



Estimating activity-based costs using the FADN data

Felicity Addo

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Abstract

A persistent issue in agricultural costing is disaggregating farm-level input expenditure to activity-specific production costs (i.e., costs per unit of farm activities). For example, allocating farm-level fertilizer expenditure between crops produced on the farm. The agricultural sector presents particular challenges: i) farms often perform multiple activities on the farm; ii) a considerable share of the total cost is not activity-specific and common to all activities, iii) calculating farm stocks is complex (e.g., crop yields are dependent on weather and other external factors, and hence change from year to year), and iv) it is not reported in official statistics how and when farms use their inputs, thus establishing this is difficult. Moreover, the estimation of activity costs is relevant for farm, sectoral, and regional level evaluation by policymakers.

To assess aggregate impacts of the agricultural sector, policymakers rely on macro-level economic models such as GLOBIOM, MAGNET, etc. These models work with activity-level economic cost information to inform the supply side. Bottom-up estimated costs aggregated over various spatial resolutions and management systems would improve the cost specifications of these models and inform input- and land-use scenarios focusing on input-use (i.e., fertilizer use reduction through taxes). To address this, we estimate input-output coefficients using seemingly unrelated regressions and allocate variable farm-level crop-specific costs. We apply the proposed method to all major crops cultivated across the EU using the FADN database. Furthermore, we use open-source data to validate our estimation in selected countries where national activity-level data exist (i.e., BAB for Austria). For Austria, our preliminary results are, on average consistent with validation data across all major crops.

Biography

Felicity Addo joined the IIASA Integrated Biosphere Futures (IBF) Research Group of the Biodiversity and Natural Resources (BNR) Program as a research scholar in 2021. Her current scientific interests include agricultural production systems and value chains, food security, sustainable rural development, micro-economic modeling, and agricultural resource management and efficiency. Currently, she contributes to multiple projects in the EU and Africa, primarily focusing on EU farm typology classifications for use with the GLOBIOM model and the impacts of climate change on food security, health, and nutrition in the Gambia.

She obtained her master's degree in Agricultural Economics from the University of Hohenheim, Germany, focusing on options for sustainable agriculture in North-East Ghana by analyzing the linkages between NGOs and farmer-based organizations through soybean value chains, production, and market participation research.

In 2015, Addo started working at the Institute for Sustainable Economic Development at the University of Natural Resources and Life Sciences, Vienna as a university assistant (research and teaching). She is currently completing her PhD thesis on assessing productivity, efficiency, and economies of scale of Austrian agriculture.