Global Food Security 16 (2018) 46–53

Contents lists available at ScienceDirect

Global Food Security

journal homepage: www.elsevier.com/locate/gfs

How comparable are cross-country data on agricultural public expenditures?

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ARTICLE INFO

Keywords:
Cross-country data
Agricultural expenditures
Public spending
Development aid
Agricultural R & D
Government finance

ABSTRACT

Sound cross-country data on agricultural public expenditures are key for determining public resource needs to support food security in the developing world. This article reviews all international initiatives that produce such data, and analyses the scope and methodologies underlying these data. We find that while, combined, all 13 data initiatives cover a rich spectrum, there remains an absence of crucial datasets such as on extension and on agricultural subsidies. Although there are several points of interaction between the data initiatives, significant (in some cases staggering) differences across datasets exist on seemingly the same variables, countries, and years. There is thus scope for greater collaboration across the data initiatives to develop shared standards in cross-country compilation of agricultural expenditure data.

1. Introduction

One of the most important instruments that developing and transitioning countries possess to achieve food security through a stronger agricultural sector are efficient and effective agricultural public expenditures, coupled with a conducive policy environment and dynamic private investments (FAO, 2012; Mogues et al., 2015). The Sustainable Development Goals highlight as a target toward the zero hunger goal the need to "Increase investment [in…] agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity…" (UN, 2015).

To ensure much-needed improvements in public resource allocation to the agricultural sector, it is vital for developing countries and international development partners to possess sound and adequate data on the quantity and distribution of agricultural public spending, as this will enable appropriate evidence-based analysis on the trends in and returns to such expenditures. A number of global, regional, and national policy initiatives have made appeals for countries to commit to adequate and effectively targeted public finances to agriculture. A prominent example is the call by the African Union for governments in the continent to spend at least 10 per cent of their funds to the sector (AU, 2003), followed up more recently by an African Union guidance note on how to properly account for and measure agricultural public expenditures (AU, 2015). Such appeals then create a demand for data that allow benchmarking and comparing agricultural public spending across countries and over time.

This article is concerned with the assessing the nature, quality, and comparability of extant data that may serve such a purpose. While in many contexts of the developing world a shortage of data is a serious constraint to policy analysis, this review finds that there are in fact a plethora of programmes that assemble and quantify agricultural public expenditures across countries and time. We conduct a systematic review of all data initiatives that focus on or include agricultural public expenditure in multiple developing and transitioning countries. In addition to taking stock of such initiatives, we carry out a comparison of relevant features, identify the extent to which there is interaction between the initiatives, and determine the degree of consistency across the data produced by these initiatives.

Despite a large body of work that examines the consistency of data and data collection methods in other aspects of food security and agriculture—such as in crop production estimates, or food prices (e.g. See et al., 2015)—we are not aware of any academic peer-reviewed work that undertakes a comparative review with regard to agricultural public expenditure data (Lowder et al. (2015) point out the need to improve data on public and private investments in agriculture). This lacunae exists despite the strong policy imperative to have a good handle on such information, as described above, as well as despite such data frequently being drawn upon for cross-country econometric analyses of the impacts of agricultural public expenditures on growth and development indicators (for example, Mosley et al., 2004, or Allen and Ulimwengu, 2015) using various of the datasets reviewed here. Both the policy demand and the research use of such data necessitates a clear understanding of how these various data initiatives compare with each other.

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http://dx.doi.org/10.1016/j.gfs.2017.09.001
Received 19 April 2017; Received in revised form 9 August 2017; Accepted 8 September 2017

Table 1
Multi-country databases and analytical initiatives.

Name of data and/or analytical initiative	Hosting organisation	Type	Geographic focus
1. AgPELAC: Agricultural Public Expenditures for Latin America and the Caribbean	UN/ECLAC (CEPAL)	agpe	Central America and Mexico
2. ASTI: Agricultural Science and Technology Indicators	IFPRI	agpe	DCs
3. BOOST: Making Expenditure Data Available for Analysis	World Bank	agpe	DCs and EEs
4. CRS: Creditor Reporting System of ODA Flows	OECD	don	DCs and EEs
5. DFA: Development Flows to Agriculture - FAOSTAT Investment dataset on international aid	FAO	don	DCs and EEs
6. GEA: FAOSTAT Investment dataset on Government Expenditures on Agriculture	FAO	agpe	DCs and EEs
7. GFS: Government Financial Statistics	IMF	agpe	Global
8. MAFAP: Monitoring and Analysing Food and Agricultural Policies	FAO	agpe, pse, ana	Initially Africa, recently expanded to other DCs
9. PSE-LAC: Producer Support Estimates for Latin America and the Caribbean	IDB	pse	LAC
10. PSE-OEE: Producer Support Estimates (and Related Indicators for Agricultural Support) for OECD and Emerging Economies	OECD	pse	OECD and EEs
11. ReSAKSS: Regional Strategic Analysis and Knowledge Support System for Sub-Saharan Africa	IFPRI	agpe, ana	Africa
12. SNAPE: Strengthening National Comprehensive Agricultural Public Expenditure in Sub-Saharan Africa	World Bank	ana	Africa
13. SPEED: Statistics on Public Expenditures for Economic Development	IFPRI	agpe	DCs and EEs

Notes: CEPAL = Comisión Económica para América Latina y el Caribe; DCs = Developing Countries; ECLAC = Economic Commission for LAC; EEs = Emerging Economies; FAO = Food and Agriculture Organisation of the United Nation; IDB = Inter-American Development Bank; IFPRI = International Food Policy Research Institute; IMF = International Monetary Fund; LAC = Latin America and the Caribbean; OECD = Organisation for Economic Co-operation and Development; UN = United Nations. The four types signify: agpe = broad public expenditure data, don = data containing donor expenditures, pse = data on producer support estimates and related measures of public expenditures in support of agriculture, ana = i-initiatives containing analytical work in addition to data.

2. Assessment and comparison of the agricultural public expenditure data initiatives

2.1. Overview of the data initiatives

The main criteria to identify data initiatives for the study are that they include databases that were active at the time this study was initiated, and that the databases involve agricultural public expenditures in at least seven developing or emerging economies (to exclude smaller case study data collection efforts). Based on this, 13 data initiatives have been identified for this review, and are listed in Table 1. We organise these along a basic typology, shown in the third column of the table, which categorises the data initiatives into four groups that reflect each initiative's main area(s) of focus: One group (indicated as “agpe” in Table 1) pertains to data on agricultural public expenditures, measured in various ways (discussed in greater detail later). Data initiatives indicated with type “don” are centred on agricultural public expenditures resourced from donor agencies. Initiatives indicted with “pse” primarily use public expenditure data toward developing production support estimates and related indicators. Finally, data initiatives indicated with “ana” focus on using the data to conduct analytical studies. Some initiatives have about an equal focus in more than one of these areas, thus fitting into different elements of the typology. Given the constantly evolving nature of datasets such as these, all analysis in this paper is based on the data initiatives' state of affairs at the same point in time (in March 2016) when we downloaded and analysed all data, data users' manuals, web interface for the data, etc. (Table A1 in the Supplementary Materials provides updated webpages of the data and manuals).

2.2. Scope of coverage: Complementarities, overlaps, and gaps

Fig. 1 gives an overview of the basic elements of the scope of the data initiatives (alternately referred to as datasets, although several contain more than data). Placement in axes-space indicates the number of countries and years covered by the publicly available data in each dataset. A hollow marker indicates that, largely, the corresponding dataset captures only fairly aggregate data on agricultural spending, while the filled markers suggest more fine-grained agricultural expenditure data, for example for subsectors within agriculture. The circle

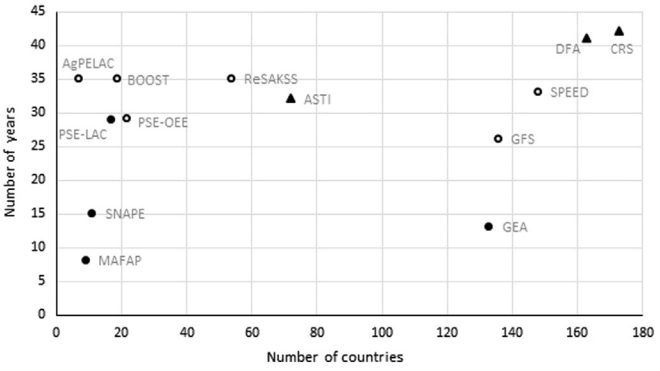

Fig. 1. Number of countries and years covered by initiatives' publicly available data on agricultural public expenditure. Note that for any given dataset, some variables may not have data for all the countries, or all the years, that are in the dataset. In other words, the datasets may be unbalanced panels.

markers are for initiatives that contain data on the totality of agricultural spending, while the triangle datasets focus only on a certain type of agriculture expenditure, such as agricultural R & D, or agricultural public spending sourced from international aid (Numeric details are provided in Table A2 in the online Supplementary Materials).

From the perspective of country and year count, the figure shows approximately four clusters: five initiatives cover a very large number of countries, more than 130. Two have a medium number of countries, 50–80, but cover a large number of years. Four have a smaller number of countries (fewer than 30) but a large temporal coverage. Finally, two have a smaller year and country coverage, however, they both collect and make available an extremely high level of data disaggregation by function, subsector, etc. Fig. 1 clearly reflects that there are tradeoffs: Generally speaking, broader datasets in terms of country and year coverage have less detail in level of disaggregation of agriculture, and vice versa. There is no case in which an initiative offers data on a large number of years and countries, while reflecting the totality of agricultural expenditures finely disaggregated by subsector or subfunction.

The administrative unit at which most of the data are available are countries. GFS produces limited data at the subnational level—that is, aggregate for all subnational units in a given country, not separately by subnational jurisdiction—and BOOST compiled subnational data for