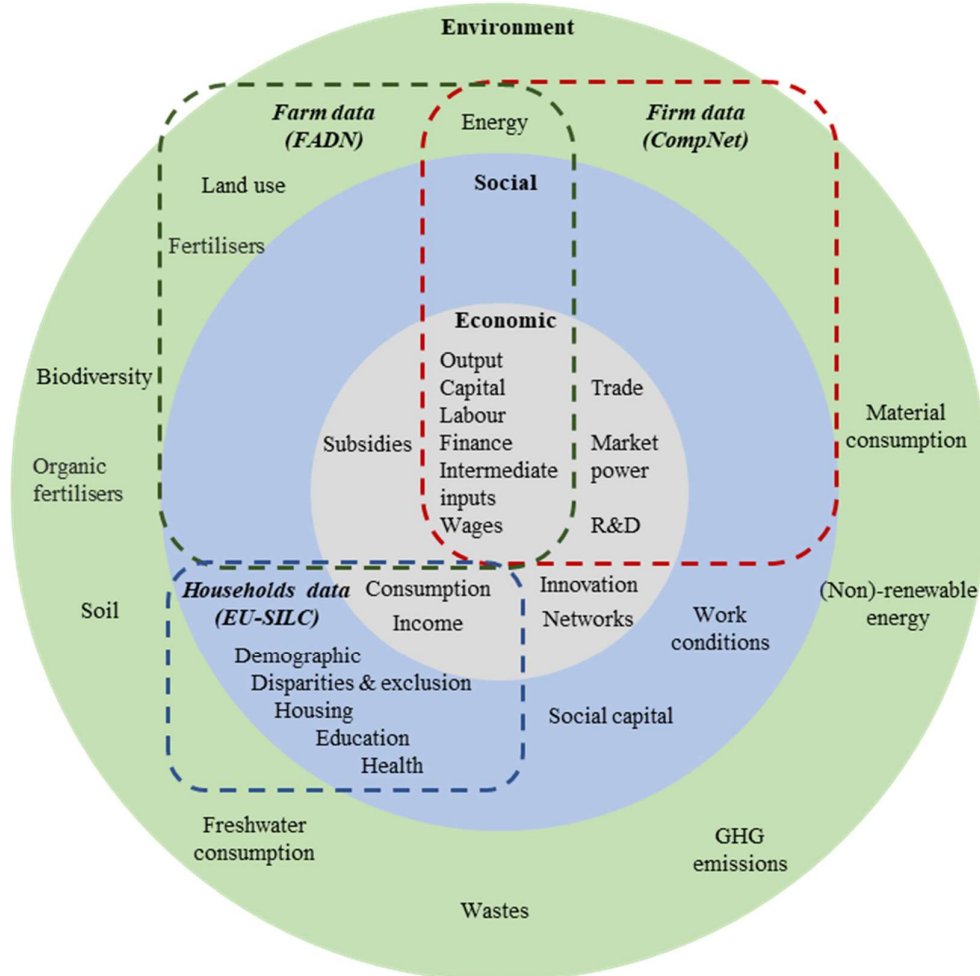
The diagram above shows how farm and business datasets provide extensive information on production, including production inputs and outputs, as well as energy consumption (in monetary values). Both datasets include similar indicators that are sufficient for productivity measurements at the territorial level. However, there are some indicators that are different in the two datasets. For instance, the FADN provides additional information on public support (particularly subsidies through the Common Agricultural Policy), land use, as well as the use of fertilisers, which are not comparable to any information provided in business data. On the other hand, business data has additional information on businesses' market power and competitiveness, derived from prices and marginal costs data. In addition, CompNet report more information on imports and exports of businesses, as well as Research & Development expenditure. Data on market power, international trade, and R&D expenditure are not currently available in farm data, and could be very valuable for agricultural policy analysis and research.

However, as shown in the diagram, social and environmental indicators are still under-represented in both datasets, which limits the ability to produce key information for understanding the drivers of social and environmental performance in the rural economy. Acknowledging this gap in farm-level data, the EU is aiming to incorporate social and environmental data by converting the FADN to a Farm Sustainability Data Network (FSDN) to monitor and improve the sustainability performance of farms. Similar initiatives will be needed to measure the social and environmental performance of non-farm businesses (FSDN, 2021; Vrolijk and Poppe, 2021).

While environmental indicators are rarely available at the micro-level, social could be collected and matched from different survey data, but this is not always feasible especially for cross-country analysis. Social indicators are available from the European Union Statistics on Income and Living Conditions (EU-SILC), which includes data on income, poverty, social exclusion and living conditions. The EU-SILC includes variables at the level of individual persons and at the level of households covering the period from 2005 to 2019 for all EU MS. Data on employment, income, education, and health are mainly collected at the individual level from individuals aged 16 and over, while data on social exclusion and housing conditions are collected at household level (European Commission, 2019).

In addition to these yearly datasets, the EU collects Farm Structure Surveys (FSS) using a common methodology across the Member States. The FSS is collected every 3 or 4 years through a sample survey, and as a census each ten years. For the FSS, EU countries collect information at the farm-level including data on land use, livestock, rural development, management and farm labour input. In addition, social indicators such as age and gender of farm holders, management and labour are available in the FSS and aggregated by different geographic levels, which could be used to measure social and economic performance of rural areas in the EU. Furthermore, the European Commission will include additional social and environmental indicators in the FSS for the coming waves in 2023 and 2026, including (but not only) (European Parliament, 2018):

1. gender balance,
2. safety measures in farms,
3. employment conditions,
4. advisory services,
5. farm and business development plans,
6. restoring agriculture production potential damaged by natural disasters,
7. organic farming,
8. nutrient use and manure on the farm, and
9. irrigation practices.

The inclusion of additional social and environmental data, as outlined by the European Union plans for the FADN and the FSS, will be central for policy analysis and research to assess the sustainability and inclusivity of the agricultural sector and rural areas. Similar initiatives to collect and provide micro-level data for non-farm businesses are equally important to better assess the social and environmental impact of all economic activities at the micro and territorial levels.

Similar microdata is available in other OECD countries. For instance, the Annual Agricultural Resource Management Survey (ARMS) of the United States is the primary source of information on the US agriculture sector. The ARMS provide detailed economic data on the financial condition, production practices, and resource management of farms. Moreover, the Bureau of Economic Analysis (BEA) produces several micro-level annual surveys that has been widely utilised for several economic research, such as productivity, taxation, innovation, R&D, and offshoring. In addition, the Annual Business Survey of the U.S. Census Bureau provides demographic information, as well as economic ones, that could be exploited for social indicators.

Overall, the availability of high-quality microdata is important for policy and research that aim to assess and examine the socio-economic and ecological performance of the agriculture sector and rural areas, in order to achieve sustainable and inclusive territorial development in rural areas. Although several information could be extracted from existing micro-level surveys, there are a number of challenges that restrict our ability to exploit available data, in addition to other constraints that limit our ability to examine more urgent and important ecological questions. Examples of such challenges and constraints are:

1) Can we identify common indicators for social and environmental performance among **rural** firms, farms and households? what can be used directly, what can be estimated, and how? What are the gaps?
2) Can we match data units from more than one dataset (e.g. farm, firm, individual, or household)?
3) How can we deal with multifunctional businesses (farms which are also processors or retailers), or multiple-site businesses (operating in both cities and rural areas)?
4) Can surveys capture exchanges between businesses / business networks effectively, in order to measure rural value-chain and the trade between farm and non-farm businesses in rural areas?

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