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A Systematic Review of Cross-Country Data Initiatives on Agricultural Public Expenditures in Developing Countries

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ABSTRACT

A number of data initiatives exist that assemble and make available public expenditure data on agriculture, in addition to other variables. Several of these data initiatives overlap in terms of which types of agricultural public expenditure they capture, for which years, and in which countries. Using these different datasets to conduct descriptive or more technical analyses could produce differing results, and thus could possibly lead to different conclusions for public policy and public investment. It is therefore important to be aware of what these data initiatives are and where they relate to one another and where they differ, and to reflect on how analysts and policy makers can make informed judgments based on the different databases. This study reviews all of the relevant data and analytical initiatives or activities that focus on or include agricultural public expenditure (AgPE) in developing and transitioning countries. In addition to taking stock of such initiatives, we carry out a comparison of relevant features, describe differences and similarities, and identify possible avenues for greater collaboration and complementarity, including the use of selected empirical examples arising from the comparative review.

This review began its life at a workshop organized by the Organisation for Economic Co-operation and Development (OECD) and Policies, Institutions and Markets (PIM) of the International Food Policy Research Institute (IFPRI) in June 2013 that intended to discuss options for a coordinated approach to developing technical standards for measuring agricultural policy indicators. A first full draft of this review was finalized and widely disseminated in November 2013 to relevant stakeholders in the development community, including to all managers of the different initiatives reviewed. This paper significantly expands on the earlier analysis and updates the comparative review of the state of all data and analytical initiatives (DAIs) as of the end of March 2016. This update was warranted in light of the dramatic changes and improvements in various aspects of several DAIs, especially in 2015 and 2016.

Based on well-specified criteria, 13 ongoing data collection and analytical initiatives/programs were identified for this review. The 13 DAIs reflect a wide variety of objectives, unique origins, and diverse users. There are differences in scope in terms of sectors covered; level of disaggregation of AgPE; frequency of data updates; and countries, regions, and years covered. Although most of the initiatives have global coverage, three of them focus exclusively or mainly on Africa and two on Latin America and the Caribbean. Other regions seem somewhat neglected, aside from the global data initiatives. The limited disaggregation of AgPE data according to the main functions poses considerable constraints to analysts and policy makers in that there is still adequate information for better budgetary allocations and accountability, given that different types of agricultural expenditures vary strongly in terms of their contribution to agricultural performance and development.

The initiatives exhibit a variety of important methodological differences and, to a lesser extent, similarities, including cases of narrower and wider definitions of the "agricultural sector," with important implications for data compilation, comparisons, and interventions. Various AgPE analytical initiatives have developed different methodological tool kits. Several initiatives demonstrate emerging complementarities and synergies of varying degrees among DAIs, suggesting the potential for further stimulating such relationships. All of the initiatives reviewed are both users and suppliers of agricultural expenditure data. There are variable levels of collaboration and interdependence across databases and analytical studies in terms of resource sharing, data collection methodologies, and dissemination strategies. However, there is both scope as well as significant technical utility that can emerge from more systematic coordination and collaboration across DAIs. Creative consideration should be given to how the institutional, logistical, and financial impediments to such cross-data initiative coordination could be overcome.

Keywords: public expenditures; agricultural government spending; data comparison

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[1] Some of these individuals have taken on new posts since the time of the interviews with and feedback from them for earlier versions of this paper. Others listed here provided useful feedback on initiatives that were in earlier versions of the paper but are no longer included in this version in order to adhere strictly to the criteria for inclusion.

ACRONYMS

AgPE	agricultural public expenditure
ASTI	Agricultural Science and Technology Indicators
ATOR	Annual Trends and Outlook Report
BOOST	(This is not an acronym)
CAADP	Comprehensive Africa Agricultural Development Programme
CABRI	Collaborative Africa Budget Reform Initiative
CEPAL	Comisión Económica para América Latina y el Caribe
CEPALSTAT	CEPAL's Statistics database
CGIAR	(This is not an acronym)
COFOG	classification of the functions of government
CRS	creditor reporting system
DAC	development assistance committee
DAI	Data and Analytical Initiative
DC	developing country
DFA	development flows to agriculture
ECLAC	Economic Commission for LAC
EE	emerging economy
ESA	Agricultural Development Economics Division of FAO (the letters ESA do not respectively stand for words)
ESS	Statistics Division of FAO (the letters ESS do not respectively stand for words)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO Statistics Database
GDP	gross domestic product
GEA	government expenditures on agriculture
GFS	government financial statistics
GFSM	Government Financial Statistics Manual
GSSE	general services support expenditure
IDB	Inter-American Development Bank
IDF	Institutional Development Fund
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
ISNAR	International Service for National Agricultural Research

LCU	local currency unit
MAFAP	monitoring and analysing food and agricultural policies
MPS	market price support
NEPAD	New Partnership for Africa's Development
NPCA	NEPAD Planning and Coordinating Agency
OECD	Organisation for Economic Co-operation and Development
ONE	(This is not an acronym)
PIM	CGIAR Research Program on Policies, Institutions and Markets
PSE-LAC	Producer Support Estimates for Latin America and the Caribbean
PSE-OEE	PSEs for OECD countries and emerging economies
R&D	research and development
RePEAA	Resources for Public Expenditure Analysis in Agriculture
ReSAKSS	Regional Strategic Analysis and Knowledge Support System
SIAGRO	*Sistema de Información Agropecuaria*
SNAPE	Strengthening National Agricultural Public Expenditures
SPEED	Statistics on Public Expenditures for Economic Development
TSE	total support estimate
UN	United Nations
UNESCO	United Nations Educational Scientific and Cultural Organisation
WDI	World Development Indicators
WTO	World Trade Organization

1. INTRODUCTION

Context of and Rationale for This Study

One of the most important instruments that developing and transitioning countries possess to achieve the transformation of their economies through meeting key development outcomes and impacts, especially where the agricultural sector plays a key role, is efficient and effective agricultural public expenditures (AgPEs), coupled with a conducive policy environment and dynamic private investments.[1] Practitioners and policy makers increasingly recognize that public investment in agriculture is a key determinant of productivity growth, essential to meeting the demands on and the strategic role of the sector.[2] To ensure much-needed improvements in resource allocation decisions and complementary policy decisions, it is vital for these countries and development partners to possess sound and adequate databases that will enable appropriate types of evidenced-based AgPE analysis. Such resources also need to be complemented by other types of analyses and interventions to enhance the policy environment and stimulate private-sector investment flows to the sector. While recognizing the importance of private-sector investment flows and of nonagricultural public expenditures, this review focuses on AgPEs, which are a key component of common interest to development partners and policy makers in developing countries.

No single dataset enables a comprehensive and reliable assessment of trends regarding investment in or resource flows to agriculture, including datasets on AgPEs. With regard to public expenditures, the data challenges include a number of underlying and systemic weaknesses, which also make it difficult to make sound comparisons across time and countries, as well as comparisons across different datasets. The major data challenges include, among others:

- Varying definitions of the "agricultural sector and subsector" result in varying country-level classification systems for AgPE data. Although a large number of countries have adopted the Classification of the Functions of Government (COFOG) system, application of the system is variable.
- Many countries rely on the administrative classification for recording public expenditures. However, in practice, it is not just ministries of agriculture and related agencies that spend on agriculture. Ministries of land planning, rural development, and others are often responsible for expenditures on some key agricultural services or commodities. In addition, certain complementary expenditures in rural areas are important for agriculture, such as infrastructure and social investment. Practices in this area vary from country to country and need to be considered to ensure transparency, accuracy, and comparability of expenditures based on standardized and comparable classifications, such as COFOG.
- There is only highly limited availability of varying levels of disaggregation of AgPE data, with most data available only at a high level of aggregation (say, to level 2 of COFOG, the aggregate of "Agriculture, Forestry and Fisheries") and at the national level
- The extent to which subnational (for example, state and local government) and donor grant–funded (often off-budget) AgPEs are captured in aggregate country figures varies
- There are varying time periods and varying coverage of countries

[1] A growing number of empirical studies show that public spending in agriculture has a strong and positive effect on growth and poverty-reduction efforts. Some of the relevant studies include Mogues, Fan, and Benin (2015); Fan and Brzeska (2010); Fan and Rao (2008); and Fan (2008). A useful synthesis of good practices on AgPE reviews is World Bank and DFID (2011), and a practitioner toolkit can be found in World Bank (2011).

[2] See von Cramon-Taubadel et al. (2009). Note also that the private sector is the single most important source of investments in the agricultural sector; therefore, it is important to ensure that public investments generate potential synergies from private investments.

Some of the ongoing DAIs are endeavoring to contribute toward the construction of different types of databases for enabling enhanced and more disaggregated agricultural expenditure information and analytical studies, which could contribute to better expenditure priorities and allocation decisions. However, there are varying levels of harmonization, coordination, complementarity, and sustainability among these initiatives, given their diverse underlying objectives. Accordingly, these constraints and the increased awareness of these challenges suggest the potential for exploring synergies and complementarities among the totality of DAIs.

In June 20113, OECD and IFPRI/PIM—the CGIAR Research Program on Policies, Institutions and Markets—organized a workshop titled "Shared Approaches to Measuring the Agricultural Policy Environment," which brought together managers, researchers, and practitioners from numerous international development agencies to discuss specific aspects of the issues and opportunities for greater collaboration. One of the topics discussed involved finding practical ways to address many of the above-mentioned issues involving AgPE data and related analytical initiatives that could contribute to sound measurement of the agricultural policy environment. It also became clear at this workshop that there are, in fact, a plethora of DAIs that include cross-country data over time on agricultural public expenditures. And while the managers of some of these DAIs were aware of some of the other DAIs, there was a strong lack of awareness among the concerned stakeholders of the full spectrum of initiatives on this topic. This absence of an overview of data initiatives also implied that important opportunities were not being taken advantage of, for the DAIs to cross-fertilize each other through shared information and data, and through exchanges about the merits of alternative methodologies in assembling such data across countries and over time. This gave rise to the need to conduct a comprehensive, systematic, and comparative review of all DAIs of this type, to produce a public good that could tap into the aforementioned opportunities.

A first draft of this review, based on analysis of documentation on each data and analytical initiative (DAI) as well as extensive, mostly in-person interviews with the managers and teams of each DAI, was completed in November 2013, and widely shared with all DAI managers as well as other stakeholders.[3] This current paper constitutes a full update of the 2013 draft analysis as well as additional quantitative analysis, based on the DAIs' data and documentation publicly available as of March 31, 2016. This was deemed necessary given that several DAIs have made significant strides on various fronts in the past two years, including expansion of their data by country and year, increases in their analytical outputs (where applicable), enhancement of the public accessibility of the data, and, to a lesser extent, better documentation of the methodology they employ, to name a few of the changes in the DAIs.

Objectives, Scope, Criteria, and Approach

Considering the above context, this study aims to review relevant data collection and analytical initiatives or activities that are focused on or inclusive of AgPE data, as well as studies of developing and transitioning countries. In addition to taking stock of such initiatives, this review compares relevant features, describes differences and similarities, and identifies possible avenues for greater collaboration and complementarity. The outcome of this review is to contribute to the improved coordination and sharing of data on public resource allocations to agriculture in developing countries, and to improved communication and exchange on measurement approaches and methodologies in compiling such data and conducting analytical studies.

The main criteria to identify DAIs for the study were that they include *databases* that were still active—that is, in development—at the time this study began, and that the database involves AgPEs in at least seven developing or emerging economies. The approach involved the following sequential steps:

[3] The November 2013 draft, while widely disseminated, was never formally published online.

- Identifying the relevant DAIs that were already completed, ongoing, and emerging at the time this study began, that comply with the above criteria
- Developing a template table to compile relevant information for each initiative (primarily for the ongoing DAIs, as there was limited information on initiatives that were already past or were still in conception stage at the time this study began)
- Completing the template table for each initiative, based on available information and interviews with the relevant focal persons of the DAIs, as well as obtaining their feedback, validation, and further inputs for each draft template table
- Carrying out a comparative assessment of the various initiatives, based on a typology of initiatives to ensure comparability, while also using relevant empirical examples to illustrate similarities and differences
- Generating feedback or inputs from strategic users of AgPE analysis (for example, ministry of finance officials from selected developing countries, selected researchers on AgPE, specialists in AgPE analyses, and other international development practitioners)
- Downloading all publicly available data of each DAI and conducting quantitative comparative assessments
- Deriving relevant conclusions and recommendations to foster enhanced relevance, effectiveness, collaboration, and complementarity among ongoing, emerging, and prospective initiatives

Following the description of the motivation and origins of this study, and its objectives and approach, the next section provides a summary of the basic features of each initiative. In Section 3 we offer a classification of the initiatives into four major types, covering strategic aspects and giving special attention to their methodological features. Section 4 offers a quantitative comparison of AgPE-related variables across DAIs that reflects the extent and nature of the discrepancies for the same variables, countries, and years. The final section presents main conclusions and emerging recommendations.

2. OVERVIEW OF DATA AND ANALYTICAL INITIATIVES

This section of the review starts by providing a summary of the different features of certain selected past or emerging initiatives. We then provide a new typology (categorization) of the selected 13 initiatives based on their similarity in objectives and structures. Finally, we present a summary of the different features of each of the 13 initiatives under consideration.

Summary of Selected Past and Emerging Initiatives

The above criteria point to five past and one emerging initiative. These are briefly described below, based on the available information.

Past Initiatives

Expenditure Tracking of the Maputo Declaration, FAO

The Maputo Declaration on Agriculture and Food Security in Africa (2003) was a formal commitment by the heads of state of African countries to allocate at least 10 percent of their public budgets to the agricultural sector, together with a targeted 6 percent agricultural growth rate per year. In 2014, African countries reaffirmed these goals in the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. In about 2004, FAO established a tracking system to monitor progress toward these key policy targets. A World Bank–supported Institutional Development Fund (IDF) grant supported this work. The primary beneficiary was intended to be the New Partnership for Africa's Development (NEPAD) secretariat as well as member-state ministries of agriculture, which were to benefit through the creation of a method for common and consistent measurement of public expenditures in national agricultural sectors. This would enable consolidation of information and tracking at the continent level by the secretariat, which would in turn facilitate monitoring the progress of the Comprehensive Africa Agricultural Development Programme (CAADP) commitments.[4]

Regional Database 1986–2001, FAO LAC Regional Office

In 2004–2005, the Latin American and Caribbean (LAC) Regional Office of FAO, based in Chile, developed an initiative to measure and analyze agricultural and rural development public expenditures in 18 selected LAC countries. The initiative ordered country studies to gather data on public expenditures for the years 1986–2001. The data were put together in a unique database, which was made available to a group of researchers for regional analyses.

The collected data considered three main categories: (1) production promotion, (2) rural infrastructure, and (3) rural social investment. Item (1) was the closest to agriculture-related expenditures, and the other two were wider concepts contributing to a supporting environment. However, large variation in classification criteria was observed across countries in these categories, especially in social investment. The constructed database also included some macroeconomic variables such as sector and global gross domestic product (GDP), agricultural and rural population, and employment, among others. Analytical studies used these and additional variables to assess the impacts and relationships of agricultural and rural expenditures on growth, poverty reduction, and factor productivity using alternative conceptual models.

The initiative did not publish a methodological document explaining how the data were collected and organized. Specific country reports were not made available to researchers, so they could not evaluate comparability and reliability of the data across specific countries. Data from federal countries were particularly problematic. All of these issues undermined the potential additional use of the data, and the

[4] One of the main outputs of this activity included National Compliance with 2003 African Union–Maputo Declaration: 2007 Draft Survey Report (NEPAD 2008).

initiative did not have further impacts on policy analysis and decision making after the publication of the 2006 volume. Currently there are no activities related to this initiative at the FAO LAC regional office.

Institutional Strengthening of Agriculture in Belize, Central America, and Dominic Republic, IDB

This was a technical assistance project (from 2009 to 2011) funded by IDB, comprising two components: two AgPEs (for Honduras, Costa Rica, and Belize) and estimates of PSEs and related indicators for five Central American countries (which provided inputs for the Agricultural Public Expenditures for LAC (AgPELAC) data initiative).[5] The AgPE studies applied a standard methodology (drawing on the AgPE tool kit cited above, World Bank 2011), customized according to the requirements of each country. The studies included a section on enhanced budgetary management processes and mechanisms, based on a systematic assessment of the main constraints in each stage of the budgetary cycle. The studies developed a planning, budgeting, implementation, and governance cycle framework for enhanced budgetary management. Those conducting the country-level AgPEs encountered significant challenges in compiling reliable and comprehensive AgPE data to a level of disaggregation below level 3 (COFOG), especially considering the multiple implementing agencies. The PSEs were based on applying the OECD methodology for PSEs and related indicators.

The studies identified data constraint issues and recommendations for enhanced AgPE databases and recommended institutionalizing a process whereby ministries of agriculture would carry out periodic *light* budgetary assessments of past performance as a key input for formulating sectoral medium-term and annual expenditure budgets, within which an annual budget would be drawn up. The PSEs provided key results, which were used for policy discussions with each of the governments, although the desired country ownership was not achieved for several reasons. At the end of the project, there was an independent assessment of its objectives, including lessons learned.[6]

ONE Report

In late 2012 and early 2013, the campaigning and advocacy organization ONE carried out a major review of progress of African governments' efforts to invest in their own agricultural development (ONE 2013).[7] It is included because it highlights an important initiative by a key stakeholder promoting sustainable development, and it also demonstrates some of the data constraints faced by all empirical studies. ONE looked at the 19 African countries with vetted, signed national agriculture investment plans, developed through Comprehensive Africa Agriculture Development Programme (CAADP). For each of these countries, the ONE team looked at progress on its commitment to reduce poverty, spend 10 percent of national expenditures on agriculture, implement a national plan, and include citizens in decision making. ONE analyzed available public budget expenditure and allocation statements from individual countries and surveyed agriculture ministries with the opportunity for feedback and verification. The ONE team developed a methodology note, which provides further details. Unfortunately, because there is no standard system for reporting data, information must rely upon documented assumptions, sources, and caveats.

The report continued to assess donors' delivery of their L'Aquila commitments made by the Group of 8 (G8) countries in 2009 to reverse underinvestments in agriculture and food security, and evaluated the quantity and quality of their agriculture assistance. In addition, the report hones in on the

[5] In Spanish, the project name is *Mejora Institucional Agrícola en Belice, Centroamérica, Panamá y la República Dominicana*. Regional Unit for Technical Assistance (RUTA) executed the project, mainly in the form of contracting five separate country-level studies on AgPE analysis and one PSE for the Dominican Republic, Guatemala, and Honduras (based on the OECD methodology).

[6] The report is in Spanish and is for internal use by RUTA and Inter-American Development Bank (IDB) (RUTA 2012).

[7] Note that the review covered only national expenditures and did not consider funding or expenditures by international development partners as part of total public expenditures. Most initiatives monitor total public expenditures: national plus donor contributions.

first Rome Principle of country ownership. For donors, the ONE team looked at four different indicators of country ownership of national agriculture plans, from inclusion of nonstate actors to donor support for these plans. For African governments, the ONE team looked at whether budgetary and program information is available to citizens and whether a country's national agriculture plan includes a structure for the participation of nonstate actors. The team also included case studies from Benin, Ghana, Kenya, and Tanzania to help illustrate the concept of country ownership and its impact on the CAADP national process. Finally, given that 2013 was a turning point for both African and donor governments, ONE offered some targeted recommendations on how to improve commitments to agriculture and food security moving forward.

RePEAA

The Agriculture and Rural Development Department of the World Bank developed this project with funding from the United Kingdom Department for International Development as part of a partnership on public expenditure in agriculture. The objective is to compile or generate, and make available, various resources on (1) available tools and methods that may be used in analyzing public expenditures in the agriculture sector and (2) many published studies that have analyzed expenditures in the agriculture sector. Although this analytic initiative does not involve construction of a database on AgPEs, it provides a comprehensive source of valuable resources and references and a tool kit for supporting evidence-based AgPE analysis, thereby contributing to enhanced resource allocations and supporting policy decisions. Its references include tools for better understanding AgPE data and tools for policy makers on how to classify and organize AgPE data. This initiative was completed in 2011. The main methodological resource generated by this initiative was the *Practitioners' Toolkit for Agriculture Public Expenditure Analysis* (World Bank 2011), complemented by a large array of other resources on specific methodologies and country-level expenditure reports, which illustrate diverse practices.

Emerging Initiative

The NEPAD Planning and Coordinating Agency (NPCA) aims to establish and maintain a database of key agricultural indicators, connected with key output, outcome, and impact variables, in support of meeting the strategic objectives of CAADP. The intention is to use the emerging CAADP results framework as a guide for prioritizing the types of indicators that would be included in the database, giving special attention to tracking the agricultural budgets and actual expenditures. Over time, it would aim to track disaggregated expenditure data, especially if AgPE databases can be improved at the continent, regional, and country levels. This initiative provides an opportunity for strengthening ongoing partnerships with other key actors that are managing some of the current AgPE databases—for example, SPEED, ReSAKSS, and the Government Expenditures on Agriculture (GEA) DAI. As the proposal crystallizes, it is timely for interagency collaboration to support it as an important policy target.

List and Typology of Ongoing Initiatives Covered

Based on the earlier mentioned criteria, 13 DAIs have been identified for this review (see Table 2.1).

Table 2.1 Key databases and analytical initiatives

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

Source: Authors' compilation.

Notes: * MAFAP previously stood for Monitoring African Food and Agricultural Policies, and was renamed after expanding its mandate to countries beyond Africa. UN = United Nations; ECLAC = Economic Commission for LAC; CEPAL = Comisión Económica para América Latina y el Caribe; IFPRI = International Food Policy Research Institute; DCs = Developing Countries; EEs = Emerging Economies; FAO = Food and Agriculture Organization of the United Nation; IMF = International Monetary Fund; LAC = Latin America and the Caribbean. IDB = Inter-American Development Bank; OECD = Organisation for Economic Co-operation and Development.

Based on the main common orientations and features of the above initiatives, Table 2.2 summarizes the typology of DAIs that is used to guide the comparative review of diverse initiatives. Each initiative has specific and unique objectives that must be kept in mind in relation to the comparisons and conclusions. Accordingly, this review is not an assessment per se of each initiative; rather, the review focuses on bringing to light key information and relevant comparisons to give practitioners (both suppliers and users of data) a better appreciation of each initiative and to foster enhanced interagency collaboration for better response to the requirements of users (researchers and policy makers).

Figure 2.1 illustrates the interrelationships among the various DAIs and how they can enhance the budgetary cycle and contribute to enhanced budgetary outcomes and impacts for the agriculture sector, if effectively managed and coordinated at the country level.

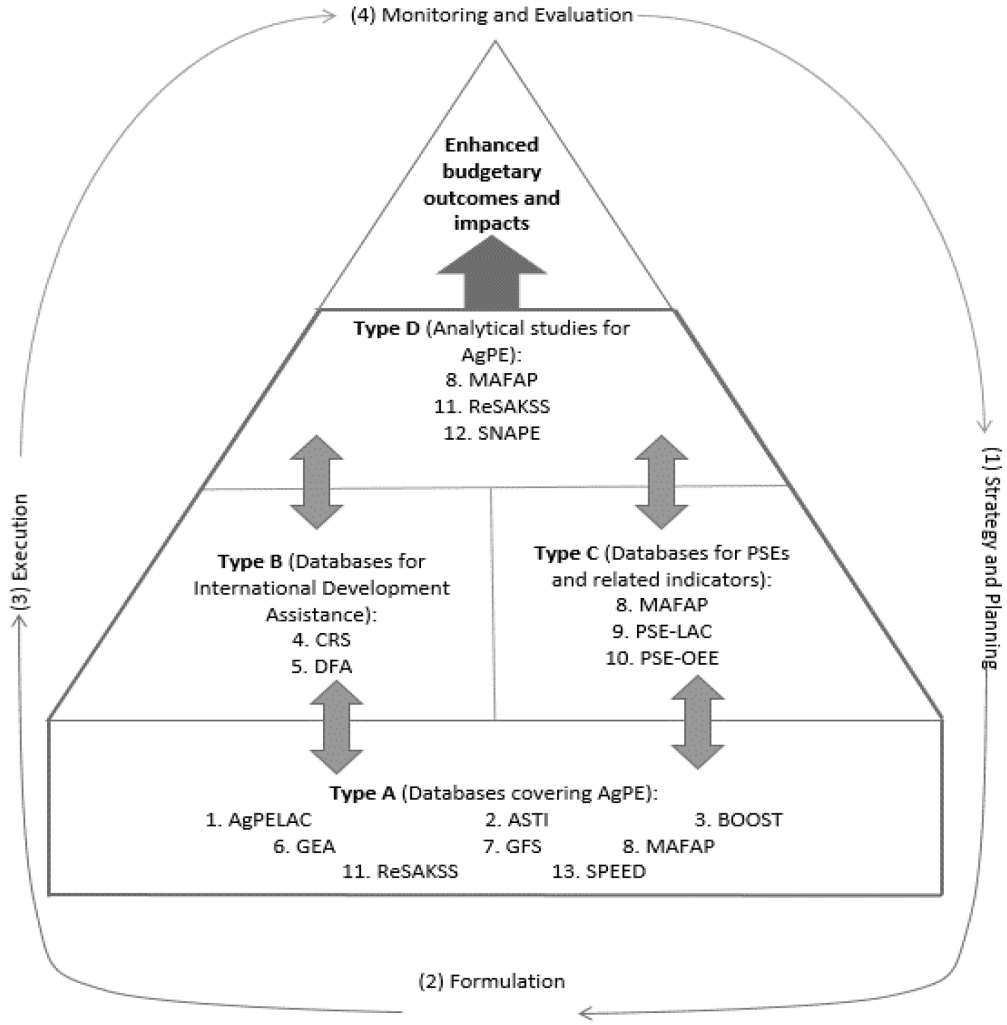
Table 2.2 Typology of data and analytical initiatives on agriculture public expenditures

Initiative	Databases covering AgPE Type A	Analytical studies for AgPE* Type B	Databases for PSEs and related indicators* Type C	Databases for international development assistance Type D
1. AgPELAC: Agricultural Public Expenditures for Latin America and the Caribbean	☑			
2. ASTI: Agricultural Science and Technology Indicators	☑			
3. BOOST: Making Expenditure Data Available for Analysis	☑			
4. CRS: Creditor Reporting System of ODA Flows		☑		
5. DFA: Development Flows to Agriculture - FAOSTAT Investment dataset on international aid		☑		
6. GEA: FAOSTAT Investment dataset on Government Expenditures on Agriculture	☑			
7. GFS: Government Financial Statistics	☑			
8. MAFAP: Monitoring and Analysing Food and Agricultural Policies*	☑		☑	☑
9. PSE-LAC: Producer Support Estimates for Latin America and the Caribbean			☑	
10. PSE-OEE: Producer Support Estimates (and Related Indicators for Agricultural Support) for OECD and Emerging Economies			☑	
11. ReSAKSS: Regional Strategic Analysis and Knowledge Support System for Sub-Saharan Africa	☑			☑
12. SNAPE: Strengthening National Comprehensive Agricultural Public Expenditure in Sub-Saharan Africa				☑
13. SPEED: Statistics on Public Expenditures for Economic Development	☑			

Source: Authors' compilation.

Notes: * Some of the database initiatives also support some analytical studies (for example, ASTI). But inclusion in Type D requires that the analytical study be comprehensive in methodology and scope.

Figure 2.1 Framework of data and analytical initiatives for supporting enhanced agricultural expenditure analyses, budgetary cycles, outcomes, and impacts



Source: Authors' compilation.

Notes: AgPELAC: Agricultural Public Expenditures for Latin America and the Caribbean; ASTI: Agricultural Science and Technology Indicators; BOOST: Making Expenditure Data Available for Analysis; CRS: Creditor Reporting System of ODA Flows; DFA: Development Flows to Agriculture - FAOSTAT Investment dataset on international aid; GEA: FAOSTAT Investment dataset on Government Expenditures on Agriculture; GFS: Government Financial Statistics; MAFAP: Monitoring and Analysing Food and Agricultural Policies; PSE-LAC: Producer Support Estimates for Latin America and the Caribbean; PSE-OEE: Producer Support Estimates (and Related Indicators for Agricultural Support) for OECD and Emerging Economies ; ReSAKSS: Regional Strategic Analysis and Knowledge Support System for Sub-Saharan Africa; SNAPE: Strengthening National Comprehensive Agricultural Public Expenditure in Sub-Saharan Africa; SPEED: Statistics on Public Expenditures for Economic Development.

This illustration reflects a results chain whereby strong databases are the foundation of sound analyses, which can help underpin better budgetary allocations, which in turn feed into the databases. Regions such as Africa, which are implementing a strategic framework for the agricultural sector (CAADP) at the three levels of the continent, subregion, and country, can generate synergies in the effective and complementary utilization of the various types of databases and analytical initiatives in AgPE. This paper highlights some of these key features and opportunities.

Summary Descriptive Features

This section provides a summary of general features of each DAI, categorized based on the typology of Table 2.2.

Type A: Databases for AgPEs

AgPELAC

The United Nations Economic Commission for Latin America and the Caribbean (ECLAC) established and managed a dataset on AgPE for its northern subregion (Central America, the Caribbean, and Mexico). There are only two indicators in the database known as AgPELAC: total public expenditure and AgPE. These are part of the System of Agricultural Information (*Sistema de Información Agropecuaria*, or SIAGRO), which was developed by the Unit of Agricultural Development of ECLAC's Mexico subregional office. It was developed in response to information needs of the public and private sectors from the northern subregion of LAC countries, complementing other existing regional and international databases like FAOSTAT and World Bank's WDI.

Data are compiled from official published sources, such as publications from central banks or finance ministries. No questionnaires are sent specifically to governments. Currently, AgPELAC covers seven Central American and Caribbean countries.[8] The main goals of SIAGRO are (1) to generate national and regional diagnoses about the evolution of the agricultural sector, (2) to support in the formulation of agricultural development policies, (3) to give inputs for the preparation of specific socioeconomic research in the agricultural sector, and (4) to help in the decision making of the public and private sectors. Some unique and value-added features are that the AgPELAC database has a relatively long time series of 1980–2014, which makes it attractive for comparative research and analysis with other long-term macroeconomic variables, such as GDP, productivity, and credit.

The main limitations are its limited geographical coverage and its lack of disaggregation for types of agricultural expenditures or levels of government. In addition, being based only on official publications from the countries covered, it does not have a comparable and standard method for data collection.

ASTI

The ASTI initiative, managed by IFPRI, compiles, analyzes, and disseminates data on institutional developments, investments, and capacity in agricultural research and development (R&D) in low- and middle-income countries, with the objectives of assisting R&D managers and policy makers with improved policy formulation and decision making at the country, region, and international levels. The origin of ASTI traces back to 1981, when two of the then–Consultative Group on International Agricultural Research (CGIAR) member institutes—IFPRI and the former International Service for National Agricultural Research (ISNAR)—initiated a joint venture on agricultural R&D data indicators and published the best available data from secondary sources for an ad hoc group of national agricultural research systems. ISNAR continued this work during the next two decades, involving various institutional survey rounds to collect primary data for various countries and the developing world, and linking these data with secondary data sources as well as science and technology indicators for OECD countries. In 2001, IFPRI and ISNAR collaborated again in collecting agricultural R&D indicators, which led to the official establishment of the ASTI initiative in 2001. The initiative, to this end, has identified four objectives in fulfilling its mission: (1) provide up-to-date, high-quality datasets on agricultural R&D; (2) conduct further analysis of agricultural R&D datasets; (3) communicate data results and analysis for policy formulation and advocacy; and (4) build capacity for data collection and analysis.

ASTI has limited itself to measuring inputs into agricultural R&D rather than expanding to include indicators on the multiple dimensions of the agricultural innovation process, but it is currently piloting collection of output or performance indicators. It is also piloting an agricultural innovation

[8] These are Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

system framework for use as an analytical tool at the sector and commodity levels. ASTI groups *performers* of agricultural R&D into two sector categories (public sector and private sector) and five institutional categories (government, higher education, nonprofits, businesses, and public enterprises). The level of data disaggregation also varies according to the indicators. The ASTI initiative currently compiles public spending data from 72 developing countries in Africa, the Asia-Pacific region, LAC, and the West Asia and North Africa region through national institutional survey rounds, which capture primary data of hundreds of agencies involved in agricultural R&D. Time-series data are collected for three main indicators: research investments spending, research funding sources, and research staff totals. Benchmark data are collected for other indicators, such as research staff by degree, gender, and age; support staff; and research focus by commodity and theme. ASTI collects and processes the data on agricultural R&D using internationally accepted definitions and statistical procedures for compiling R&D statistics developed by OECD and the United Nations Educational Scientific and Cultural Organisation (UNESCO).

BOOST

The World Bank has been the lead organization in carrying out aggregate and sectoral public expenditure reviews in the developing world. Given that governments are intensifying their efforts to rationalize public expenditures in the face of fiscal constraints, and in light of data constraints as a constant challenge in these reviews, the Bank sought and developed a new tool (titled BOOST) to help enhance public-sector performance, especially in compiling, organizing, and analyzing different aspects of public expenditure data at the aggregate and sectoral levels. BOOST collects and compiles detailed data on public expenditures from national treasury systems and makes some of these data available in a format ready for granular analysis.

BOOST has two main objectives:

- It is designed to help researchers and government officials improve public expenditure management decisions by examining trends in allocations of public resources, analyzing potential sources of inefficiency, and informing how governments can better finance the delivery of enhanced public services. In countries for which the BOOST database is publicly available, it enables civil society and researchers to take informed views and positions on public expenditure allocations, efficiency, and effectiveness.
- It aims to improve the quality of public expenditure analysis, dialogue, decisions, and monitoring.

BOOST was launched in 2008, and country engagements have been undertaken in 36 countries, with 50 country agreements in total. Nineteen BOOSTs have become publicly available on the new Open Budgets Portal that the World Bank launched (by "a BOOST," we mean the product of applying BOOST analytics to a particular country or sector). BOOST has been generally used to support country-level public expenditure reviews, covering all major sectors. More recently, BOOST has been increasingly applied to key sectors (thus far, education and health) as part of in-depth sectoral expenditure reviews, but colleagues in the agriculture sector have indicated interest.

The main methodological aspects include the following:

- The World Bank works with ministries of finance to collect and compile data on all public expenditures (budgeted and executed) in a given country or federal state (that is, all expenditures recorded by the country's treasury system).
- The BOOST team (which consists of World Bank staff, consultants, and government counterparts) prepares a comprehensive, easy-to-use database covering expenditures across sectors, levels of government, and multiple years.
- The World Bank and government counterparts use the database to develop new ways of analyzing public expenditures and to provide better policy advice across a variety of sectors. The BOOST team intends to develop an online platform that will allow users to analyze public expenditure data through web-based pivot-table and mapping interfaces to make the analysis of public expenditures easy and accessible for a nontechnical audience, as well as to get citizens and policy makers thinking about the linkages between spending and results.

GEA

As part of the global effort in creating a world free from hunger and malnutrition, the Statistics Division of FAO, FAOSTAT, developed a Global Investment Dataset comprising four main components: Credit to Agriculture, GEA, DFA, and Foreign Direct Investment in Agriculture. The collection and dissemination of the GEA data, in particular, aims at providing researchers, policy makers (in-country personnel and their supporting analysts), and international development partners with relevant data to facilitate the assessment of governments' role in and contribution to agriculture, rural development, and environmental protection services. The initiative prioritizes comparability across countries and harmonization with other international organizations (primarily IMF) that are compiling relevant datasets.

The important anchor that underpins FAOSTAT-Global Investment Dataset's addition of the Investment Domain is the FAO charter. The charter calls on FAO to compile basic statistical information on agriculture and food security, whereby the Investment Domain gained the status of being a "core" part of FAO's statistical information for cross-country monitoring and comparisons.

In 2004, FAO started an initiative to track progress in allocating public expenditures to the agricultural sector for Africa, as part of supporting the Maputo Declaration (see more details on this in Section 2 under '*Expenditure Tracking of the Maputo Declaration, FAO*'). This initiative contributed to triggering the inclusion of GEA in the Investment Domain. Under the umbrella of the Global Strategy to Improve Agricultural and Rural Statistics, the United Nations Statistical Commission adopted GEA in February 2010. In 2012, the GEA database was launched. It tracks expenditures on agriculture and rural development from 2001 through 2013. FAOSTAT uses a questionnaire based on the methodology of IMF's Government Finance Statistics Manual (GFSM) (IMF 2001). The questionnaire requests data structured according to COFOG, and disaggregated at COFOG's level 3. This approach was to help ensure comparable data that are aligned with international statistical standards. Reporting countries and focal persons—usually within the ministry of finance or agriculture, or the central statistics bureau—are requested to complete the annual FAO questionnaire, which has additional disaggregation of COFOG level 3 expenditure into its recurrent and capital components, and includes supplemental and cross-reference data introduced by FAO beyond the COFOG classifications. The database currently makes agricultural expenditure data available publicly for 133 countries across 33 geographic and economic regions.

The main methodological features of GEA include the following:

- The first (2012) FAO questionnaire for government expenditure on agriculture was mainly developed based on the methodology of IMF's GFSM (IMF 2001), in particular GFSM's Table 7, "Outlays by Function of Government," in an effort to ensure comparable data that are aligned with international standards.
- The questionnaire is designed to collect key data series for tracking the allocation of government expenditures to agriculture and rural development, and related metadata, by requesting a time series on expenditures by general government and its subsectors for the period 2001–2013 (and each year thereafter, according to an established cycle of compilation, adjustment, and release). The questionnaire is distributed to reporting bodies of member countries in about September of each year, such that it follows about two months after IMF's GFS questionnaire is issued. This is to help ensure consistency with the GFS data, although the latter is at a higher level of aggregation. Release of the published, compiled data is normally at midyear of the following year.
- The revised questionnaire on government expenditure on agriculture (2013) and related functions by source of funds also includes supplemental and cross-reference data on further disaggregation of outlays on subsidies and grants.
- While the FAOSTAT team reviews the data sent by each country, there are limitations on how far the FAOSTAT team can validate and adjust the data and fill data gaps. The team is currently devising cost-effective ways to help ensure the data from the countries are complete, timely, and accurate.

GFS

The GFS system compiles detailed annual statistical data on revenue, expenses, transactions in assets and liabilities, and stocks of assets and liabilities of a general government and its subsectors as reported by IMF member countries. IMF originated the GFS data collection system in 1976 to support internationally comparable country-level fiscal reporting. The system provides for three levels of government: central; state, provincial, or regional; and local. It covers all aggregate fiscal data and includes major subsectors and functions, in accordance with COFOG to levels 1 and 2. The system also records two types of flows: transactions and other economic flows.

GFS is the most internationally recognized source of data for policy makers and analysts to examine in a consistent and systematic manner specific areas of government operations (taxation, grants, subsidies, and so on); developments in the financial operations, financial position, and liquidity situation of the general government or the public sector; and the socioeconomic objectives of fiscal policy. One hundred and thirty-six countries report agriculture public expenditure data to GFS, with varying degrees of institutional and transactional coverage across the globe. The electronic database contains COFOG time-series data for these countries from 1989 to 2014 (or about up to two years prior to the time of access).[9] The data can be found in print, online, or in compact-disc formats.

The main methodological references and features include:

- The *GFS Manual* (IMF 2001, and most recently the updated IMF 2014) provides the economic and statistical reporting principles to be used in compiling the statistics and guidelines for the presentation of fiscal statistics within an analytic framework that includes appropriate balancing items.
- *Public Sector Debt Statistics: Guide for Compilers and Users* (IMF 2013b) is the first global guide on public-sector debt statistics prepared under the joint responsibility of nine organizations, through the mechanism of the interagency Task Force on Finance

[9] In fact, there was one single observation for 2015 at the time of database access (early 2016), while for the other years there were hundreds of observations.

Statistics. It provides guidance on (1) concepts, definitions, and classifications of public-sector debt statistics; (2) the sources and techniques for compiling these data; and (3) some analytical tools that may be used to analyze these statistics.

- *Government Finance Statistics: Compilation Guide for Developing Countries* (IMF 2011) represents a new approach by IMF's Statistics Department to assist developing countries in compiling GFS data in accordance with the guidelines of GFSM (IMF 2001). The guideline was stimulated by the recent economic and financial crises, which highlighted the need for more and better data to monitor and evaluate economic developments.
- Preparation of GFSM 2014 was released in early 2014 (IMF 2014). One of the main features of the new manual is better alignment with the 2008 System of National Accounts.

MAFAP

FAO has established a sustainable system for monitoring the impact of food and agricultural policies, initially in select African countries, and recently expanded to countries in other regions. The initiative, called MAFAP, was first developed in response to the declining agricultural investment and serious food crisis observed in Africa. Although decision makers recognize that appropriate policies and adequate public spending are critical for closing this gap, evidence to support decision making is often limited in Africa. MAFAP therefore emerged as a response to this growing data demand to monitor key agricultural policies and expenditures. There is ongoing or completed data collection in 15 countries, with data publicly available for 9 countries, all in Africa: Burkina Faso, Ethiopia, Ghana, Kenya, Malawi, Mali, Mozambique, Tanzania, and Uganda. The data on these nine countries span 2006 to 2013, with different ranges within these years for the different countries.

The MAFAP database, in particular, provides access to data and common indicators to policy makers and their development partners on public expenditures on food, agriculture, and rural development. (The database also compiles data on market incentives and disincentives for key commodities, using the OECD methodology for measuring price distortions; this function is discussed with Type D initiatives below.) The initiative's first phase (2010–2013) has been successfully completed, having compiled data from 2006 to 2013. A second phase was initiated in 2014, going through 2019.

With regard to data compilation and dissemination of methodological aspects, MAFAP followed a common quantitative methodology and indicators to increase transparency and enable comparison of agricultural policies across countries. The public expenditure database provides a high level of disaggregation of agricultural expenditure data, although the actual level, availability, and reliability of data vary by country.

The following synthesizes the methodological concepts behind MAFAP, based on an explicit classification of AgPEs that reflects the OECD method for estimating PSEs and other indicators:

- The main variables capture all public expenditures that are undertaken in support of food and agriculture–sector development (from the national budget, provided by either central or regional actors or any ministry) and external aid (provided by international or nongovernmental organizations).
- The main focus is on the food and agriculture sector, but expenditures in support of the forestry and fishery sectors are also captured.
- It also captures all public expenditures in rural areas, such as rural infrastructure, rural education, and rural health.
- Expenditure measures generate explicit or implicit monetary transfers to supported individuals or groups, according to two categories of expenditures:
  - Agriculture-specific expenditures: transfers to agricultural agents or the sector as a whole. These are further broken down into two categories:

- Payment to agents *individually* (producers and consumers) in the agrifood sector, as a proxy for "private" goods
- General sector support to agrifood-sector agents, *collectively*, as a proxy for "public" goods

– Agriculture-supportive expenditures: public expenditures that are not specific to agriculture but have strong influence on agriculture-sector development, such as rural education, rural health, and rural infrastructure.

- Expenditure measures are considered and classified according to the way in which they are implemented, not on the basis of their objectives or economic impacts.

The detailed classification of support follows OECD's principle of classifying policies according to their economic characteristics (the way they are implemented). The particular expenditure categories are designed to reflect the types of policies that are applied in African countries, and they reflect the experience of FAO's work on public expenditures in developing countries. Furthermore, the classification system attempts to distinguish policies providing private goods, as opposed to public goods, given different effects.

MAFAP seeks to develop a set of measures of value to policy makers in African countries. The two core types of policy indicators are:

- Measures of explicit policy incentives and disincentives, and the market development gap in key agricultural value chains
- Measures of budgetary expenditures

MAFAP is based on the OECD PSE approach to measuring support to the food and agriculture sector. The methodology has been adjusted for application in African countries but remains complementary with the OECD's PSE indicators.

ReSAKSS

The ReSAKSS database—facilitated by IFPRI in partnership with the Africa-based CGIAR centers, NPCA, the African Union Commission, and the regional economic communities—tracks agricultural performance in support of the implementation of the CAADP agenda. The database covers only Africa, disaggregated into five regions (Africa-wide, eastern and central Africa, southern Africa, West Africa, and North Africa), with a focus on Africa.[10]

ReSAKSS is developing several databases that involve tracking the policy targets arising from the Maputo Declaration. It presents available AgPE data from 1980 to 2014 at various levels (continent, region, and country). In recognition of the usefulness of generating disaggregated expenditures that can be compared across countries to help underpin better resource allocation decisions, the ReSAKSS team, working with and through the regional and country-level nodes, is considering the development of disaggregated agricultural expenditures data.

The Annual Trends and Outlook Report (ATOR) for 2012 (Benin and Yu 2013) illustrates the type of methodology that ReSAKSS uses to compile the required data, using multiple sources per item. The team obtained from the SPEED database total expenditures from 1980 onward. It then compiled data on the share of AgPE in total expenditure based on available data from all the different sources, using more recent sources where there were competing sources for any data point. Then it used these two approaches to obtain the amount of AgPE by multiplying the total amount by the share. Missing values in the total expenditure and AgPE were estimated using extrapolations based on annual average growth rates that were estimated with the observed data. These were then used to fill in missing observations in the shares of AgPE. To remove the influence of inflation over time and to more reliably compare

[10] There is another initiative called ReSAKSS-Asia, which started in 2011. It is not included in this paper, given that this initiative does not produce a separate database on agricultural public expenditures. Its website displays SPEED, the coverage of which includes Asian countries among other regions. In this paper, "ReSAKSS" will always be referring to the Africa-related initiative.

expenditures across countries, total expenditures and AgPE were converted into constant 2005 purchasing power parity using conversion factors from WDI (World Bank 2013b). The guide to the ReSAKSS website is a clear and useful tool to encourage users to work with the available data. However, the ReSAKSS 2010 data notes have not yet been updated.

SPEED

IFPRI's SPEED initiative aims to create the most comprehensive and publicly available agricultural and other public expenditure information to researchers, policy makers, donors, and the broader development community to support a variety of economic and policy applications, a better understanding of the linkages between public expenditures and development, and enhanced insights for promoting overall poverty reduction strategies and other key economic development objectives.

Stimulated by IFPRI's research focus on and increasing policy maker demand for clearer assessments of public expenditure-outcome-impact linkages, the SPEED team at IFPRI started compilation of data shortly after the year 2000. The database currently covers 148 countries: 114 developing and 34 developed. In close collaboration with other international data initiatives and different stakeholders, the team drew on available expenditure data from relevant international agencies, such as IMF's GFS, domestic sources, and other country-level sources, and in July 2010 the public expenditure database was expanded and formally launched as SPEED. In 2013, a new edition was published, and a third edition came out in 2015. In early 2016, a menu-driven visualization tool was also developed and made available, through which users can easily create maps and charts showing total and sectoral public expenditures in different countries.

In addition to collecting relevant data from IMF's sources (GFS, Statistical Appendixes, and Selected Issues), as well as from World Bank's public expenditure reviews and various national government publications, the SPEED team uses partners to compile expenditure data at the country level (especially in Africa, where the ReSAKSS network has regional and country nodes that facilitate data collection for closing gaps).

Currently, the SPEED database compiles and makes available public expenditure information for the period 1980–2012 for 148 countries, in 6 regions across the globe, and in 8 sectors: agriculture, education, health, defense, social protection, mining, transportation and communication, and total expenditure. Although SPEED provides aggregate expenditure data at COFOG level 2 disaggregation (combined for agriculture, forestry, and fisheries), it provides data at COFOG level 1 for other key sectors (such as for health and for education).

The main methodological features include the following:

- A systematic data collection process is used to compile the SPEED database from multiple data sources (published and in-country), drawing on various ongoing initiatives for generating expenditure data and analysis (CAADP and ReSAKSS in Africa). SPEED does not use a questionnaire.
- A visualization tool generates maps and charts reflecting public expenditure related variables by sector and region or country.
- Certain adjustments are made to the data for various factors, including currency redenomination, in order for the figures to be consistent and comparable over time.
- Imputations are also estimated for missing values in the database. Three methods are used to calculate the imputation: average, linear trend, and five-year average growth rate.
- Supplementary methods for filling data gaps include desk work to collect local-level data from available national sources.

Type B: Databases for Overseas Development Flows

CRS

The OECD's CRS data initiative provides data on three types of activity: (1) official development assistance (ODA), (2) official export credits (private loans and credits under official guarantee or insurance), and (3) other official flows. The objective of the CRS database is to facilitate the study of sectoral and geographical distribution of aid and other official flows. The CRS aid activity database, in particular, contains data on donor expenditures in recipient developing countries that enables analyses on where aid goes, what purposes it serves, and what policies it aims to implement, on a comparable basis for all Development Assistance Committee (DAC) member countries and non-DAC members and foundations.

Since its establishment in 1967 jointly by OECD and the World Bank—with the aim of supplying the participants with a regular stream of data on indebtedness and capital flows—CRS has evolved to respond to changing needs over the years. The database provides data on developing countries or territories eligible to receive donor funds, covering the period 1973–2014. Data consist of approved commitments and disbursements, focusing on financial data, but some descriptive information on each project is also made available. The CRS sector classification, in general, contains five broad categories: social infrastructure and services, economic infrastructure and services, production, multisector/crosscutting, and nonallocatable by sector.

CRS is an ongoing data initiative and forms a core function of the OECD's DAC, as its members provide about 95 percent of development assistance to developing countries. CRS is currently the most comprehensive source for data on international development assistance and other official flows at the project level, when considering the allocation of assistance to agriculture as well as other relevant sectors by recipient country and region. Other international agencies, such as FAO, build on the CRS database (see below). Major methodological features of the CRS data compilation strategy include:

- Reporting institutions report according to a set of directives that have been agreed upon by DAC members.
- There is also a reporting format known as CRS++ that contains all data items needed for reporting to the DAC aggregates. The data items are based on definitions and statistical classifications established by the Working Party on Development Finance Statistics and endorsed by DAC. All donor assistance commitments and disbursements—both bilateral and multilateral aid—are reported in CRS++ at the activity level, applying the agreed-upon classifications of aid by sector (and subsector), type of aid (for example, budget support, project-type intervention, technical assistance), type of financing (for example, grant, loan, or equity), policy objective (for example, gender equality, climate change mitigation and adaptation), channel of delivery (for example, nongovernmental organization, public-private partnership, UN agency, international financial institution, other multilateral institution), and tied or untied aid status.
- A number of integrity or reliability checks within CRS are designed to help reporters avoid inconsistencies. Members are encouraged to implement these integrity checks in their systems. They are invited to review their reports using a provided checklist prior to sending them to the secretariat.

The DAC secretariat assesses the quality of aid activity data each year by verifying both the coverage (completeness) of each donor's reporting and the conformity of reporting with definitions (so as to ensure the comparability of data between donors). Prior to any statistical analysis, users are advised to examine the "coverage ratios" available on the website.

DFA

Further to the summary above, FAOSTAT's Investment Domain database comprises various components, of which DFA to agriculture in a broad sense is one component; hence, this initiative is covered under two types (A and B). Given that most of the donors report their aid activities to OECD, FAO has decided to move toward harvesting international donor spending data from CRS, with a specific focus on agriculture. FAO's Statistics Division, in consultation with OECD, is developing a comprehensive CRS-based dataset that supports analysis of the destination of these flows worldwide and allows investigating the role of such investment-financing sources in developing countries. This approach will reduce duplication of effort across international organizations and allow for greater specialization of statistical activities in areas of comparative advantage.

Type C: Databases for PSEs and Related Indicators

MAFAP

The MAFAP initiative adapted OECD's PSE methodology to the African context. One of the main features is its treatment of the market price support (MPS) analysis, complementing it with value-chain analysis that enables the measurement of "development gap" indicators related to market failures and externalities, which are of crucial importance for developing countries. The initiative also gives special attention to foreign aid, both through governments and directly aimed at nongovernmental or farmers' organizations in the private sector. The MAFAP methodology also distinguishes budgeted and allocated transfers, which enables the measurement of actual expenditures versus intended goals. A key innovation of the MAFAP initiative is that it allows for a fruitful interaction between, on the one hand, MPS or policy impacts on prices, and on the other hand, AgPE analysis: Development gaps identify public-good problems that can be tackled with general services support expenditure (GSSE) on infrastructure, roads, and market improvement.

PSE-LAC

IDB has been devoting increased attention to tracking and promoting sound agricultural policies to enhance the impacts of providing increased agricultural investments to its member countries. As part of this broader effort, over the last several years, starting in 2006, IDB commissioned studies in different LAC countries to assess and measure PSEs, including GSSE, using standard OECD methodology. After country studies were completed, IDB generated country-level databases on PSEs, plus the data from OECD members Mexico, Chile, and Brazil. An important part of the calculations is related to public expenditures in the agricultural sector, both through direct or indirect payments to individual farmers (in the PSE) and through financing public goods via GSSE. IDB has applied the PSE in 20 countries to date, with data available for 17 of them, including Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, and Suriname. In the near term, IDB also intends to expand the estimation of PSEs and related indicators to more LAC countries, including to Belize, Haiti, Panama, and Uruguay, while extending coverage of years (currently, it runs from 1986 to 2013, with most countries having data on only a subset of these years).

Regarding the methodological aspects, the initiative has a strong commitment to applying the original OECD methodology as closely and rigorously as possible to ensure comparability. Following the OECD approach, this effort seeks the best available information on each country to fill the main categories of PSE and collective GSSE expenditures related to agriculture. Nevertheless, IDB has been developing expanded methods for regional needs. To that end, in 2012 a valuable approach was used in Central America and the Caribbean to understand how public policy, the private sector, and institutional arrangements relate to each other and create obstacles to competitiveness by combining PSE and value-chain analysis. IDB also has developed a framework to use the PSE methodology to address issues in

agriculture and climate change, considering mitigation of emissions, adaptation, and vulnerability by commodity and region.

Increased IDB administrative and external sources are being sought to expand the PSEs for LAC countries, which could also enable stepped-up efforts to increase capacities at the country level to sustain the updating of estimates and to respond to the demand for PSEs from country authorities.

PSE-OEE: PSEs and Related Indicators for Supporting the Agriculture Sector (for OECD and Emerging Economies)

The PSE approach followed by OECD has two main objectives: (1) to monitor agricultural policies in the OECD countries and key emerging countries, with a focus on measuring aggregate policy transfers—including budgetary transfers—to the agricultural sector; and (2) to provide inputs for agricultural policy impact analyses, including the use of a policy evaluation model that employs a dataset covering AgPEs.

The OECD PSE framework and related indicators are based on a conceptual model of transfers among farmers, consumers, and taxpayers in the economy to measure incentives and disincentives for the agriculture sector and assess their underlying factors. Accordingly, the PSE methodology seeks to integrate AgPEs as one of the important policy tools in which governments seek to generate incentives (support) to agriculture, but in a general context in which other incentives and disincentives are created by policies and real market operations.

Two main PSE indicators are the PSEs and the total support estimates (TSEs) to agriculture. The first measures the transfers to (or from) producers from (to) the rest of the economy, including MPS and government transfers and subsidies that go directly to individual producers. The second indicator measures the total value of support received by agriculture, including government expenditure in nonspecific GSSE in support of the agricultural sector. Part of the support in the PSE is AgPE, and all GSSE involves AgPE; therefore, there is an important relationship between PSE/Total Support Estimate (TSE) analyses and AgPE analyses.

This approach, applied dynamically, enables policy analysts and policy makers to assess changes in agriculture policies in an integrated and systematic way. In the PSE-OEE database, 39 OECD members currently use the method (the European Union, with 28 countries, is considered a single unit). Also, currently there is PSE monitoring of eight emerging economies (Brazil, China, Colombia, Indonesia, Kazakhstan, Russia, South Africa, and Ukraine). The PSE-OEE data on PSE indicators is available online for a total of 22 countries/units: 14 of the 39 OECD members, and all 8 emerging economy countries. OECD envisions including a greater number of developing or emerging economies. Vietnam is currently undergoing country-level agricultural policy studies and estimates of PSEs and related indicators.

A general feature of the OECD approach has been to collect data from multiple sources to address a specific analytical need. PSE/TSE measurement does not require development of data systems in any way but rather relies on collecting expenditure information in each of the categories identified in the methodology from whatever source contains that information. When OECD undertakes a country review, the task is basically a sort of detective exercise, finding out what the policies are and who has information on the associated public expenditures.

Another important caveat about the OECD method in relation to AgPE is that the budgetary element in PSE/TSE seeks purely to meet the needs of the method. If a budgetary expenditure such as an export subsidy creates a price gap, then it is not included on the expenditure side because that would be double counting. This prevents the approach from compiling an exhaustive system of public accounts that contain all expenditures fitting, say, a COFOG definition of agriculture.

Type D: Analytical Studies for AgPEs

MAFAP

As part of FAO's mandate to focus on food security, MAFAP has worked with national partners to establish for the first time a sustainable system for monitoring the impact of food and agricultural policies initially in Africa, and subsequently in other countries. In response to the global food price crisis, the

increasing attention to supporting the implementation of the CAADP agenda for Africa, and a renewed focus on the importance of agricultural policy in creating enabling environments for agricultural development, FAO established and launched MAFAP in 2010 for an initial phase (2010–2013). This phase has been successfully completed, and the new phase runs from 2014 to 2019. The national partners are most commonly ministries of agriculture, researchers and academia, and ministries of finance. The objective of MAFAP is to supply policy makers and their development partners with solid evidence on the impacts of policies and investments affecting agriculture and food security, thus enabling the comparison of results across countries and over time (for the target countries). MAFAP also emphasizes participatory processes to ensure ownership, sustainability, and enhanced capacity of the target countries. The MAFAP database aims to provide access to data and common indicators on (1) price incentives and disincentives for key commodities, using the OECD methodology for measuring market price support; and (2) public expenditure on food, agriculture, and rural development.

MAFAP endeavors to follow a common quantitative methodology and indicators to increase transparency and enable comparison of agricultural policy effects across countries, over time, and between different commodities and commodity groups (such as exports, imports, and food security crops).

ReSAKSS

ReSAKSS is an Africa-wide network of regional nodes supporting implementation of CAADP. ReSAKSS offers high-quality analyses and knowledge products to improve policy making, track progress, document success, and derive lessons for the enhanced implementation of the CAADP agenda and other agricultural and rural development policies and programs in Africa. ReSAKSS is facilitated by IFPRI in partnership with the Africa-based CGIAR centers, NPCA, the African Union Commission, and the regional economic communities. It recently completed its second phase (2011–2015), following a four-year first phase (2007–2010), and has now entered a third phase of work (2016–2020). It currently produces public expenditure (as well as other types of) agriculture-related data for 54 African countries.

The elements of ReSAKSS that go beyond data development and have analytical content have four main interrelated objectives:

- To respond to the growing demand for credible information and analysis during the design and implementation of agriculture-led development strategies, especially in support of the CAADP agenda
- To establish ReSAKSS nodes to provide timely access to relevant information on agricultural investment options and priorities, benchmarks and best practices, statistical information to monitor progress in achieving key targets (hence the emerging database on agricultural expenditures, covered under Type A), and other relevant technical information to help guide and inform the CAADP implementation process (these nodes have been established in several countries, with more being added over time)
- To promote enhanced evidence-based articulation of investment priorities and associated decision making; improve awareness of the role of agriculture for development in Africa; and fill knowledge gaps, promote dialogue, and facilitate the benchmarking and review processes associated with the CAADP agenda
- To strengthen national systems and capacities to implement the CAADP agenda at the country level

SNAPE

The overall purpose of SNAPE in Africa is to contribute toward improving the impact of scarce public resources spent by African governments on agriculture-sector development activities, hence improving the welfare of rural (predominantly poor) populations.

There are two operational objectives in providing two levels of analytical support to national teams of selected African countries working on agriculture-sector expenditure programming: (1) to support carrying out a basic AgPE review in countries where such a review has not been undertaken recently, and (2) to support countries in performing specialized AgPE analyses in situations where an adequate understanding of the nature and magnitude of public expenditures in the agriculture sector already exists (for example, thematic and subsectoral, and generally more rigorous types of analyses). Also, analysis is being undertaken to clarify AgPE links to aggregate sector outcomes (although in practice, there has been less emphasis on this broader component).

A secondary objective is to enhance capacity at the country level to conduct and manage these and periodic AgPE reviews to contribute to enhanced decisions on resource allocation priorities. The initiative provides training modules on various topics of AgPE and is targeted to analysts in African countries.

There are two types of AgPE studies supported: basic and specialized. Combined, these cover a total of 16 countries in Africa, with 11 of them having data publicly available online and 13 having public expenditure review reports publicly available online. These studies have involved varying degrees of disaggregation in analysis, endeavoring to rely on existing expenditure data. In practice, many of the teams for the basic diagnostic had to completely construct and integrate off-budget expenditure data and perform other considerable data cleaning as a basis for meaningful analysis (for example, to arrive at consistent time series of actual expenditures). To varying degrees, each study is giving serious attention to devising strategies to address the data and reliability requirements in a more systemic manner as well as other issues. All of the country-level studies provide some rich examples of the types of data-related issues emerging from specific expenditure studies. The findings are generating some recommendations on strategies to address the systemic data issues in Africa, and the need for "lite" approaches to sustainable and periodic expenditure analysis, which can have applicable messages for other regions.

The program is funded by the Bill & Melinda Gates Foundation and managed by the World Bank. Its first phase spanned 2010–2015, and the second phase as of 2016 focuses primarily on two elements: (1) developing a network of African experts of AgPE reviews, and (2) conducting AgPE reviews "lite," or simplified versions of such country reviews that can be carried out in a shorter time and through greater leadership by country government agencies.

The methodologies of SNAPE build on the *Practitioners' Toolkit for Agriculture Public Expenditure Analysis* (World Bank 2011). The application of these principles and tools is being adapted and carried out by each country AgPE study to fit the specific country-level requirements. Dissemination workshops (for example, one held in Tanzania in 2013) are sharing results and addressing comparability issues across country studies, including relevant AgPE data issues.

3. ASSESSMENT AND COMPARISON OF THE INITIATIVES

The section above has summarized the main features for each of the DAIs being reviewed in this exercise. This section focuses on a comparative review, based on the following criteria:

- Comparison according to the type of initiative, based on the typology framework outlined in Section 2, to ensure comparability, but also recognizing that some intertype comparisons may also provide relevant insights
- Focus on the following strategic aspects, which could foster enhanced data and analytical quality and interagency collaboration:
  - Objectives, unique features, and value-added
  - Scope of coverage (in terms of period, frequency, level of disaggregation)
  - Key methodological aspects (including comparison on key aspects, such as classification system [where relevant], data compilation methodologies and documentation, approach to making data adjustments, metadata documentation
  - Public accessibility
  - Strategies and mechanisms to link data users with suppliers
  - Main issues and challenges
  - Sustainability aspects
  - Linkages to and collaboration with other DAIs

Objectives, Unique Features, and Value-Added

Type A: Databases for AgPEs

Although the central objective of each of the eight databases is to provide a wide range of socioeconomic data that include public expenditure on agriculture and related activities, for diverse stakeholders, there are certain attributes—depth and breadth—that differentiate one database's objective from that of another.

Four of the databases (ASTI, GEA, MAFAP, and ReSAKSS) aim to compile and disseminate relatively disaggregated data that can be used to facilitate the assessment of governments' role in and contribution to agriculture and to other activities that affect the agriculture sector, enabling comparability among countries and harmonization with similar datasets compiled by other international organizations. Two of the databases (GFS and SPEED) endeavor to build and make available a comprehensive and wide range of (general) public expenditure information to researchers, policy makers, donors, and the broader development community, on a large set of countries. AgPELAC seeks to provide a wide range of relevant, high-quality, internationally comparable statistics about development and the quality of people's lives, for policy makers, development specialists, students, and the public, so that they may use the data to conduct poverty analysis and gain an understanding of pressing development problems.

Some of the databases are designed to complement information obtained from others through the following:

- One DAI provides further disaggregation of information building on the other. For example, GEA enhances and provides additional value-added to the data already collected by IMF according to COFOG, through the disaggregation of IMF aggregates pertaining to government expenditure on agriculture. GEA disaggregates expenditures to the COFOG level 3, and further to recurrent and capital expenditures. As another example, MAFAP adopts a broad definition of the agricultural sector and endeavors to use FAOSTAT data where possible, while compiling more disaggregated data from country-level sources based on MAFAP's expenditure classification system for AgPE.
- Different DAIs tracking specific targets (for example, ReSAKSS tracks progress toward CAADP goals)

- One DAI may compile scattered publication of public expenditure statistics of different DAIs into one platform (for example, SPEED is among the largest publicly available public expenditure database and incorporates local data from a large selection of countries)
- A DAI may providing primary data through institutional survey rounds that are not captured in other DAIs (for example, ASTI compiles information on inputs into agricultural R&D, rather than outputs or outcomes, although the program is currently piloting the latter in a number of countries)

BOOST offers a tool that can integrate the generation of an AgPE database (with sector-disaggregated data) with the facilitation of expenditure analytical studies at the macro and sectoral levels. BOOST has the objectives to help researchers, government officials, and ordinary citizens examine trends in allocations of public resources; analyze potential sources of inefficiencies; and inform how governments can better finance the delivery of enhanced public services. It also wants to see an improvement in the quality of public expenditure analysis, dialogue, decisions, and monitoring. Its value-added features include serving as a platform for expenditure dialogue for client countries and World Bank engagement with clients.

This variety of objectives calls for further efforts to put an integrated system in place that can draw relevant AgPE information from all data sources into one platform and ensure complementarity of objectives of the data sources and two-way flow of readily available and reliable information—from aggregate to more disaggregated information and the other way around.

Type B: Databases for International Development Assistance

The common dominant feature of the objectives of the two initiatives in this category is compiling and providing a set of readily available data on international development assistance and other official flows that enable analysis on where aid goes, what purposes it serves, and what policies it aims to implement, on a comparable basis. The DFA database of FAOSTAT, in particular, tracks flows of international aid and other official flows worldwide to show whether the distribution of external assistance to agriculture as well as other related sectors is aligned with need or concentrated in a small number of countries. To this end, it compiles more detailed data than the OECD's CRS information on some agricultural activities and purposes, and it refers to both narrow and broad definitions of agriculture. Moreover, it augments the CRS data by continuing to collect and maintain data for the activities related to agriculture provided by non-CRS reporters included in the FAO's broad definition of agriculture.

Currently, FAOSTAT is in the process of enhancing its database on external flows, and once the relevant information is available, several aspects need to be considered, especially with regard to complementarities between the CRS and FAOSTAT's DFA databases. Some particular attributes of the DFA database of FAOSTAT include its relatively broader coverage of

- donors (more data and information on contributions, priorities, and so on);
- purpose codes (primary and secondary activities in agriculture);
- definitions (narrow and broad) of agriculture; and
- types of aid flows (for example, concessional and nonconcessional).

Type C: Databases for PSEs and Related Indicators

The three Type C initiatives share the goal of generating relevant data for agricultural policy analysis, with a focus on measuring price distortions and AgPE structure and efficiencies. The use of OECD methodology is clearly key for having a sound and consistent conceptual model in which AgPE and other supports are classified according to policy considerations (the way in which incentives are generated). MAFAP is more clearly related to policy monitoring in the context of Africa, so it shows important

adaptations and expansions of the OECD approach in order to meet country needs (for example, value-chain analysis, key additional disaggregation, expanded agriculture-related and supportive expenses).

The PSE-LAC initiative originated in a different policy context and requirements than the PSEs for OECD countries, while still endeavoring to serve as a tool for enhanced policy monitoring and measurement of a key sector of the LAC countries. It has tended to follow as closely as possible the OECD PSE method because comparability is considered a key element. IDB's PSE was generated as a result of work initiated in 2003 as part of its support to the agriculture-sector negotiations of the Central American Free Trade Agreement, and subsequently in other regions in Latin America. The IDB has since used PSE analysis to support policy dialogue in many countries in LAC to date, and its use for this purpose is established in the IDB document *Sector Framework Document on Agriculture and Natural Resources Management*, approved by the board of directors (Malarin and Martel 2013). It is therefore expected that the PSE database will contribute over time to a better understanding of and basis for policy dialogue on the objectives of food security, trade integration, rural poverty reduction, competitiveness, and adaptation to climate change. Some countries, such as Haiti and Suriname, have already committed to integrating this policy tool into their agricultural information systems.

Type D: Analytical Studies for AgPEs

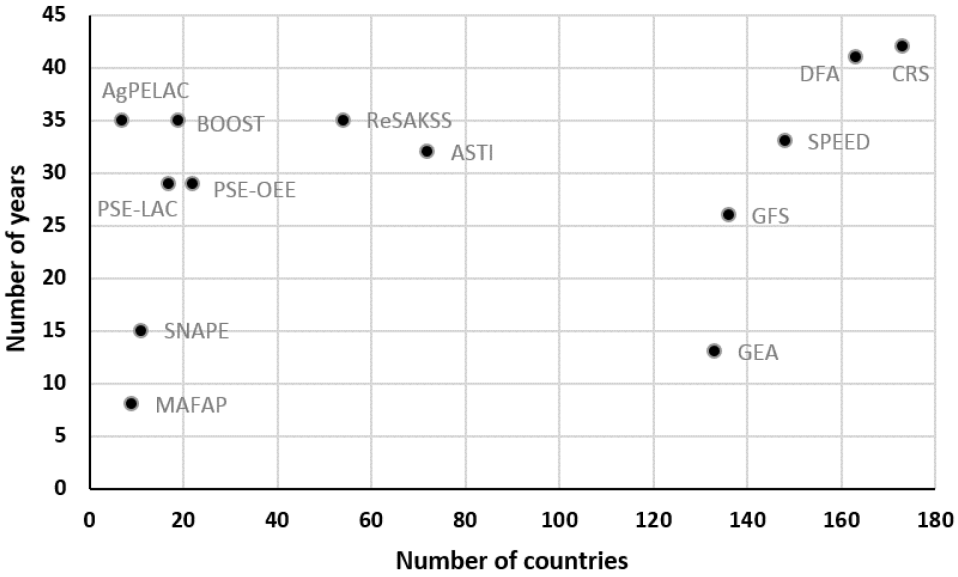
All of the three analytical initiatives focus on carrying out and disseminating analytical studies on AgPEs. Three of the four initiatives focus on African countries, reflecting a high priority on supporting the implementation of the CAADP agenda through enhanced agricultural expenditure levels, priorities and composition, and management. All studies endeavor to focus on generating and disseminating evidenced-based outcome and, where possible, impact results. Although tracking of the Maputo targets is done by nearly all initiatives, a unique feature of ReSAKSS is its explicit mandate to do it. MAFAP's uniqueness lies in its level of disaggregation in expenditure analysis, as well as its focus on country-level institutionalization.

All the initiatives emphasize participatory approaches and strong in-country ownership, with a concerted orientation to developing and promoting in-country capacities to sustain this type of study and expenditure "agenda" over time. Each initiative exhibits unique features that distinguish it from other initiatives; therefore, they complement each other, although this is not always an intentional strategy. For example, MAFAP adopts a broad definition of the agricultural sector and is executed by FAO; ReSAKSS focuses on supporting the tracking and implementation of CAADP and has a unique linkage with IFPRI; SNAPE focuses on supporting basic AgPE analysis, supported by training modules, and is executed by the World Bank.

Scope of Coverage

Figure 3.1 gives an overview of the number of countries and years covered by the publicly available data in each DAI. (Further details follow by DAI typology in this section.) From the perspective of country and year count, the figure shows approximately four clusters: five DAIs (CRS, DFA, SPEED, GFS, and GEA) have a very large number of countries, more than 130, although they strongly differ in the number of years covered. Two DAIs (ReSAKSS and ASTI) have a medium number of countries, 50 to 80, but cover a large number of years. Four DAIs (AgPELAC, BOOST, PSE-OEE, and PSE-LAC) have a smaller number of countries (fewer than 30) but a large temporal coverage. Finally, SNAPE and MAFAP have a smaller year and country coverage; however, what is not captured in this figure is the level of detail of the data collected. Both SNAPE and MAFAP collect and make available an extremely high level of data disaggregation by function, subsector, etc., with MAFAP's data perhaps the most disaggregated of all DAIs.

Figure 3.1 Number of countries and years covered by DAIs' publicly available data on agricultural public expenditure



Source: Authors' calculation.

Notes: AgPELAC = Agricultural Public Expenditures for LAC; ASTI = Agricultural Science and Technology Indicators; CRS = creditor reporting system; DFA = development flows to agriculture; GEA = government expenditures on agriculture; GFS = government financial statistics; MAFAP = Monitoring and Analysing Food and Agricultural Policies; PSE-OEE = PSEs for OECD countries and emerging economies; PSE-LAC = Producer Support Estimates for Latin America and the Caribbean; ReSAKSS = Regional Strategic Analysis and Knowledge Support System; SNAPE = Strengthening National Agricultural Public Expenditures.

Type A: Databases for AgPEs

Although all of the Type A databases contain certain information on public expenditure on agriculture, the scope (sectors covered, level of disaggregation, updates and frequency of data, countries and years considered) and depth of the information they provide varies to a great extent. While the expenditure variables in three of the databases (SPEED, GFS, BOOST) cover other sectors, the other initiatives focus their expenditure data only on agriculture and rural development.

Three of the databases (AgPELAC, GFS, SPEED) provide public expenditure data on agriculture only up to COFOG level 2. Another four (ASTI, GEA, MAFAP, and ReSAKSS) go further, providing disaggregated data beyond COFOG level 2. The content of each BOOST is country specific. By requesting raw data at the most disaggregated sector level available in a country's expenditure system, the resulting BOOST database takes advantage of the full breadth and depth of the country's budget classification system and corresponding data. The data on expenditures, organized using all of the country's budget classification codes, is then compiled into one database that covers all sectors, all spending units, and all types of expenditures recorded in the treasury system.

Four of the databases (GEA, ReSAKSS, ASTI, AgPELAC) provide a wide range of nonexpenditure data on different aspects of agriculture and food security. Two of them (GFS and SPEED) do not cover such information. ASTI generates a wide range of nonexpenditure data, including research staff, research focus, and funding sources, disaggregated at different levels and categories, but generally does not cover nonexpenditure information unless it is an important contextual matter that affects total expenditures in support of the food and agriculture sector.

The countries, territories, and regions covered by the databases also vary across initiatives. Figure 3.1 shows the number of countries covered with agricultural public expenditure data by each initiative across all groups in the DAI typology. Given the objectives of the initiatives and the structures of the

organizations that host the initiatives, while three of them cover more than 100 countries across the globe (SPEED, 148; GEA, 133; GFS, 136), the rest cover fewer countries, focusing only on certain target regions—a subset of developing countries where agriculture plays a central role in the economy. Initiatives should strive to cover as many countries and regions as possible within the resource constraints they all face.

GEA provides data that go back to 2001, ASTI data go further back to 1981 and extend to 2012, and ReSAKSS data go back even further to 1980. All of the initiatives in this group, in general, provide data annually. It is important to consolidate progress on annual data before proceeding to compile data on a shorter frequency (such as seasonal price fluctuations or expenditure outturns per quarter).

The disparities in the scope, coverage, and depth of information across the data sources have a limiting effect on the effort of researchers and data users in their search for comprehensive datasets to conduct their studies. The data compilation work alone requires an inefficient use of professional time in searching for a complete and relevant set of data from the dispersed and fragmented sources. (We have faced this challenge even while conducting this review.) Data initiatives also have to consider compiling budget information in addition to the actual/executed expenditure data they collect because budget information has paramount importance in evaluating the commitment of countries to live up to their promises for enhancing the agriculture sector. Some initiatives do this, such as GFS.

Type B: Databases for International Development Assistance

The CRS Aid Activity database is currently the most comprehensive when considering the allocation of external assistance to agriculture, as well as other relevant sectors, by recipient country and region at the activity level. The dataset covers the flows recorded as both commitments and disbursements from 1973 to 2014 for 173 countries, although the progressive improvement in donors' reporting should be taken into consideration during the analyses. The CRS data only partially capture international development support to agriculture because not all donors are captured. For example, some multilateral organizations as well as new donors such as China are not fully included.

The DFA database of FAO is derived from CRS, and includes only a subset of sectors on which aid is provided, such as agriculture, food aid, and related areas, but also health, water and sanitation, and environmental protection. The DFA database spans the years 1973–2013. Details on how precisely it is derived from CRS is not available online, given that a manual for DFA is not yet provided on the FAOSTAT or ESS website.[11]

Type C: Databases for PSEs and Related Indicators

Before 2006, the PSE-LAC database had only three OECD members (Brazil, Chile, and Mexico).12 IDB has made available indicators on PSE in 17 countries to date. Some countries are under revision, and the revised and additional country estimations will be uploaded for public release as they become available. The earliest data begin from 1986, though most of the calculations started in 2006 and run through 2013, and updates are being considered annually. There are plans for building historical series for all countries in the database for the past decade to increase its potential usefulness for time-series and cross-country comparisons. The PSE-OEE dataset spans from 1986 to 2014 for 22 countries (with one of these being a collective for 28 European Union (EU) countries). MAFAP is focused on African and Asian countries, with data having been released for nine countries (all of them in Africa). The time span for PSE data is currently 2005–2013. There are plans for building historical series with less disaggregation, using 2005 as the base year.

[11] The page www.fao.org/economic/ess/ess-economic/flows/en only gives some information on trends in ODA based on the data, but does not offer a data manual.

[12] The IDB database uses official OECD data for the three OECD members, Brazil, Chile, and Mexico, thus preventing duplication or discrepancies.

Type D: Analytical Studies for AgPEs

Three of the four analytical initiatives of Type D focus mostly on Africa, and among these, MAFAP has data available on nine target countries in Africa. All initiatives endeavor to compile and analyze disaggregated expenditure data to the extent possible, with MAFAP and ReSAKSS making more progress in compiling and analyzing disaggregated expenditure data for selected countries (and some of the same ones). Many of the country-level studies supported by SNAPE achieved varying levels of disaggregated expenditure analysis due to data constraints.

There has been some overlap of countries covered. For example, MAFAP and SNAPE have both involved Burkina Faso, Ghana, and Malawi. ReSAKSS (and its regional nodes) covers most of the African countries. Where overlap has occurred, the studies and tracking activities have involved engaging and coordinating with many of the same core country-level counterparts, but with some differences in methodological approaches. These differences have not been major, however, and the outputs are generally well received by the main counterparts (especially the ministries of agriculture). Therefore, it appears that overlapping studies may have been complementary in these countries.

Key Methodological Aspects

Type A: Databases for AgPEs

The methodologies applied by each Type A data initiative in compiling and disseminating data exhibit some similarities and, to a lesser extent, some differences. Most initiatives develop user guide manuals and useful links to support and encourage users to understand the technical details of the methodologies and to employ the available data easily, while some do not have this documentation available (as is the case, for example, with AgPELAC). SPEED, for instance, has all the relevant technical explanation of data compilation and source material in one detailed document. ASTI provides all relevant resources, such as operational and work plans, user guide manual, background information on the project, and so on, to the public without restriction. GFS provides a thorough list of standards and codes on their websites; these include the General Data Dissemination System and the Special Data Dissemination Standard manuals and guides. In MAFAP, capacity development, methodological details, and user guide materials have been placed online. Similar materials are available online for most of the other DAIs, with varying levels of detail.

Some initiatives, such as GEA, GFS, and ASTI, use a questionnaire to collect data, while others, such as SPEED and AgPELAC, do not use a questionnaire and draw data using a systematic method from multiple sources. In the case of questionnaire-based data collection, the timing of sending questionnaires to reporting countries and institutions should be determined cautiously because it may have a critical implication in gathering high-quality and comparable data at a reasonable cost of resources. Certain data initiatives try to ensure consistency of data collection by rearranging the timing for sending questionnaires to reporting countries in accordance with other initiatives. In about September of each year, for instance, GEA issues its questionnaire on government expenditures on agriculture, rural development, and related activities, such that it follows about two months after the IMF issues the GFS questionnaire, to help ensure consistency with the GFS data.

All initiatives have endeavored to compile time-series agricultural expenditure data, primarily at the national level. Some data initiatives (for example, GFS, GEA, SPEED, and ReSAKSS) also make changes to the data they compile to adjust for various factors, including currency redenomination, inflation, and so on, thus enabling cross-country comparisons. This may suggest the need for closer collaboration across initiatives to ensure consistency in approach to adjustments.

There is generally a growing trend toward enhanced collaboration to ensure improved data quality and consistency across initiatives. For example, IMF, in collaboration with the World Bank, has developed the Data Quality Assessment Framework as a methodology for assessing data quality that brings together best practices and internationally accepted concepts and definitions in statistics. Such

collaboration should be inclusive such that other data initiatives that rely on data for these initiatives, or supply data to them, can also benefit.

Although all initiatives attempt to follow internationally accepted definitions and statistical procedures to compile their data, variations can be observed in the approaches to defining the agricultural sector. Whereas some of the databases (for example, GFS, GEA, SNAPE) use a COFOG definition of the agricultural sector, others (for example, those supported by MAFAP) have used a broader definition of the agricultural sector, which also was influenced by the expenditure classifications for estimating PSEs in accordance with the OECD methodology. This variation, coupled with the other methodological divides mentioned above, has resulted in data differences and inconsistency across the different data sources.

It has been well recognized that the aggregate government expenditure statistics provided by the most referred to and internationally recognized databases (such as GFS), and even the relatively young databases such as SPEED, have made more apparent the importance of assessing the allocation of resources within agricultural expenditure. To this end, different researchers are proposing a more transparent and flexible system to better track public resources allocation to enable customized and consistent aggregation, promote open data access, and provide information in a timely manner to support an evidence-based policy-making process. One of the possible ways to meet this objective is to develop a well-defined expenditure coding system, for example, by adopting a chart of accounts that organizes spending data according to numeric codes, alphabetic codes, or a combination of both, together with implementing a flexible aggregation model or program.

In Kenya, for example, the chart of accounts for government expenditures is organized according to a numerical coding system. The first two digits of the code represent the highest-level government administration category, for example, ministries or ministry-level government agencies. The following three digits of the code represent the second-level government administrative category, while the last three digits represent the programs or units within a department. For example, the code 10.103.260 represents the Farmers Training Center (a unit), where the first two digits (10) stand for the Ministry of Agriculture and the next three digits (103) represent the ministry's Department for Facilitation and Supply of Agriculture Extension Service (see Yu and Zhang 2014). Other countries similarly have their coding structure for public expenditures (see an analysis of these coding systems in Mogues et al. 2015 on Mozambique and Benin 2014 on Ghana). Such a coding system allows more flexibility to aggregate data in addition to easing the explicit mapping relationship between the country's government finance statistics system and COFOG or any other aggregation of classification. This ensures that the aggregate data are no longer a black box that is unlikely to be inconsistent across countries and hence difficult to compare.

The three core dimensions of BOOST are administrative location of expenditure agencies, functional or programmatic areas covered, and economic classification. This same methodology can be applied to a specific sector, such as agriculture. The steps involved in engaging with and delivering to government the BOOST methodology and country-level package (developed jointly with the country) include the following (also applicable if working with a country's ministry of agriculture):

- Final draft version of the database, for clearance by the government or ministry
- A user manual and technical supporting documentation on how the database was constructed
- Training sessions on how to construct, maintain, and update the database
- Joint training and policy dialogue, wherein bank and government explore the database in support of expenditure analytics
- Standard tables for the bank's public expenditure review or for the client, supporting, for example, annual budget preparation

Thus far, of the 19 countries[13] that have applied BOOST with data available, all but one have applied it at the country level, and Brazil at the subnational level.

Type B: Databases for International Development Assistance

FAO harvests development funds data directly from CRS, which is developed and maintained by OECD. In consultation with OECD, FAO is developing a dataset that supports analysis of the destination of these flows worldwide and allows investigating the role of such investment financing sources in developing countries. Data compiled to CRS are collected by CRS++, a reporting format that consists of a number of integrity or reliability checks within CRS and is designed to help reporters avoid inconsistencies.

Type C: Databases for PSEs and Related Indicators

A comparative assessment of the methodological aspects of the PSE-related initiatives reveals the following main findings, including some important methodological caveats:

Product basket for MPS estimations. In OECD's PSE methodology, a basket of agricultural goods must be selected to carry out PSE calculations (specifically for the MPS estimation). This basket has to be representative of sectoral output comprising at least 70 percent of the value of production, according to the OECD manual. In LAC non-OECD countries, the rule of 70 percent has also been adopted, although Honduras (57 percent) is an exception. New updates and historical revision for Central American countries will address this exception. OECD countries have consistent values above 70 percent for the contents of the basket.[14] The MAFAP initiative uses the rule of 70 percent, and selected baskets generally surpass that proportion of agricultural GDP. African agriculture is not as diverse as that of LAC countries, so the target of 70 percent is more feasible with a manageable number of commodities.

Links between MPS estimations and public expenditure analysis. Both PSE-OEE and PSE-LAC use a basic model for the law of one price for the MPS estimation. This model, however, has the problem of not identifying how market failures and imperfections, which generally severely affect farmers' income and agricultural development, distort incentives to agriculture, and the way in which agents receive these market imperfections. MAFAP seeks to distinguish in the MPS estimation the "market development gap," which measures the extent to which market imperfections contribute to the price gap at different parts of the value chain. This approach allows for an interesting interplay between MPS and AgPE analysis, enabling one to observe whether governments are orienting public resources to tackle these imperfections. This seems to be a promising avenue for supporting the efforts in LAC countries through using an "expanded" OECD approach, as introduced and used by MAFAP.

The role of external assistance in AgPE analysis. An important feature of MAFAP is that it explicitly tackles the issue of external assistance and its impact on budgeted and nonbudgeted support to agriculture in the African context. This issue could also be of particular importance for some LAC countries, such as Central American and Caribbean countries in which external assistance continues to be important. MAFAP uses CRS from OECD to obtain and classify external assistance and integrate it into the AgPE analysis, but for non-CRS donors data collection is more complicated.

Other expenditures. MAFAP has included separate modules for measuring public expenditures that are not agriculture-specific but are important for the food and agriculture sector. This approach is to serve for assessing broader government investments' impact on rural-based agriculture: Expenditures for education, health, and roads in rural areas can affect agricultural and rural development in the medium and long terms. Managing these expenditures in a separate module allows one to ensure comparability of public expenditures with traditional GSSE measurements.

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[13] These are Armenia, Brazil (separate BOOSTS for selected regions), Burkina Faso, Burundi, Guatemala, Indonesia, Kenya, Kiribati, Mali, Mauritania, Mexico, Moldova, Paraguay, Peru, Poland, Seychelles, Solomon Islands, Togo, and Tunisia.

[14] It should be said that LAC countries tend to have a more diversified agriculture, with a more diverse production base, than do industrialized countries, and so it is more complicated to achieve the requirement of 70 percent of GDP using a manageable number of commodities for the estimations (say, no more than 10 or 12).

Other useful distinctions for AgPE analysis. An important distinction is between allocated and actually expended resources, which allows one to measure "expenditure capacity," used in many countries for assessing how policy goals are being addressed using the budget. Equally important is to register administrative costs (which are not considered in the OECD method) as a separate entity, which allows comparison and also construction of indicators on the importance of these costs in agricultural expenditure. Finally, MAFAP also allows for including fishery and forestry expenditure data, but it separates them into independent modules. This flexibility while preserving the core method expands the method to useful areas for policy purposes.

Type D: Analytical Studies for AgPEs

All the analytical Type D initiatives endeavor to compile and analyze agricultural expenditure data, primarily time-series data at mostly the national level. There are some variations in the approaches to defining the agricultural sector, with some of the studies (such as those supported by SNAPE) using a COFOG definition of the agricultural sector, whereas others (those supported by MAFAP) use a broader definition of the agricultural sector; this latter practice is influenced by the expenditure classifications for estimating PSEs in accordance with the OECD methodology.

All the initiatives apply a basic type of descriptive analysis, analyzing historical trends and composition (by major subsector and by other classifications such as economic categories, for example, capital or recurrent expenditure), and lay out the institutional budgetary management processes according to the budgetary cycle, with resulting recommendations to improve agricultural expenditure efficiencies.

In practice, there have been limited specialized expenditure analyses assessing the quantitative impacts of agricultural expenditures on key target variables, such as agricultural GDP, incomes, and poverty reduction. This limitation reflects data, capacity, and resource constraints. ReSAKSS's country-level and cross-country studies, together with IFPRI-sponsored research studies, have tended to carry out more such rigorous empirical studies, with an emphasis on assessing expenditure-outcome linkages and on using quantitative methods to determine public investment priorities and requirements.[15] This kind of quantitative analysis, which would be useful to carry out periodically, illustrates the rationale for improving the expenditure database and in-country analytical capacities. Since all of the analytical initiatives tend to include a capacity-building dimension, it would be important for future DAIs to ensure close coordination and complementarity of efforts, responding to the demands of country-level decision makers.

Public Accessibility

Nowadays access to data is one of the most pressing issues in the development arena. Information gathered by any body has little use unless citizens have access to the data freely or at an affordable price. By now, all DAIs in this category are publicly and freely accessible online. Until the recent past, only certain data could be retrieved from the IMF's GFS databank, while much of the data were, in general, available by subscription with a fee. This has changed, and IMF no longer requires subscription to access its public expenditure data. No expenditure data generated using BOOST is disclosed without governments' consent. At the same time, making such data publicly available would signal a government's strong commitment to enhanced transparency. In early 2014, the World Bank launched its Open Budget Portal of available BOOST databases. By early 2016, the publicly accessible databases included data from 19 countries.

[15] For example, ReSAKSS researchers have carried out several country-level studies since 2008 (such as Diao et al. 2008). IFPRI conducted an analytical study involving collaboration with ReSAKSS (and its regional and country-level nodes) to compile available public expenditure data for helping to assess updated public investment requirements and targets at the country level (ESARO-IFPRI 2013).

Allowing the public, in principle, to obtain data is not as useful by itself unless the data are easy to extract and interpret. Some of the datasets are fairly easy to find from a related main webpage, while others are somewhat harder to find or are in less intuitive locations. For example, it is fairly easy to find the relevant databases of ASTI, BOOST, DFA and GEA (which are both in the FAOSTAT page), MAFAP, PSE-LAC, and PSE-OEE. On the other hand, the AgPELAC agricultural expenditure database within the CEPAL Statistics database's (CEPALSTAT) webpage is located at a place that is fairly unintuitive, and thus for a while escaped the authors' sight. It is similarly not as easy to find the CRS dataset or to access the GFS in bulk—that is, for all available years and countries. The ReSAKSS database is not located, as one may expect, under its "data and statistics" category of the main ReSAKSS webpage. SNAPE data, although the DAI was managed by the World Bank and funded by the Gates Foundation, is in fact stored on the ReSAKSS website. Until recently, various versions of the SPEED database were located on different IFPRI webpages, leading some to accidentally use older editions of SPEED. This has been rectified, however, and there is now one single main webpage for SPEED, highlighting its latest edition but also making available previous editions.

Even when the relevant webpage is found, there are variations with respect to the ease with which the data can be extracted—both for analysts who want to bulk download the data and for researchers and practitioners who seek to obtain only selected data, such as for some countries, some years, or some variables. Bulk download, for example, is time-consuming in BOOST, as the data have to be downloaded country by country and in several cases there are separate download procedures by expenditure type within a country. Similarly, ReSAKSS requires the user to download separately for each country, and there are a total of 54 countries. PSE-LAC, PSE-OEE, and SNAPE are characterized by a medium level of difficulty in access: All data are extracted country by country, but there are relatively few countries in these datasets. For users, especially those less comfortable or able to undertake data management processes, it also matters how easily only distinct parts of the data can be obtained. Most DAIs are menu-driven, while SPEED, SNAPE, and BOOST are not. However, even for some of the menu-driven DAIs, it can be a challenge to download certain types of data in usable ways (an example of this is GFS). If a user is interested in accessing, say, all countries' data for a given year, some of the menu-driven options do not allow this (for example, SNAPE and ReSAKSS).

For practitioners even less comfortable with wielding data, and instead looking for user-friendly management of data—for example, to have data interactively visualized in the form of geographic maps, or graphs, rather than any form of dataset—SPEED, ReSAKSS, ASTI, and GEA offer this option. Although providing such an extension for some of the other data initiatives requires some investment in web design, doing so allows the initiatives to reach an even wider audience, beyond technically adept users.

The initiatives also need to devise different strategies so that the larger public, researchers, and policy makers at different levels of national authorities (such as the ministries of agriculture) can easily and readily consume their data. One such strategy would be to distribute published datasets at events where potential users without the luxury of Internet and information technology facilities might participate, as a form of advertisement about the database. It is evident that most government offices in developing countries have poor or no Internet access. Hence, making published data available for people in these offices on CDs or pen-drives is worth consideration.

It is very useful to have databases with solid country assessment reports, which are key for policy analysis and guidance. For the DAIs that also systematically produce analytical reports based on the data—MAFAP and SNAPE—these outputs are for the most part publicly accessible, certainly whenever the data are also accessible.

Strategies and Mechanisms to Link Data Users with Data Suppliers

Type A: Databases for AgPEs

In general, all of the initiatives make an effort to link data users with producers in the following ways:

- Promoting expanded usage of the database through enhanced communication strategies, and by more conventional methods, such as organizing and participating in country and regional workshops; the aim of these diverse mechanisms is to create awareness about the databases, actively disseminate their data, and encourage greater use of the databases by target users
- Using innovative and effective interaction approaches (such as application programming interface, bulk download, query tools, mobile apps, and web portal systems to receive questions and suggestions from the public) and keeping an updated, comprehensive, and user-friendly database
- Fostering expanded collaboration with strategic groups, international agencies, regional development banks, donors, and other partners
- Offering technical assistance and financial support for statistical development
- Providing training and seminars to target groups

At the same time, there appear to be some differences in approaches and style, which reflect some of the unique features of each initiative and the specific stakeholders targeted. While the more mature, long-standing data initiatives such as GFS focus on continuing to make enhancements to their databases based on improved data accessibility policies, the younger data initiatives employ various strategies, such as organizing and participating in workshops that disseminate their datasets and developing comprehensive websites and extensive publications to ensure awareness and optimal use of their databases.

BOOST is using various modalities to promote its use by key decision makers. It is still in an ongoing stage of application, with 16 countries having applied it to their expenditure reviews. The participatory approach followed has included orientation, training, and dissemination workshops involving a large group of stakeholders, including key policy and budget decision makers. A web-based application has been developed that allows anyone to access public expenditure data. BOOST's home website offers a demonstration video of the BOOST Excel pivot table. Currently, 19 countries have published BOOST datasets on country portals.

Type B: Databases for International Development Assistance

The two data initiatives of this type use different strategies to promote optimal usage of their databases. FAOSTAT convenes workshops with key practitioners and suppliers of expenditure data to inform them and seek further inputs on the Investment Domain initiative, including inputs to improve its design, implementation aspects, and usefulness. FAOSTAT is also seeking ways to strengthen the linkages among the four components of the Investment Domain (Credit to Agriculture, GEA, DFA, and Foreign Direct Investment in Agriculture), as well as to strengthen its connections with users and suppliers. OECD endeavors to link CRS data users with suppliers by improving its website, providing an online tutorial, organizing regional and national training workshops, and collaborating with other initiatives. OECD is working to establish a CRS learning center to facilitate the linkages between users and suppliers of the CRS database.

Type C: Databases for PSEs and Related Indicators

PSE-OEE's method of measuring support to agriculture has a long trajectory of almost three decades and has been tested and analyzed by many researchers and policy makers. Therefore, it has a strong methodological basis with easy public access to official manuals and documentation. However, prior to its

design, there was limited discussion with policy makers and researchers about specific goals and needs to be addressed, so users were not actively engaged in the methodology from the outset. But there was a clear commitment to apply the OECD method as closely and rigorously as possible in order to take advantage of comparability across countries and regions.

In contrast, MAFAP had substantive up-front discussions and orientation with key African country-level actors on goals and methods before applying the OECD method to the study countries. This background has enabled MAFAP to increase users' ownership and to introduce important adaptations and innovations, which are useful and attractive for policy makers and researchers. This participatory approach can be fruitfully taken up by the PSE-LAC initiative in its next phase, now that its pilot phase has been completed, thereby involving policy makers and researchers in the required adaptation and expansion to LAC agricultural realities.

Type D: Analytical Studies for AgPEs

All of the initiatives include specific and common mechanisms and processes to link suppliers of the analytical studies with users, mainly through report dissemination workshops and user-friendly websites. Most of the initiatives have targeted both users and suppliers in their dissemination workshops, including key decision makers from sectoral ministries (agriculture and other relevant ones) and central ministries, most notably, ministries of finance. There are some relatively minor differences in approaches and styles to fostering linkages among users and suppliers, which reflect some of the unique features of each initiative, the sponsoring organization(s), and the specific stakeholders targeted.

It appears that all the initiatives have had limited systematic follow-up to the large number of workshops convened, which suggests there is scope for enhancing the linkages in a more institutionalized and continuous manner, especially according to the budgetary cycle of the relevant countries. Such enhancements, to the extent that they actively engage policy makers (especially from ministries of finance), can contribute to institutionalizing processes for identifying and designing more policy-relevant agricultural expenditure studies and helping to create stronger incentives to strengthen expenditure data systems.

Main Challenges

The scrutiny of different attributes of each and every data initiative under consideration reveals the following main conclusions regarding the challenges to further enhancing the databases and making available high-quality and timely data for users.

Type A: Databases for AgPEs

It is apparent that compiling, organizing, and disseminating sensitive information such as government expenditures for diversified countries in different levels of socioeconomic, political, and technological development confronts serious challenges and obstacles. The data initiatives under review nevertheless exert efforts to provide as high-quality data as possible, all these challenges notwithstanding. The most pressing challenges faced by the emerging and young data initiatives under review include, among others:

- Constraints in resources and capacities, as well as lack of incentives and commitment of countries (including the crucial ministries of finance) to compile and disseminate relevant data at the desired level of disaggregation, coverage, and frequency
- Lack of awareness among senior government officials about the importance of internationally comparable data
- Uneven quality of underlying source data, including accounting systems, across reporting countries
- Fragmented sources of expenditure data at the country level, which sometimes are not reconciled

- Difficulty in measuring some indicators (for example, R&D outputs are notoriously difficult to measure at the national level and over time)
- Inadequate and unsustainable funding strategies to implement and sustain the databases of the initiatives, because many of them are project based (for example, ASTI and ReSAKSS)

All of the data initiatives emphasize the challenges of obtaining reliable and disaggregated agricultural expenditure data on a regular basis. This difficulty suggests the need for a global, coordinated effort to address the problem, and efficient use of resources. Compiling and disseminating agricultural expenditure data requires continued external funding as well as the active involvement of key units in government to address data gaps and ensure a timely flow of data series. There is a need to enhance the relevance and user-friendliness of databases at national levels (for example, ASTI has been less successful than others in reaching national-level stakeholders, for a variety of reasons).

The main challenges being faced and addressed to varying degrees by the BOOST team (in the World Bank, working together with country-level counterparts) include:

- The BOOST tool and database do not address underlying data quality issues; rather, they tend to compile existing data, which can be of varying levels of quality and reliability. Such issues must be addressed as a separate exercise from data collection, a process that BOOST often facilitates; at the same time, BOOST has also developed various quality standards.
- Because BOOST is adapted to each country's situation, it is intended more for application at the country level than as a tool for cross-country comparison. Still, comparisons are possible to the extent that different countries use a common budget classification.
- BOOST is in the early stages of scaling up, and efforts to ensure sustainability are prioritized. This includes training and capacity-building activities aimed at government officials so as to maintain and sustain the datasets.

Type B: Databases for International Development Assistance

The following issues surfaced as challenges for both of the Type B data initiatives under review: First, the initiatives face constraints in resources and capacities, and as in the case of Type A lack of incentives for and commitment of countries to compile and disseminate relevant data at the desired level of disaggregation, coverage, and regularity. Second, some donor agencies do not report their aid data through the CRS system. For instance, only Taiwan—one of the top 10 bilateral donors to Burkina Faso—reports to the Aid Management Platform. Taiwan does report its aggregate DAC statistics to the DAC secretariat, but not the activity-level data.

Type C: Databases for PSEs and Related Indicators

The three initiatives face different challenges according to their level of maturity. PSE-OEE is a long-standing system that seeks to expand the number of countries it serves (especially important emerging economies) to be more useful for policy discussions at multilateral levels, such as those of the World Trade Organization (WTO). The PSE-LAC initiative has been effective in opening a dialogue on the structure of support for agriculture in the region and the need to increase expenditure on general services, while addressing high levels of MPS, which create distortions to producers and increase costs for basic foods, affecting primarily low-income consumers. As the use of the PSE analysis is expanded in the region, it is expected that more effort will be exerted to use complementary kinds of tools, such as value-chain analysis, and to strengthen the reliability of governments' data collection on production, trade, and prices to improve the capacity for agricultural policy analysis in the region. And MAFAP is at a crucial stage in which it is required to show its potential, especially in terms of the interplay between PSE and

AgPE analysis. It is also at a stage in which it could entrench its ability to advance the acceptance and use of the analysis by governments and policy makers in Africa (and beyond), so that the work can be institutionalized and supported by expanded resources in its next phase.

Type D: Analytical Studies for AgPEs

All of the (Type D) analytical initiatives face the challenges of obtaining reliable and disaggregated agricultural expenditure data to underpin their evidenced-based expenditure studies. MAFAP and ReSAKSS are in the process of developing strategies and actions to address the issues in their new phase. This suggests the need for a coordinated approach.

External consultants carried out all of the analytical initiatives, with concerted efforts to engage key local counterparts (from ministries of agriculture). This process reflects the capacity constraints at the country level and highlights the challenges to increase the demand, capacities, and incentives to carry out periodic analytical studies (using a "lite" approach) to help underpin budgetary planning and resource allocation decisions (as part of the budgetary cycle). There is growing recognition of the vital role of ministries of finance to get more actively engaged in promoting and funding analytical studies (such as SNAPE) to help underpin resource allocation proposals and decisions.

The study sponsors recognize a need to find improved modalities for strengthening the active engagement of key agencies and actors in government (especially finance and agriculture ministries) in the design and implementation of their studies. For example, SNAPE promoted a "lite" approach to the expenditure studies, which could support the budgetary planning cycle, as was done successfully in Tanzania.

External agencies need to coordinate closely in the design and execution of multiple analytical studies that involve the same countries to avoid duplication of effort by both the analysts and the country counterparts. Coordination will also foster complementarity and synergies, even in the context of distinct unique objectives. For example, ReSAKSS is coordinating closely with NPCA; MAFAP and SNAPE held a joint workshop in June 2013 to exchange lessons learned. External agencies will also need to play an important role in supporting analytical studies in agricultural expenditure work, especially in sharing and promoting the application of sound methodologies, good practices, and cross-country comparisons and lessons, as well as building local, in-country capacities. At the same time, all of the initiatives face challenges in mobilizing the resources to sustain such efforts.

Sustainability of the Initiatives

Type A: Databases for AgPEs

Ensuring the sustainability of the data initiatives should be core tasks and priorities of governments, development partners, and other stakeholders who aspire to see a long-term positive impact on the development of the agriculture sector in developing economies. As a consequence of the number of challenges the data initiatives face, as outlined in Section 3, 'Main Challenges' above, the young and project-funded initiatives, in particular, have to design and put in place sound sustainability strategies. Currently three of the eight Type A data initiatives (ASTI, MAFAP, ReSAKSS) in this category are funded by external projects and do not have clear sustainability strategies, except for helping to build initial capacities at the country level (for ReSAKSS, at the subregional level of regional economic commissions and the continent level in relation to NEPAD). SPEED was previously part of this group, but now is receiving more stable funding through an IFPRI-led CGIAR program called Policies, Institutions and Markets (PIM). The other four Type A data initiatives are well established and included as core parts of the permanent programs of the hosting organizations; they therefore have no sustainability issues, at least in the short run.

The three project-funded data initiatives plan to have follow-up phases to continue and expand their ongoing activities, including supporting public expenditure analytical studies in expanded target countries. These initiatives are also mainly (though not all exclusively) focused on African countries and

aim to support the implementation of the CAADP agenda. A close observation of the origin of the project-funded databases also reveals that they all were initiated in response to data needs strongly expressed by other emerging regional and global initiatives. For example, the ReSAKSS database, and its structural and organizational evolution at the continent, region, and country levels, was stimulated in response to the implementation requirements of CAADP. The success of CAADP will therefore influence the success of the ReSAKSS database and the entire initiative one way or the other.

The survival of the project-funded data initiatives still depends on the generous funding of donors. All three need to design a strategy to secure sustainable funding to meet their short-term and long-term objectives. They have to prove themselves as important sources of information to different stakeholders to guarantee their sustainability. The ASTI data initiative could provide a good model for how to do this. It existed at an ad hoc level at IFPRI until it showed significant achievements and, as of 2001, evolved to be a strong system of up-to-date data compilation and analysis in agricultural R&D, thanks to the generous support of donors. It will be important for each data initiative to devise an explicit sustainability strategy regarding the continuation of demand-driven public expenditure data, preferably as part of the budgetary cycle at the country level and explicit capacity development interventions with established organizations at the country, region, and continent levels.

With the increased successful use of BOOST to support the World Bank's operational programs, this tool is in the process of becoming institutionalized within World Bank operations. Thus far, there are early signs that counterpart governments appear to be adopting BOOST as their own tool to support enhanced public expenditure analysis and budgetary allocation decisions. Kenya, Moldova, Paraguay, and Togo can be mentioned as good examples. There is still no instance in which BOOST has been used exclusively to support AgPE analyses; hence, its sustainability for the agricultural sector is still untested. Given BOOST's active engagement in Africa, it would appear that one of the other initiatives may wish to include BOOST as one of its data-gathering and analytic tools, to test the value-added of applying this tool for the agricultural sector (successful applications in the health and education sectors have been reported).

Type B: Databases for International Development Assistance

Both Type B data initiatives are ongoing data compilation efforts and part of the core functions of their respective host organizations. Their foundation is well established on strong data demand from within their respective organizations and from stakeholders outside their organizations. Consequently, there is no immediate threat to or concern about their sustainability.

Type C: Databases for PSEs and Related Indicators

Sustainability of the PSE methodology will increase in LAC if it is more linked to the demand that has emerged from key government entities (finance, planning, agriculture) involved in agriculture policy for better analytical tools to monitor their performance and make comparisons across time and in a regional context. MAFAP may face the highest challenges for sustainability because it is a relatively high-cost initiative[16] that depends on external financial support. It is very important that this initiative find clear support from African governments that see it as a useful tool for policy analysis and decision making at the country and regional levels. In the case of PSE-LAC, the challenge is to get support for the initiative from policy makers and researchers, so that governments start to see this initiative as important for policy making and one that can be used and replicated.

[16] It is estimated an initial average cost of about US$750,000 per country, although the cost is estimated to be lower in the second phase, given that the first phase had to invest in vital development costs to develop the methodologies and modalities for operation.

Type D: Analytical Studies for AgPEs

Currently, three of the four Type D initiatives (MAFAP, ReSAKSS, and SNAPE) are funded by external projects and do not have clear exit and sustainability strategies for their continuation, except for helping to build initial capacities at the country level (as mentioned earlier, for ReSAKSS at the subregional level). MAFAP and ReSAKSS plan to have follow-up phases to continue and expand their ongoing activities, including supporting public expenditure analytical studies in expanded target countries.

As the analytical programs move into their expanded phase, there is scope for closer collaboration and coordination of efforts among the various agencies (FAO, IFPRI, and World Bank), especially with regard to strengthening the disaggregated AgPE databases, which would be of common benefit. As development partners carry out their public expenditure reviews to help underpin their future assistance strategies, they can build on the relevant public expenditure work stimulated by these (and other) analytical initiatives.

Linkages to and Collaboration with Other DAIs

Type A: Databases for AgPEs

One of the panaceas for the multifaceted challenges, sustainability issues, obstacles to providing reliable and comprehensive datasets at regular periods, and questions of efficient resource use is enhancing linkage and collaboration between and within data initiatives. Because all of the initiatives under consideration are both users and suppliers of agricultural expenditure data, there are reasonable and variable levels of collaboration and interdependence across their databases in terms of resource sharing, data collection and dissemination methodologies, and channels of dissemination, among others. At the same time, there is scope for further enhancing more direct and proactive collaboration to improve efficiencies and completeness among the databases, while recognizing the specific objectives of each initiative. Examples include the following:

- The GEA database heavily depends and builds on the format and standards of IMF's GFSM (IMF 2001).
- SPEED has varying links with several data expenditure initiatives, by drawing on GFS and by "supplying" data to ReSAKSS.
- MAFAP's classification builds on the method for classifying agricultural policies used in OECD's PSE methodology, but also seeks to retain compatibility with COFOG.
- The IMF Statistics Department, in collaboration with the World Bank and OECD, has established an online database with access to public-sector debt statistics.
- ASTI data are accessible from the FAOSTAT website.
- BOOST is being increasingly utilized and integrated as a tool for supporting public expenditure reviews in different regions served by the World Bank, and then transferring the results to participating governments. Thus far, BOOST has not been used as a tool for supporting a separate specialized agricultural expenditure analysis. Nevertheless, BOOST is increasingly being used to support expenditure reviews in the health and education sectors, and gaining enthusiastic adoption by country counterparts.

Despite the encouraging efforts by some of the data initiatives, there is still room for more direct and proactive collaboration to improve efficiencies and completeness among the databases, while recognizing the specific objectives of each initiative. The prevailing data inconsistencies, incompleteness, and differences in depth and coverage across the databases of the different initiatives dictate the need for further collaboration and optimal harnessing of resources.

Type B: Databases for International Development Assistance

The two Type B data initiatives collaborate with each other, with OECD providing technical support from the outset. In addition, the economic value-added data methodology and analysis are consistent with OECD's principles of classification of purpose codes. FAO is also augmenting the CRS data generated by OECD by providing more disaggregated data for the agricultural sector. Both should extend further collaboration and harmonization of international aid data for agriculture collected by OECD with that of other donors and initiatives (such as the World Bank's AidFlows database and Development Gateway's AidData) to ensure consistent reporting of aid data.

Type C: Databases for PSEs and Related Indicators

Examination of linkages to and collaboration with other data initiatives of the PSE-related initiatives shows that there are clear beneficial opportunities for collaboration among these three initiatives. In the case of LAC countries, the IDB initiative (PSE-LAC) can be highly enriched by using some of the same adaptations and expansions to the OECD method that MAFAP used in the African context. For example, it would be useful to include for LAC countries the expenditure on agricultural support sectors (rural health and education, national and regional roads) in a more systematic way. It should be mentioned that in LAC countries there is important heterogeneity—between Central America, the Caribbean, the Andean region, the Southern Cone, Mercosur, and federal countries like Mexico, Argentina, and Brazil—that may have a bearing on the success of such systematization.

It is important that these three initiatives be coordinated to improve quality and coverage of data. Because they share the same methodological framework, it is useful and beneficial to discuss difficulties and strategies for tackling them.

Type D: Analytical Studies on AgPEs

All of the Type D analytical initiatives have endeavored to collaborate with at least one other initiative, although such collaboration has been limited in scope—for example, informal discussions and workshops to exchange relevant challenges and lessons, such as work by SNAPE and MAFAP to identify strategies for addressing the data constraint issues. It appears that much of this collaboration takes place on an informal basis, on the initiative of specific individuals, rather than as an institutionalized approach. There are some exceptions to this. For example, MAFAP has reached out to the World Bank for systematic collaboration. There are positive signs that this situation is gradually changing, with each institution seeking to formalize greater collaboration where there are common interests in enhancing expenditure databases and carrying out relevant and demand-driven expenditure studies, while fostering greater ownership and leadership by the host countries. Accordingly, the key actors from most of the initiatives recognize the desirability of having country-level actors (especially ministries of finance and agriculture) take a more proactive lead in fostering and ensuring coordination and collaboration among external actors in carrying out expenditure analyses. An example of this is the support of joint efforts, led by NEPAD, to avoid multiple expenditure studies.

Major external agencies (FAO, IDB, IFPRI, OECD, and World Bank) have expressed interest in and commitment to strengthening coordination and collaboration mechanisms to improve the scope and reliability of agricultural expenditure databases, especially to help ensure more disaggregated expenditure data (COFOG level 3 and below). It is widely recognized that these improvements are a global public good that would enable enhanced and more in-depth country-level and cross-country expenditure analyses, and thereby contribute to improved expenditure priorities and allocations. There seems to be relatively less of an orientation toward jointly carrying out agricultural expenditure analysis, although there is a clear recognition of the need to better coordinate with each other and to engage key stakeholders at the country level. At the same time, a positive example of joint work was IFPRI's analytical contributions on AgPE analyses to FAO's State of Food and Agriculture report for 2012 (FAO 2012, which devoted strong attention to public agricultural investment messages.

Three of the initiatives (MAFAP, ReSAKSS, and SNAPE) have taken concrete steps to enhance the commitment and capacities of countries to improve their expenditure databases and to undertake their own expenditure analyses (in a "lite" approach) as part of strengthening their budgetary planning processes and allocation priorities, for example, by organizing workshops for tool kit training and study results dissemination. A past initiative, RePEAA, has given impetus to the launching of a regional initiative within the same World Bank organization, namely SNAPE, covering selected countries in Africa. Strengthening the linkages among these analytical initiatives along the lines described above could facilitate sound exit and/or sustainability strategies for demand-driven analytical activities (see Section 3, "Sustainability of the Initiatives").

Interestingly, the analytical initiatives are quite strong in African countries, but not in other regions. Because AgPEs nevertheless play an important role in these other regions in contributing to macro and sectoral objectives, it would be useful for development partners to consider promoting and supporting in a coordinated manner a program of demand-driven analytical expenditure studies in these regions, integrated into the budgetary cycles of the respective countries.

Demand (User) Perspectives on Database and Analytical Challenges and Strategies

Three main groups of users play an important role in the demand for enhanced AgPE databases and analytical studies:

- Policy makers (including, for example, ministers and directors of budget and planning, finance, agriculture, and other key entities)
- International development partner managers
- AgPE analysts, whether from developing, emerging, or developed countries

It is useful to get a deeper understanding of the nature of demand by these three groups. This can influence incentives and the push to generate more reliable and disaggregated AgPE data.

First, the feedback obtained during the course of this review suggests that the real need for a country to have more reliable and disaggregated AgPE data is often not sufficiently internalized by key actors in government (especially those in ministries of finance, in part given that they do not concern themselves with one sector alone). Some ministries of finance tend to focus on tracking expenditure rates (actuals versus allocations), rather than focusing on outcomes and value for money, which would require disaggregated data. Also, external donors generally drive public expenditure reviews, and the ministries of finance (and of agriculture) are often not carrying them out as part of their internal budget process. Oversight committees, such as parliament committees, do not require more disaggregated analysis to address value-for-money issues, in part due to analytical and other capacity constraints, and relatively weak de facto political power in many governance systems.

Focal persons managing the DAIs reviewed in this study appear to be aware of these realities. Many of the workshops that have been convened to disseminate the findings from the AgPE and PSE analytical studies have invited key actors from ministries of finance and other relevant ministries to review the findings and policy implications (for example, convenings by ReSAKSS, MAFAP, SNAPE, and PSE-OEE). However, it appears that attending workshops is not sufficient, and the persisting data problems highlighted in this review suggest the need for more systematic follow-up and in-depth discussions to trigger stronger demand and specific and appropriate actions. Various practitioners interviewed for this review emphasized the importance of finding effective approaches and processes to pose the "right questions" and engaging key actors in these discussions and follow-up.

Second, there is growing evidence that international development partner managers are seeking AgPE data and analysis to help underpin and justify their assistance strategies. Many of them are willing to spend their administrative resources to support various types of AgPEs, and other relevant analytical work, in partnership with other development partners.

The number of AgPE specialists is growing, given the demand for their analytical skills. They can play an important role in articulating the rationale for better AgPE data, including their own professional incentives for better data. Accordingly, the use of AgPE data for policy purposes is increasingly important in developing countries. During the last three decades, AgPE has varied widely in many developing countries, as other priorities have occupied the policy agenda, especially expansion in social sectors. Ministries of agriculture and public agricultural programs in many countries have seen their budgets shrink, often well beyond what an equilibrated approach would suggest (that is, looking at the economic weight of agriculture, which is between 7 and 40 percent of GDP for most developing countries, whereas the sector receives less than 2 percent of budgets). This situation seems to be generalized in many countries and requires rethinking the role of AgPE for agricultural development, for which credible AgPE data collection and analysis is crucial.

Another significant issue for AgPE data in developing countries is the general importance and impacts on agricultural growth. Long-term aggregated data are of key importance for assessing the long-term impacts and relationship between AgPE and agricultural growth. Given the heterogeneity of developing countries, this type of analysis must be carried out among categories of countries with structural similarities (for example, the Caribbean, Central America, the Andean region, the Southern Cone for LAC countries, and so on); large federal countries such as Nigeria, Mexico, and Brazil may need a special treatment. It is clear that AgPE data are more complex in federal countries, an additional reason for separate analysis. Having elasticities of agricultural growth and AgPE in developing countries can be an important tool for convincing ministry of finance authorities of the importance of investing more in agriculture at the aggregate level, especially when its share in the total budget is well below the sector's economic importance, as seems to be the norm currently across many developing countries. Therefore, having a solid database with long-term AgPE data (combined with other agricultural and macroeconomic variables) is of clear usefulness for many developing countries to have estimations of the aggregate importance of this type of expenditure. This appears to be an important need for developing countries in the short term.

Going deeper along this line, AgPE data will be more useful for developing countries as some key levels of disaggregation are considered for wider efforts of data collection and analysis. A first and basic distinction in AgPE, which is easy to record and follow, is the relationship between allocated and expended budget. This ratio is used for a quick assessment of efficiency in budget execution and planning, and may be compared with that of other sectors within the country and of other countries in AgPE databases. This information is of high importance for most finance ministries, which use this indicator as a significant measure of sector absorptive capacity, a crucial consideration for allocating budgets.

Another factor in AgPE that is important for policy purposes in developing countries is the distinction between current and capital expenditures. This distinction is complicated in the overall budget; where to put the line is often difficult. An initial assessment of current versus capital in agriculture expenditures in some representative developing countries during the last decade may be useful to see the state of the variable. It is clear that this distinction is of great importance for policy analysis because the economic impacts of these two types of expenditure are very different. The main problem is the treatment of large projects financed by external credit, which are generally considered as capital investment, whereas important shares of these often actually go to recurrent expenditures such as staff salaries. This discussion may also allow assessment of what levels of recurrent expenditure are required for sustaining effective agricultural services (such as extension, agricultural input provision, and agronomic research), which have deteriorated in the midst of budget decline in many developing countries.

The OECD/PSE type of disaggregation of AgPE, although highly demanding, seems to be one of the more promising for policy analysis in many developing countries because it facilitates looking at three instruments in the agriculture sector: price protection, investment in private goods, and investment in public goods. This basic distinction is key for assessing how this tridimensional structure may distinctively impact agricultural growth and other agriculture-related variables in the short and long run, and it also may suggest policy reorientations for achieving better results. Investing in this type of data

would be of high return for most developing countries in which agriculture policies have seen reduced prioritization in general policy decisions.

Budget accounting in many developing countries follows the COFOG system and charts of account, which are harmonized by international institutions. The main challenge for AgPE analysis in this area is how to account for expenditures that are related to agriculture but made by other ministries or sectors, especially when functional lines overlap. The key point here is to have clarity about what "agriculture-related expenditure" means. The core is to have production-related expenditures well defined and covered across sectors, and after that, to be able to identify some agriculture support activities that may also be considered. However, it is key to distinguish expenditures that go toward supporting farmers in their main economic activity from those that go toward improving or keeping their economic environments. This separation is of importance for a proper policy discussion in developing countries.

A recent trend in the management of public budgets in developing countries is the use of "results-based budgeting." This practice links diverse types of expenditures to some specific outcome or set of outcomes, which will attend some specific need or service to the population. AgPE data may also be organized by this methodology in countries using this approach, and in this case it will be important to generate data that allow assessment of the impacts of these expenditures not only on the products but also in the broader development outcomes that are pursued. In the agriculture sector, this approach will allow policy makers to see an "expanded" expenditure for achieving development goals, which highlights synergies among different sectors for getting better results in agriculture.

Another key issue for developing countries is to have subnational-level expenditures for analytical purposes. In this case, it is worthwhile to have similar disaggregation to link AgPE data with other development variables that are measured at the same level, such as regional growth, regional poverty reduction, or change in productivity. If those complementary variables are not measured at the same level, it is of little use to have disaggregated AgPE data. Having subnational data may be very important for policy purposes; within countries, a differentiated effectiveness of AgPE by region may assist in the design of spatially better tailored agricultural policies.

4. QUANTITATIVE COMPARISON OF PUBLIC EXPENDITURES ACROSS DATA AND ANALYTICAL INITIATIVES

This section is concerned with how the DAIs compare to each other quantitatively. That is, it addresses the question of whether—when multiple DAIs report AgPE-related data for the same variable, year, and country—the values of the variables line up relatively well across DAIs, or whether there are important discrepancies in the values. Where the latter is the case, the quantitative comparative analysis of this section quantifies the level of discrepancy, and also examines whether there are any patterns in the discrepancies—for example, whether one DAI tends to report systematically higher values than another. In Section 1, we were motivated to do this study after realizing that where different datasets exist that seemingly measure the same thing, differing values across DAIs can lead users to different analytical or policy conclusions depending on which dataset they use. In this section, we examine quantitatively whether there is any potential of this being the case. It is understood, from the extensive discussion in Section 3, that each DAI may have a different methodology in compiling and managing its AgPE data, and these differing approaches, methods, and definitions can naturally lead to different values for seemingly similar variables. It is thus not the intent of the quantitative comparison to assume that discrepancies imply errors or problems with any single DAI. Nonetheless, with the demand side (users of data of the DAIs) in mind, it is important to gain clarity about potential discrepancies as a first step toward beginning a conversation about how greater transparency can be created for the reasons behind differences, and an even more preliminary step toward a discussion around shared standards and approaches in AgPE data measurement.

While this section discusses the comparisons in great detail, the key findings of the quantitative comparison can be found synthesized in Section 5 under the heading 'Quantitative Comparison across DAIs'.

Approach to Comparison of AgPE-Related Values Across DAIs

We reviewed the 13 DAIs to assess comparability in magnitude and trends in four measures: (1) public expenditures in agriculture, (2) the share of agricultural public spending in total spending, (3) agricultural public spending intensity (that is, the ratio of agricultural expenditures to agricultural GDP), and (4) public expenditures on agricultural R&D. These are the measures on which the most data are available *across* DAIs. For each comparative analysis, we selected as many DAIs as possible that have the given measure, and included the largest number of years or countries for which all of the included DAIs had data. Where the number of years or countries was larger than can be reasonably accommodated on a graph, we sought to be selective to obtain a balance of regions and time periods. For these analyses, of interest is the extent of variation or similarity in the figures *across* DAIs, rather than in the absolute quantities in and of themselves for *a given* DAI.

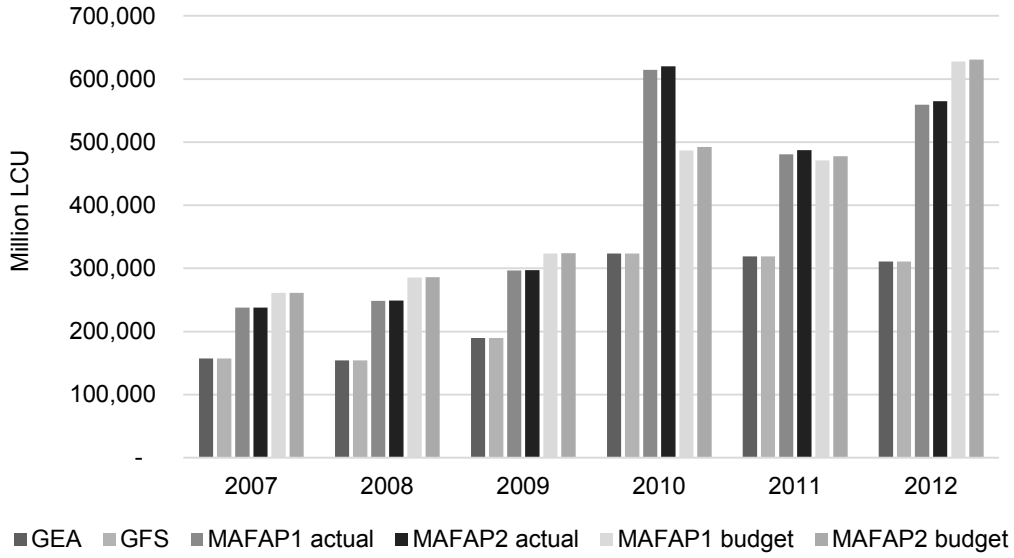
A few notes may help interpret the figures in this section. First, the order of the DAI measures in the legend corresponds to the order of the bars in the bar charts. For example, in Figure 4.2, the measure of "MAFAP1 actual" is the sixth item in the legend, and correspondingly the sixth bar for each year (that is, "MAFAP1 actual" shows about 57 billion local currency units (LCU) for 2010 in Uganda). Second, given the expansive definition used in MAFAP, we considered three different definitions in these figures. "MAFAP1" includes (1) what the initiative refers to as "general support" to agriculture, such as agricultural research, extension, etc.; (2) "payments to producers," such as agricultural subsidies; and (3) administrative costs, such as general expenses of a ministry of agriculture. "MAFAP2" is a wider definition, including (1) all of MAFAP1; (2) "payments to consumers," such as food aid and food subsidies; and (3) payments to other actors in the agricultural sector, such as processors, traders, input suppliers, etc. "MAFAP3" is the widest definition presented here, consisting of (1) MAFAP2 expenditures and (2) "agriculture-supportive" spending in other sectors, such as rural health, rural education, and rural infrastructure.

The comparisons may use actual expenditures, budgets, or both for any of the three definitions, in an attempt to see which of these are more likely to correspond with the expenditure measures of other DAIs. In the comparisons of agricultural R&D public spending, only this component of MAFAP is used (and thus no number is attached in the graph labels). In all cases where GFS is part of a comparative analysis, for easier discussion of the findings, other DAIs are expressed as ratios to the GFS values. For example, a ratio of 1 for a DAI suggests that GFS and DAI have the identical value, a ratio of 1.2 means the DAI has a value 20 percent higher than that of GFS, and so on. This is only for easier cross-DAI comparison, and not intended to suggest that the closer a value is to GFS's, the more "correct" it is. DAIs are always sorted from smallest to largest value for the first block of data (for example, for the first year, or the first country) in a chart.

Comparison of Agricultural Public Expenditure

Figures 4.1–4.4 present a comparison on the first variable of the four measures earlier mentioned, namely, public expenditures in agriculture measured in millions of each respective country's local currency unit (LCU). In Figure 4.1 (Uganda), for most of the years the GFS and GEA measures generally match or are close to each other, and a similar match applies between actual expenditures of the MAFAP1 and MAFAP2 measures; the same holds true with respect to MAFAP1 and MAFAP2 budget values. However, GFS and GEA tend to differ both from MAFAP1 and MAFAP2 actuals, as well as for most years even more strongly than the MAFAP1–2 budgets. To get a sense of the scale of difference, we will apply, as earlier discussed, a ratio of DAIs to GFS (so that, for example, 1 reflects a perfect match of the DAIs, 2 means the DAI's value is double that of GFS, and so on). The ratio MAFAP1-actual/GFS is 1.51 for 2007—that is, this MAFAP measure of agricultural expenditure is about 50 percent larger than the GFS measure of the same for 2007 in Uganda. Across all the years in Figure 4.1, this ratio ranges from 1.51 to 1.9 for 2010, the latter figure meaning that this MAFAP measure is nearly double that of GFS. Note that this MAFAP measure is the least inclusive, and therefore smallest, measure of the three measures as defined above (meaning MAFAP1, 2, and 3). Thus, considering the other two measures does not bring the MAFAP and GFS measures closer to each other. Considering MAFAP1's budget measure still leaves it clearly larger than GFS, with the corresponding ratios ranging from 1.48 to 2.02.

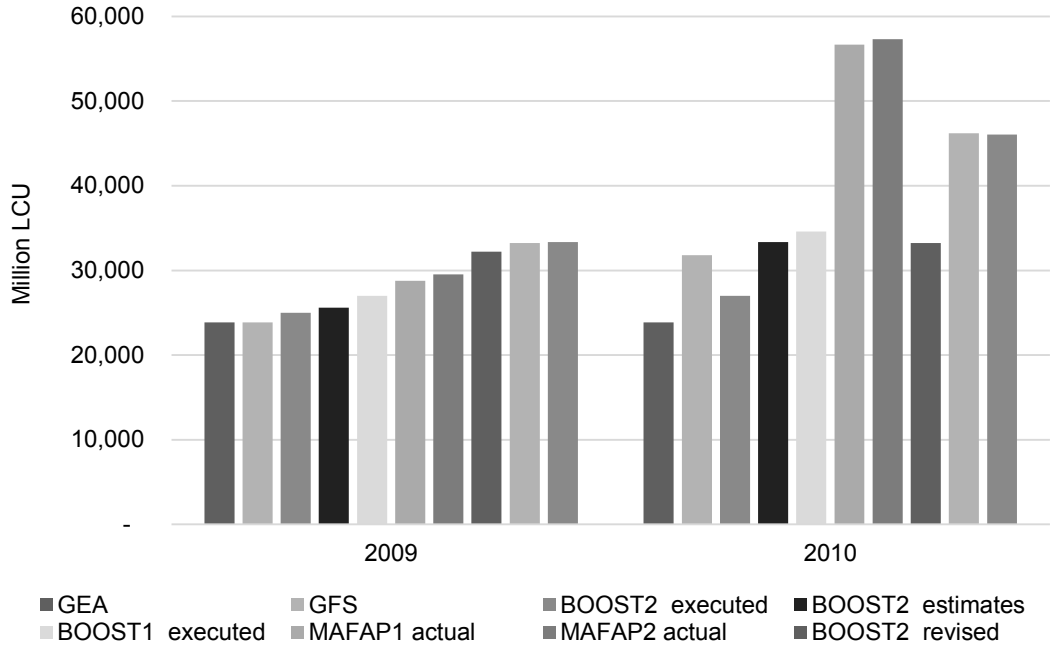
Figure 4.1 Comparisons of agricultural public expenditure, in millions of the LCU: Uganda



Source: Authors' calculation.
Note: LCU = local currency unit; GEA = government expenditures on agriculture; GFS = government financial statistics; MAFAP = Monitoring and Analysing Food and Agricultural Policies.

In the case of Kenya (Figure 4.2), we see that GEA and GFS are not always identical or highly similar. While the GEA/GFS ratio is 1 for 2009 in Uganda, it is 0.75 for 2010, so the GEA value for agricultural expenditure is 25 percent lower than that of GFS. As with the case of Uganda, we see that the level of discrepancy between two DAIs can vary between years. For example, in Kenya in 2009, the MAFAP/GFS ratio is 1.20–1.24, while in 2010 it is 1.78–1.80.

Figure 4.2 Comparisons of agricultural public expenditure, in millions of the LCU: Kenya



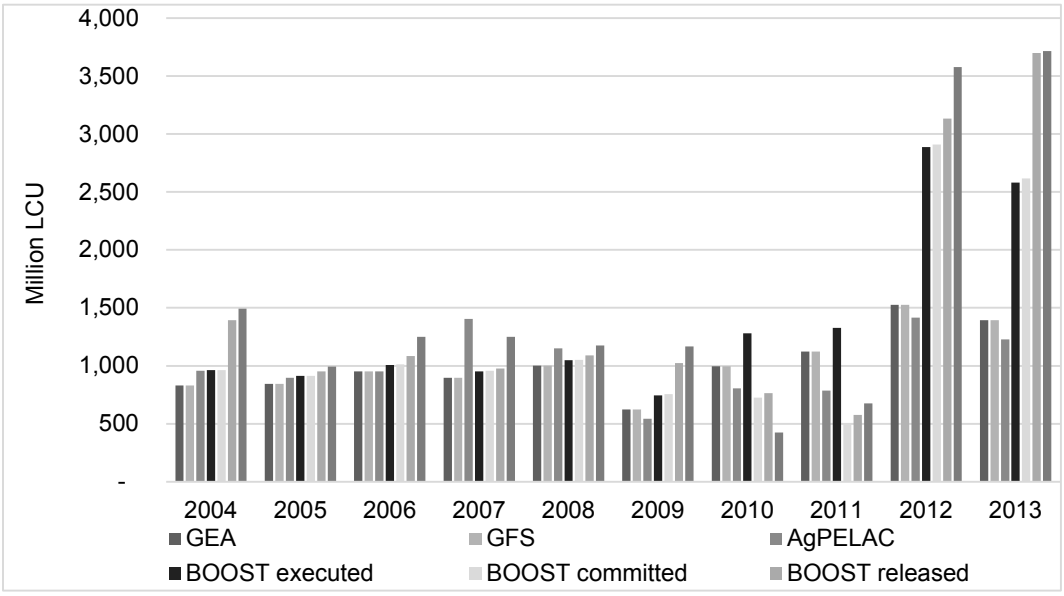
Source: Authors' calculation.
Notes: LCU = local currency unit; GEA = government expenditures on agriculture; GFS = government financial statistics; MAFAP = Monitoring and Analysing Food and Agricultural Policies.

In the Kenya data, we can also include BOOST in the comparison, although all four DAIs (BOOST, MAFAP, GEA, and GFS) are only available for the two years shown. The BOOST data for Kenya are reported as fiscal years spanning two calendar years, 2009–2010. In the measure BOOST1, such a year is associated with the later calendar year, that is, 2009–2010 as 2010, and BOOST2 associates it with the earlier year (in this example, with 2009). The Kenya BOOST has various measures corresponding to different points along the budget cycle: The "estimates" refer to the originally approved budget. The "revised" figures are the budgets with supplemental adjustments. Finally, the "executed" measure corresponds to actual expenditures. In 2009, the BOOST figure most closely resembling GFS is the actual expenditures when we associate fiscal year spending with the first of the fiscal year's calendar year—in other words, "BOOST2 executed." Its ratio to GFS is only 1.05; that is, it is 5 percent larger than GFS. All other BOOST figures have larger ratios. However, this doesn't hold consistently for 2010. The BOOST measure closest to GFS now is the revised budget of BOOST2 ("BOOST2 revised"). BOOST2-revised's ratio is 1.04, while BOOST2-executed's is 0.85. Therefore, from this information, we cannot easily conclude that actual expenditures of BOOST—mapping fiscal years to their first calendar years—are the closest figures to the IMF data.

To vary the comparative analysis of DAIs, we also consider countries from other regions. Figure 4.3 shows public expenditure values for multiple years from four DAIs: GEA, GFS, BOOST, and AgPELAC. As with Kenya, here too several BOOST measures are available corresponding to different stages in the budget cycle. Here, GEA and GFS are in tandem with each other for all years given. All four

BOOST figures have in common that they start to strongly increase above the GFS benchmark in the last two years shown, 2012 and 2013 (with ratios ranging from 1.85 to 2.67). Interestingly, the BOOST measure closest to GFS is the "executed budget," which in the Guatemalan context (and as per the BOOST user guide for the country) is fairly early in the budget process, preceding "committed" and "released" amounts. AgPELAC directly overlaps with GFS on one year (2006), but otherwise lies either below or above it (with ratios ranging from 0.81 to 1.57). One cannot detect that AgPELAC and any of the BOOST indicators consistently and even approximately trail each other across years (although on some years AgPELAC may be close to one BOOST indicator, on other years to another).

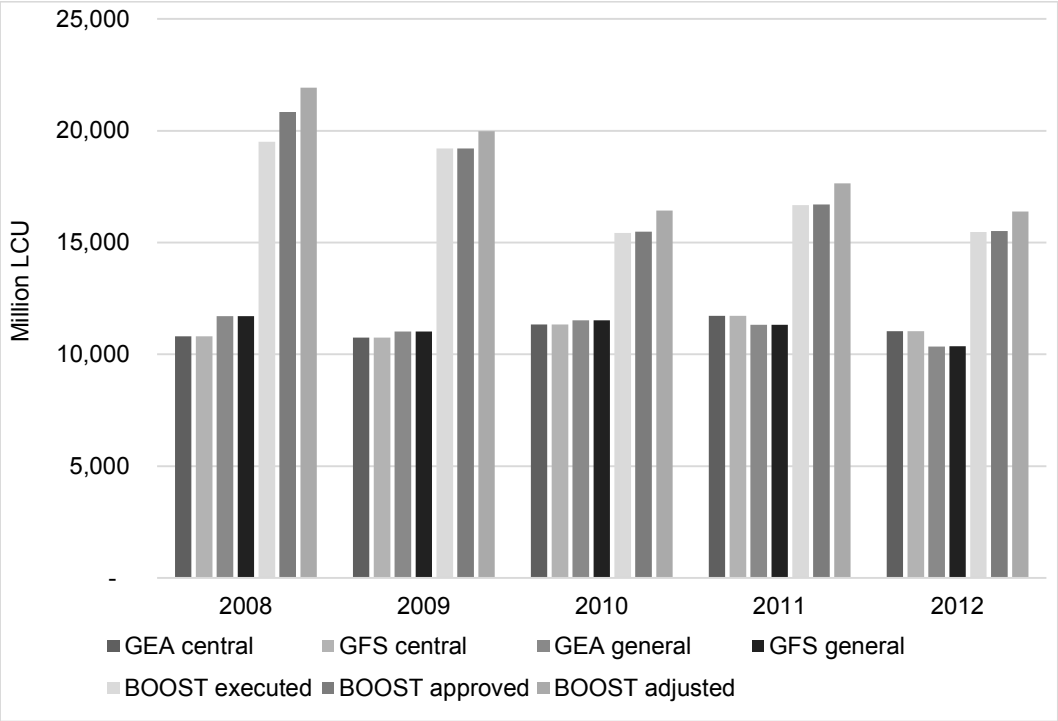
Figure 4.3 Comparisons of agricultural public expenditure, in millions of the LCU: Guatemala



Source: Authors' calculation.
Notes: LCU = local currency unit; GEA = government expenditures on agriculture; GFS = government financial statistics; AgPELAC = Agricultural Public Expenditures for LAC.

Is there greater consistency across DAIs in the case of emerging or developed economies? The case of Poland (Figure 4.4) allows us to trace three DAIs—GEA, GFS, and BOOST—across five years. Here, the data offer a distinction between central government spending (spending of the highest tier of government) and general government spending (of all tiers) for GEA and GFS. As we have seen elsewhere, GEA and GFS track each other very closely. It is also noticeable that central and general government spending do not differ much, which may be due to very limited local government spending in Poland or to a high degree of difficulty in capturing such expenditures in the general government measure. BOOST and GFS do not coincide any more closely than in the developing countries discussed above; the ratio for the various BOOST measures over the years range from 1.34 to 1.87. This shows, however, a type of consistency not observed in all other cases: BOOST is consistently higher than GFS. As seen above, in other cases, one DAI may be larger than another in some years, and smaller in other years.

Figure 4.4 Comparisons of agricultural public expenditure, in millions of the LCU: Poland



Source: Authors' calculation.

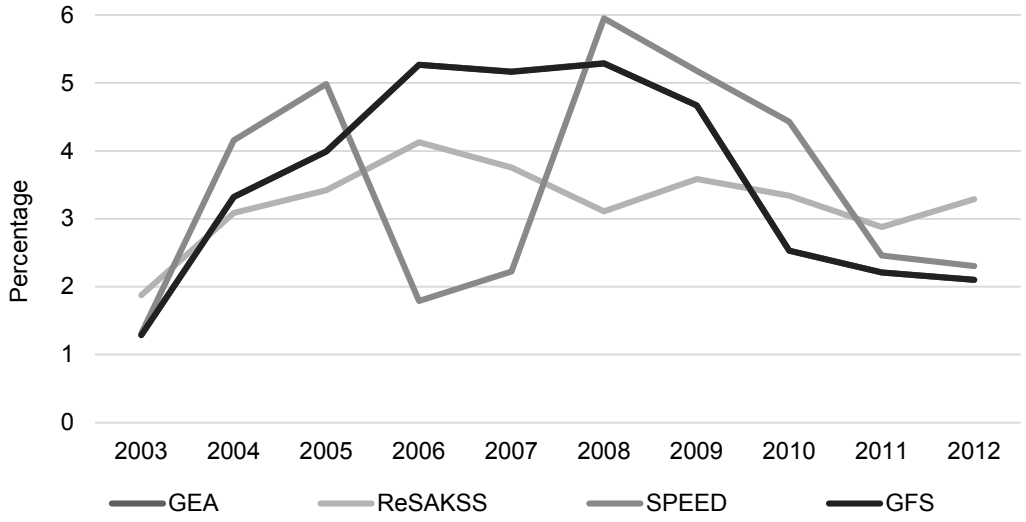
Notes: LCU = local currency unit; GEA = government expenditures on agriculture; GFS = government financial statistics;

Comparison of AgPE Share in Total Public Expenditure

Figures 4.5–4.7 document comparisons across DAIs on the second variable, namely, the spending share of agriculture in total expenditure. In the Nigeria example, in Figure 4.5, data were available for four DAIs over a relatively long time period—10 years—so that we compare the DAIs by looking at the time trend of each. As per a common pattern, GEA follows GFS figures (the two time trends exactly overlap). It is noteworthy that while ReSAKSS values differ importantly from GFS (with ratios ranging from 0.59 to 1.57), it tends to follow a similar inverse U shape in the time trend, first increasing, then decreasing expenditures. There are even stronger discrepancies between GFS and SPEED (with ratios ranging from 0.34 to 1.75); however, here there is no similarity in time trends between the two DAIs.[17] It is also notable that the ReSAKSS and SPEED values are strongly different from each other across years.

[17] This divergence in general time trend is mainly due to two years. If SPEED's 2006 and 2007 measures were significantly larger—in the range of an above 5 percent expenditure share instead of an approximately 2 percent share—then the time trends would be related.

Figure 4.5 Comparisons of AgPE share in total public expenditure (in %): Nigeria

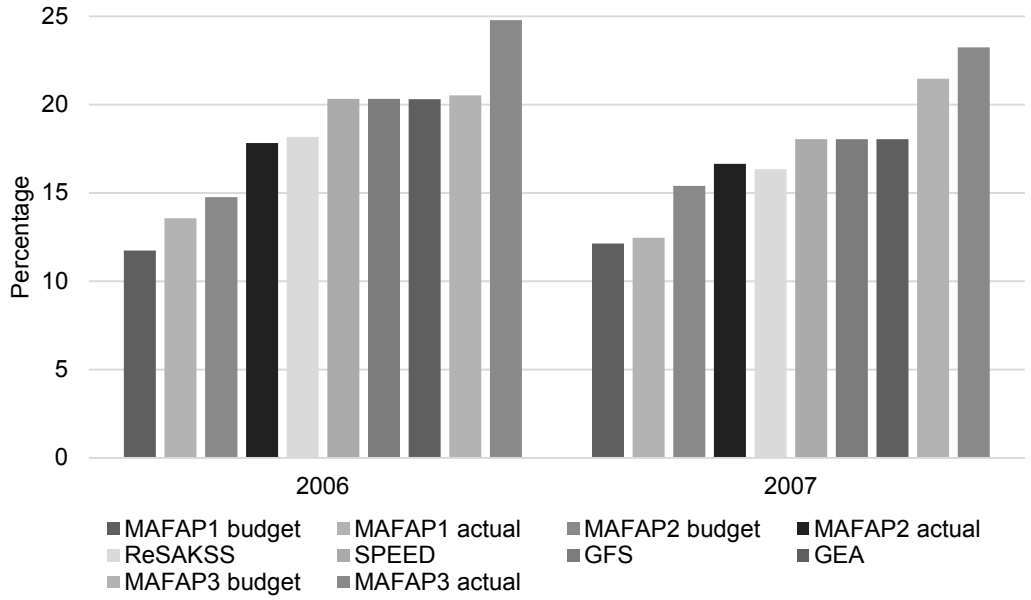


Source: Authors' calculation.
Notes: AgPELAC = Agricultural Public Expenditures for LAC; GEA = government expenditures on agriculture; ReSAKSS = Regional Strategic Analysis and Knowledge Support System; SPEED = Statistics on Public Expenditures for Economic Development; GFS = government financial statistics.

The expenditure share data on Ethiopia (Figure 4.6) allows for an accommodation of a fairly large number of DAIs—namely, GEA, GFS, MAFAP, ReSAKSS, and SPEED—for two years. Unlike in many of the comparisons before now, here GFS values are among the largest if we ignore MAFAP3, which is a highly inclusionary measure comprising rural health, rural education, etc., as previously defined. Once again, GEA and GFS are tightly related. Here, SPEED also equals the GFS figures. Of the MAFAP values, MAFAP2 actual expenditures come closest to GFS (with ratios 0.88 and 0.92 for 2006 and 2007, respectively), and ReSAKSS ratios are very similar to these. Not shown in the graph are comparisons for previous years, given that these are only available for four of the five DAIs (MAFAP is not available); SPEED, GFS, and GEA are all aligned, while ReSAKSS's ratio to GFS is quite high, reaching 2.79 in 2004.

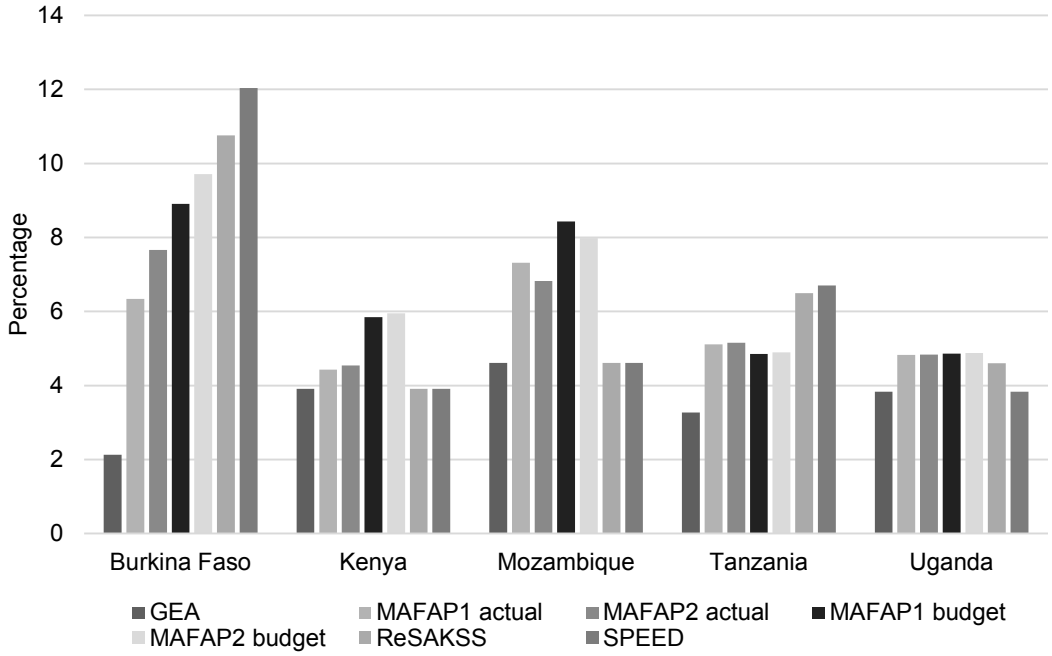
Until now, the comparisons focused on one country at a time, and contrasted DAIs' values across years. Figure 4.7 turns this around and considers multiple countries for a given year. For these five countries in 2009, data are available from four DAIs: GEA, MAFAP, ReSAKSS, and SPEED. Because GFS is not consistently available for these countries and year, we compare the DAIs with each other rather than relative to GFS. Especially for the first country, it is apparent that the DAIs' values cover a significant span. GEA has the lowest agricultural expenditure share of total expenditure, at 2.1 percent, and SPEED has the highest, at 12.0 percent. ReSAKSS and the different MAFAP values all lie in between these two widely different values. The two closest DAIs to each other in Burkina Faso and Uganda are ReSAKSS and MAFAP2 budget, and in the case of Kenya, Mozambique, and Tanzania it is ReSAKSS and SPEED. GEA's value is equal to those of ReSAKSS and SPEED for Kenya and Mozambique.

Figure 4.6 Comparisons of AgPE share in total public expenditure (in %): Ethiopia



Source: Authors' calculation.
Notes: AgPE = Agricultural Public Expenditures; MAFAP = Monitoring and Analysing Food and Agricultural Policies; ReSAKSS = Regional Strategic Analysis and Knowledge Support System; SPEED = Statistics on Public Expenditures for Economic Development; GFS = government financial statistics; GEA = government expenditures on agriculture.

Figure 4.7 Comparisons of AgPE share in total public expenditure (in %): Multiple countries

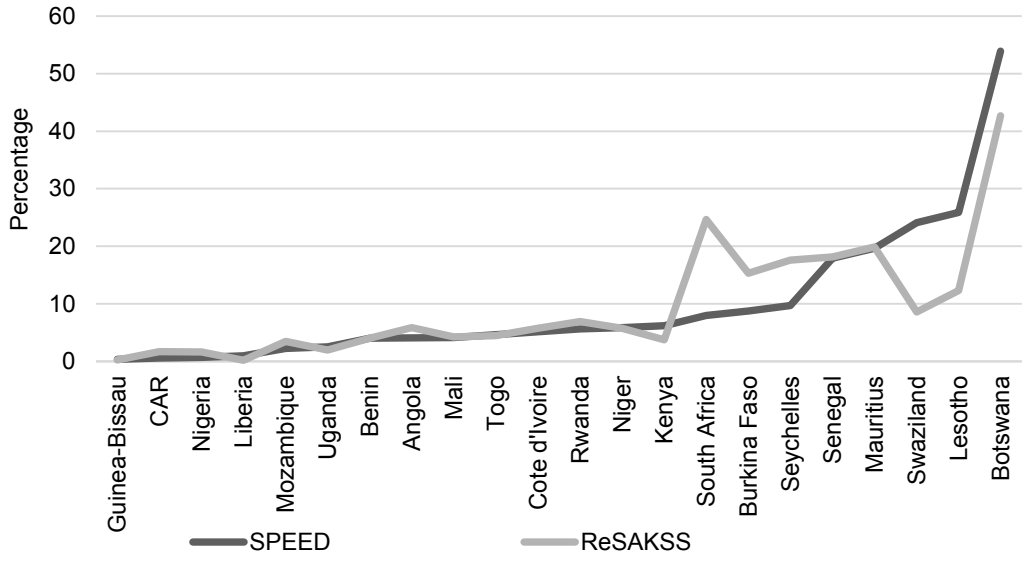


Source: Authors' calculation.
Notes: AgPE = Agricultural Public Expenditures; GEA = government expenditures on agriculture. MAFAP = Monitoring and Analysing Food and Agricultural Policies; ReSAKSS = Regional Strategic Analysis and Knowledge Support System; SPEED = Statistics on Public Expenditures for Economic Development.

Comparison of AgPE Intensity

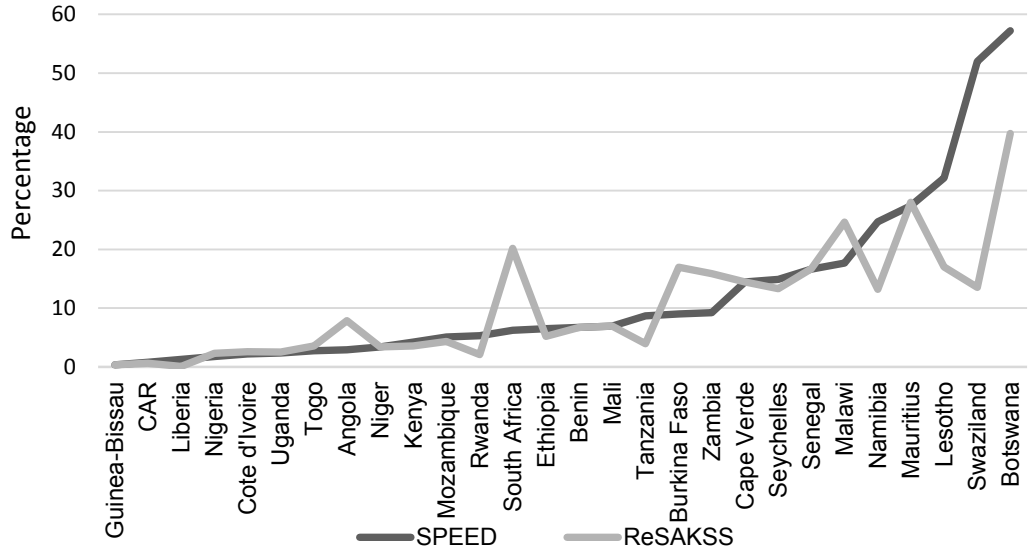
For the third variable over which the DAIs are compared—agricultural expenditure intensity, or the ratio of AgPE to AgGDP—data are available for a large number of countries (all in Africa) from two DAIs: SPEED and ReSAKSS. Thus, the comparison focuses on these. Figures 4.8, 4.9, and 4.10 display the comparison for 2012, 2009, and 2006, respectively. The line charts are sorted by the country of lowest to highest intensity in SPEED.

Figure 4.8 Comparisons of agricultural public expenditure intensity (in %), Multiple countries, 2008



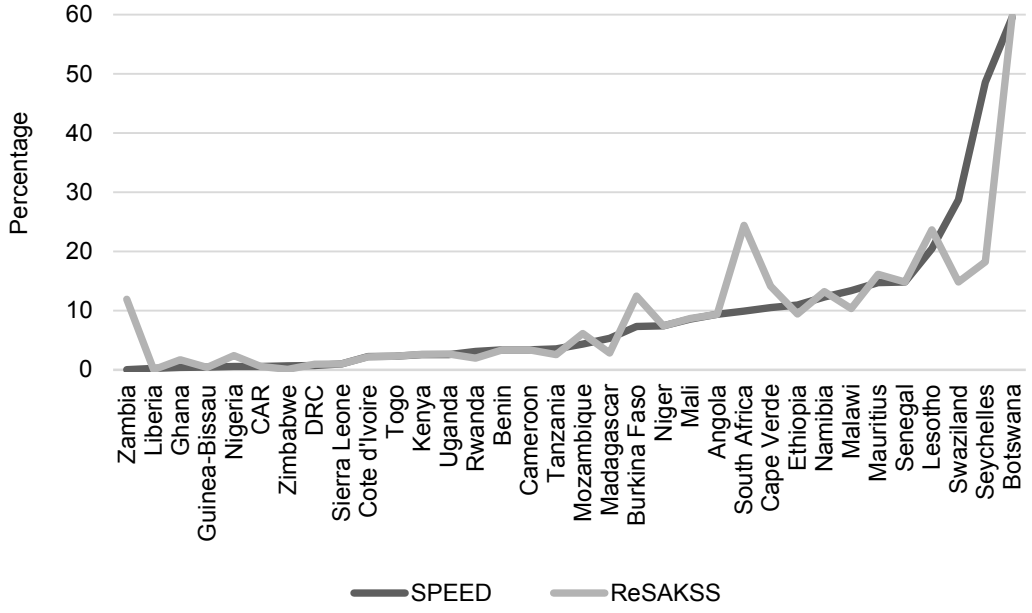
Source: Authors' calculation.
Notes: SPEED = Statistics on Public Expenditures for Economic Development; ReSAKSS = Regional Strategic Analysis and Knowledge Support System.

Figure 4.9 Comparisons of agricultural public expenditure intensity (in %), Multiple countries, 2009



Source: Authors' calculation.
Notes: SPEED = Statistics on Public Expenditures for Economic Development; ReSAKSS = Regional Strategic Analysis and Knowledge Support System.

Figure 4.10 Comparisons of agricultural public expenditure intensity (in %): Multiple countries, 2006



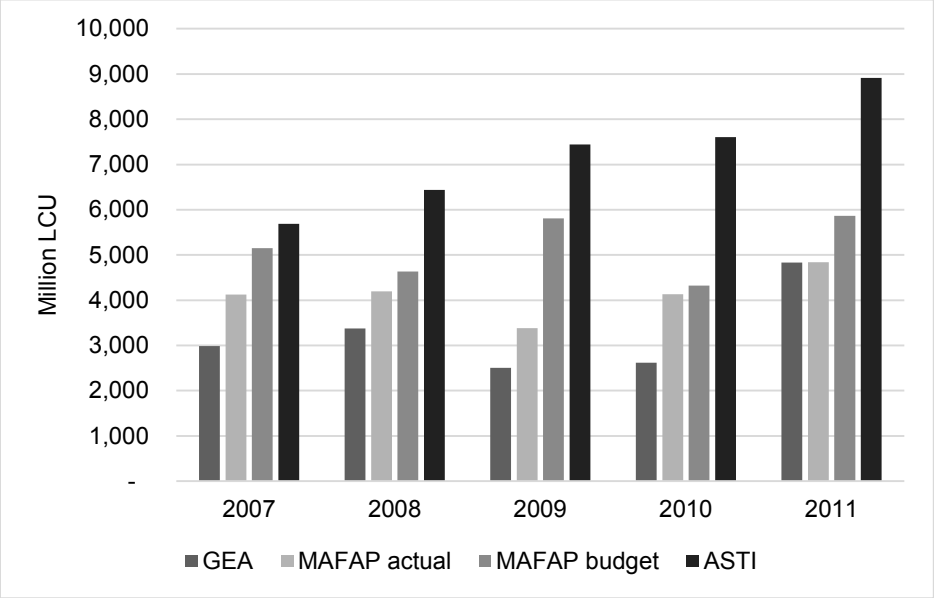
Source: Authors' calculation.
Notes: SPEED = Statistics on Public Expenditures for Economic Development; ReSAKSS = Regional Strategic Analysis and Knowledge Support System.

A similar pattern emerges across the three years. The discrepancies tend to be highest for mostly (though not exclusively) the same countries, and the direction of the discrepancy is also usually the same. For example, for Swaziland, SPEED is always significantly higher than ReSAKSS: In 2006 SPEED's and ReSAKSS's values are 29 percent and 15 percent, respectively; in 2009, 52 percent and 14 percent, respectively; and in 2012, 24 percent and 9 percent, respectively. In contrast, for South Africa, the ReSAKSS values are consistently significantly higher than SPEED's: 24 percent versus 10 percent in 2006, 20 percent versus 6 percent in 2009, and 25 percent versus 8 percent in 2012. There are other such cases with strongly varying agricultural expenditure intensities between the two DAIs, and in many cases which countries they are and the direction of difference tends to be consistent across the years.

Comparison of Public Expenditure on Agricultural R&D

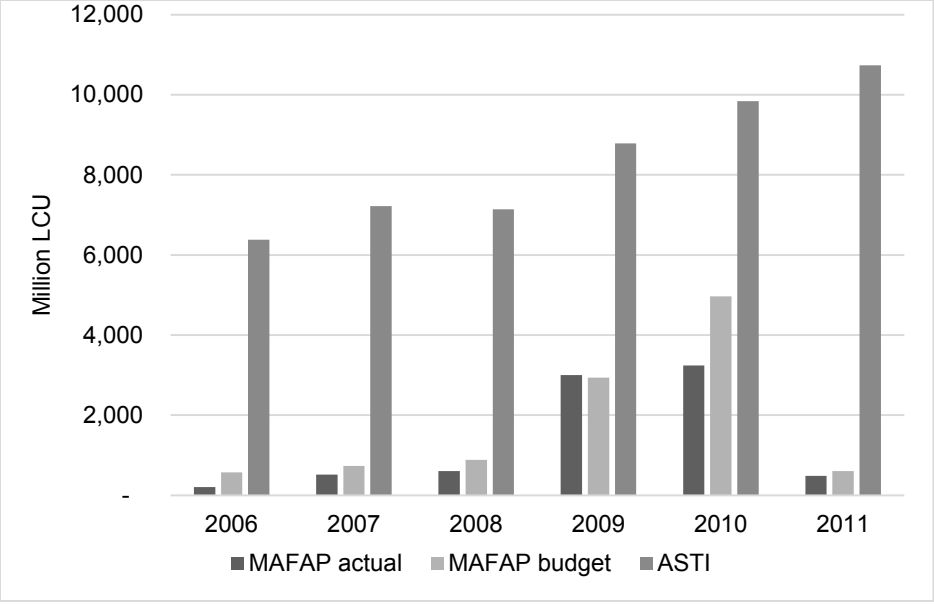
The final variable we examine is public spending on agricultural research and development (R&D). Figure 4.11 shows a case, Kenya, for which three DAIs—ASTI, GEA, and MAFAP—allow a measure of this variable for five years. GEA consistently has the smallest values, ASTI has the largest across the years, and MAFAP has values in between the two. The largest value is approximately two to three times the smallest value, depending on the year. There is a single case in this comparison in which there is near-agreement across DAIs, and that is the value in 2011 of GEA (4.83 billion LCU) and MAFAP actual expenditures (4.84 billion LCU). For the remaining comparisons in Figures 4.12 and 4.13, only two DAIs have data for the same countries and years. Figure 4.12 shows MAFAP and ASTI figures for Mali. ASTI again is consistently higher than MAFAP values, ranging from being twice as large to 17 times larger. In Figures 4.13 and 4.14 we can compare GEA and ASTI values for Bangladesh and Jamaica, respectively. In all cases, ASTI figures are higher.

Figure 4.11 Comparisons of public expenditure on agricultural research and development, in millions of LCU: Kenya



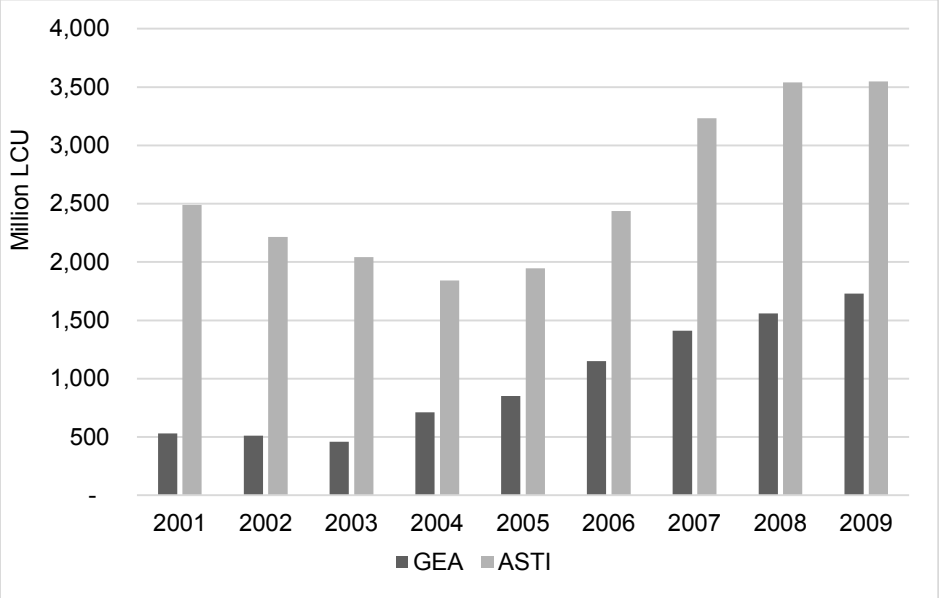
Source: Authors' calculation.
Notes: LCU = local currency unit; GEA = government expenditures on agriculture. MAFAP = Monitoring and Analysing Food and Agricultural Policies; ASTI = Agricultural Science and Technology Indicators.

Figure 4.12 Comparisons of public expenditure on agricultural research and development, in millions of LCU: Mali



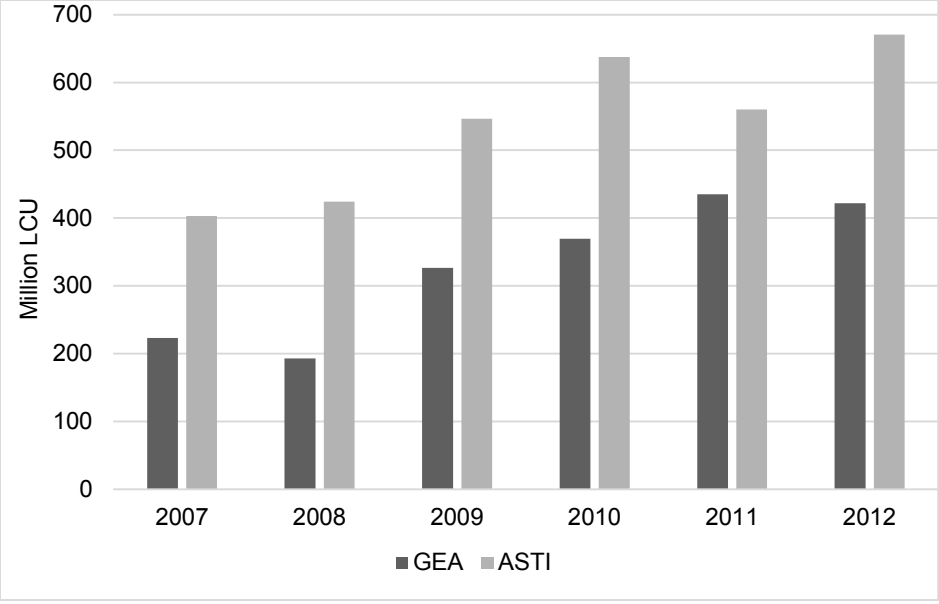
Source: Authors' calculation.
Notes: LCU = local currency unit; MAFAP = Monitoring and Analysing Food and Agricultural Policies; ASTI = Agricultural Science and Technology Indicators.

Figure 4.13 Comparisons of public expenditure on agricultural research and development, in millions of LCU: Bangladesh



Source: Authors' calculation.
Notes: LCU = local currency unit; GEA = government expenditures on agriculture; ASTI = Agricultural Science and Technology Indicators.

Figure 4.14 Comparisons of public expenditure on agricultural research and development, in millions of LCU: Jamaica



Source: Authors' calculation.
Notes: LCU = local currency unit; GEA = government expenditures on agriculture; ASTI = Agricultural Science and Technology Indicators.

5. CONCLUSIONS AND STRATEGIC OPTIONS

This review, conducted after extensive feedback from focal persons from diverse hosting organizations, has endeavored to identify and highlight important aspects of 13 diverse and complementary DAIs. It constitutes a full update of a November 2013 draft version, bringing the comparative review to the stage of each DAI as per the end of March 2016, and including more in-depth quantitative comparisons across the DAIs.

To facilitate the comparative analysis, the paper has grouped the initiatives into four types: databases for public expenditures, analytical studies of AgPEs, PSEs and related indicators, and databases for donor fund flows. The conclusions are synthesized below according to six strategic crosscutting areas (with further details outlined in Section 3, according to each type).

Summary of Main Features and Emerging Patterns of the 13 Initiatives

Variation and Rationale of Objectives: The 13 DAIs fall into four different types and reflect a wide variety of objectives, unique origins, and diverse users. All contribute to broader analytical and capacity-building objectives. In addition, some of the initiatives respond to specific policy requirements. For example, PSE-OEE is an instrument that complies with OECD member requirements, and ReSAKSS tracks a major CAADP policy target of AgPEs. Other initiatives are driven by fulfilling the mandates of various organizations—for example, GFS those of IMF, and FAOSTAT those of FAO. Yet others explicitly promote and conduct enhanced analysis of AgPE, such as SNAPE, ReSAKSS, MAFAP, and ASTI. The review has demonstrated that each initiative has its specific features, undergoes (to varying degrees) continuous improvements in response to a dynamic context, and endeavors to support the perceived priority needs of its generally multiple stakeholders. All of these aspects tend to justify the role and enhanced continuation of the initiatives, provided they are being responsive to changing needs and opportunities (discussed further below).

Variation in Scope and Disaggregation: The database initiatives show differences in scope in terms of other sectors covered; level of subsectoral disaggregation of agriculture; frequency of data updates; and countries, regions, and years covered. For example, two of the databases (GFS and SPEED) provide public expenditure data on agriculture only up to COFOG level 2 classification, but have the widest country coverage and a long time series. MAFAP has defined the agricultural sector more broadly and endeavors to generate more disaggregated data, but this ambition has required considerable efforts for a small number of countries (to date, publicly available for African countries). ASTI focuses its database on the strategic subsector of agricultural research and development, for a large number of years and a medium number of countries. SNAPE provides highly detailed analysis at the country level for relatively few countries. While some of the initiatives do not have geographic focus in their mandate, three of them focus on Africa in terms of available data (SNAPE, ReSAKSS, and MAFAP) and two give special focus to the LAC countries (AgPELAC and PSE-LAC). Other regions seem to be somewhat neglected, aside from the global data initiatives. Databases that seek to be relatively comprehensive in their country coverage, including the long-standing GFS database, are nonetheless not able to generate complete information for a number of reasons (discussed below), even for agriculture measured at COFOG level 2. These data gaps, and the limited disaggregation of AgPE data according to the main functions, pose considerable constraints to analysts and policy makers in terms of not providing adequate information for better budgetary allocations and accountability.

Methodological Aspects: The initiatives exhibit a variety of important methodological differences and, to a lesser extent, similarities, including the following:

- There are narrower and wider definitions of the "agricultural sector." This difference has important implications for data compilation and interventions. For example, MAFAP takes a wider definition of the agricultural sector: The MAFAP extension to the PSE expenditure classification system considers support to nonagricultural sectors that can

impact agricultural development (such as rural education, health, and roads). In contrast, SPEED, GFS, and GEA restrict themselves to the COFOG definition.

- The PSE methodology, pioneered by OECD, is applied by PSE-OEE to the countries that initiative includes, by MAFAP for African countries (in terms of its accessible data), where MAFAP has made relevant adaptations of the PSE methodology to the African context (further discussed below).
- Various AgPE analytical initiatives have developed different methodological tool kits, although there is a high level of convergence of key concepts and tools. There seems to be a limited but growing exchange in communications among focal persons of these initiatives to enhance harmonization of key concepts and tools, especially where they involve many of the same stakeholders. However, some of these engagements may depend on focal persons' networks and accumulated relationships with other DAI focal persons, so they may be affected as focal persons change for any given DAI.
- Different instruments and approaches are used to compile standardized AgPE and PSE data. PSE-OEE compiles country-level data to comply with a well-defined methodology. ReSAKSS compiles AgPE data from existing country sources such as SPEED while filling key gaps at the country level. In turn, SPEED draws on GFS and fills in missing data when other data are available at the country level. GFS, GEA, and ASTI use questionnaires submitted to ministries of finance, ministries of agriculture, and agricultural research agencies, respectively. MAFAP embeds a consultant physically with the ministry of agriculture to collect project and government accounts of public expenditure data at the source.
- Most of the initiatives have prepared user documentation, user manuals, and standards, although some initiatives have yet to do so. However, even where user manuals are available, these are only in some cases sufficiently detailed and updated; in other cases they are dated or provide only very limited information on the compilation methodology.

Public Accessibility: Two aspects are closely interrelated, with greater public accessibility tending to encourage expanded use, although other factors influence usage. All of the initiatives have at least part of their data publicly available online, although some of them are limited for various reasons. For example, BOOST has accessible data to only a subset of countries for which the governments have granted permission for data release; SNAPE does not have datasets available for some of its country studies, and does not have the studies themselves publicly accessible for a few countries. At this point, none of the databases requires a subscription and a user fee (GFS used to require fees but no longer does).

Linkages between Users and Suppliers: Generally, all of the initiatives show a clear awareness of the importance of stronger usage by their target stakeholders, and have varied strategies to promote this, although there appears to be varied levels of effort and effectiveness. For example, most of the initiatives use various ways to promote expanded usage of their database and analytical outputs through their websites (the most common method); employ enhanced communication strategies; and have a variety of other channels, such as by organizing and participating in country and regional workshops (including piggybacking on other major events), trainings, and seminars.

Innovative Aspects and Improvements

Some of the initiatives demonstrate innovative features, especially in terms of methodological and dissemination aspects. This can provide positive lessons for other initiatives.

On the PSE measures, the MAFAP initiative in Africa is a good example of a solid methodological design applied to a specific reality with important challenges. MAFAP uses the well-established PSE approach developed by OECD, with appropriate adaptation to the African context: measuring MPS-type development gap indicators due to market failures and relating them to public investment or disinvestment in public goods that may ameliorate them. For example, if the development

gap indicator points out severe market distortions due to lack of postharvest infrastructure, and GSSE shows no or very little investment in these key areas, then policy makers can reorient resources to reduce the negative impact of this market failure. IDB's PSE-LAC experience, so far, has made important progress in applying the PSE method to address consistency in collection and analysis of data and to allow comparability over time, within a country, and across a region.

With regard to agricultural public expenditures by international development agencies, data compiled by the CRS initiative are collected by CRS++, a reporting format that consists of a number of integrity or reliability checks within the CRS. This tool is designed to help reporters avoid inconsistencies. The continued methodological collaboration between the two data initiatives DFA and CRS, with DFA strongly relying on CRS as its point of departure for data compilation, is vital to ensure comparable and reliable data on donor support and other official flows. CRS is devising an innovative dissemination strategy through its CRS training center. In addition, improving its website, providing an online guide for navigating the data website, organizing regional and national trainings and workshops, and collaborating with other initiatives are some of the strategies the CRS employs to establish links between users and suppliers.

Most of the DAIs demonstrated ongoing efforts to further improve their methodologies and the relevance of their outputs for their targeted stakeholders, and also to strengthen their complementarity with other initiatives. For example, at this time, CRS is making enhancements to its user manual. SPEED has developed various enhancements in terms of scope of country coverage, approaches to filling data gaps, and more effective use of its data through a user-friendly, menu-driven visualization tool convenient for less technical users but also for easier absorption of a large amount of information for any type of user. ASTI is giving stronger attention to greater usage of information at the national level through an enhanced dissemination strategy. MAFAP convened a workshop with stakeholders to distill key lessons as inputs for a proposed next phase. SNAPE took a proactive role to address the underlying reasons for the data challenges that most of AgPE study teams faced, which could be addressed in a possible next phase of AgPE-supported studies.

Complementarities and Synergies among Initiatives

Several initiatives demonstrate emerging complementarities and synergies of varying degrees, and these have the potential for being further stimulated. Figure 2.1 illustrates the important complementarities among the different types of DAIs, which, if well coordinated (by each initiative and also between initiatives, where relevant), managed, and integrated into the budgetary cycle of developing countries (coupled with other appropriate policy reforms), offer the potential for enhanced budgetary outcomes and impacts from the AgPEs. All of the initiatives that were reviewed are both users and suppliers of agricultural expenditure data and, to a lesser extent, of the PSE indicators. We were able to identify variable levels of collaboration and interdependence across databases and analytical studies in terms of resource sharing, data collection methodologies, and dissemination strategies. GEA heavily depends and builds on the format of the internationally agreed-upon standards for compiling and reporting fiscal statistics as outlined in IMF's GFSM. SPEED has varying links with several data expenditure initiatives (for example, GFS and ReSAKSS for Africa data). MAFAP collaborated with SNAPE in exchanging methodological approaches and country results, and in addressing common country-level data challenges in Africa. It also links with PSE-OEE in that both rely on an OECD methodology for PSE indicators. FAOSTAT's DFA draws most of its information from the comprehensive CRS database and is currently reviewing various aspects for further improvements and complementarities.

PSE indicators, included in three of the reviewed DAIs, show high synergy with AgPE analysis, especially for policy purposes and helping to ensure an efficient use of total public resources, combined with sound agricultural regulatory policies. PSE incorporates most AgPEs as an important part of measuring support for agriculture in the form of "private" and "public" goods. Contrasting this support with other policy-induced market price distortions allows the analyst to monitor the most important policy instruments for the agricultural sector of countries or regions. Recent innovations in the PSE estimation

suggest a key relationship between PSE and AgPE analyses, because AgPEs may also address the distortions of development gaps, for instance. Some specific issues required by AgPE analysis can be incorporated into the PSE analysis without altering the basic method, such as providing disaggregation of allocated versus expended budget, giving special attention to donor spending data, and measuring administrative costs. These variables are important from the AgPE perspective and enrich the policy analysis. Also, both enhanced PSE and AgPE analysis require more disaggregated public expenditure data, based on a common and clear definition and classification system.

Quantitative Comparison across DAIs

This paper is also concerned with how the DAIs compare to each other quantitatively. That is, it addresses the question of whether—when multiple DAIs report AgPE-related data for the same variable, year, and country—the values of the variables line up relatively well across DAIs, or whether instead there are important discrepancies in the values. Where the latter is the case, the quantitative comparative analysis quantifies the level of discrepancy, and also examines whether there are any patterns in the discrepancies, such as whether one DAI tends to report systematically higher or systematically lower values than another across different years and/or countries.

Generally, while GEA and GFS often have identical values (although in some cases nontrivial differences exist), it is otherwise fairly common that two DAIs can differ from each other by magnitudes of 50 percent (meaning one DAI is 50 percent higher than another) or more. This is even the case when we include several different measures of a given DAI to see if we can identify which measures improve consistency across DAIs. For example, in comparisons of agricultural public expenditure amounts, we use three different aggregations of MAFAP data that vary in what is counted in the definition of agriculture. Similarly, where possible we include a DAI's actual expenditures as well as budgeted amounts, because, for example, the DAI's actual expenditure value (or alternatively, the budget value) may lead to a closer match with another DAI.

For example, the GEA value of agricultural expenditure in Uganda in 2007 is 157 billion USh, while that of MAFAP (including only basic agricultural spending rather than a wider definition) is 238 billion USh (Figure 4.1). In many cases, values of one DAI can reach several multiples of another. For example, the percent of AgPE in total public expenditures in Nigeria in 2006 is 1.8 percent according to SPEED, and 5.3 percent according to GFS (Figure 4.5). Or in the case of agricultural spending intensity that is, as a ratio to agricultural GDP) in Swaziland in 2009, ReSAKSS's value is 14 percent, while SPEED's is 52 percent (Figure 4.9).

There is not much pattern in the sense that one DAI is always larger than another across years or countries. In the case of Guatemala, for example, the AgPELAC value of agricultural public expenditure in 2007 is higher than BOOST's (no matter whether the BOOST measure was captured as actual expenditures, allocated budgets, etc.), while in 2009, the AgPELAC value is lower than any BOOST measure (Figure 4.3). The comparisons in agricultural public spending on research and development are an exception to the lack of pattern. There we see that the GEA and MAFAP values on R&D spending are consistently lower than those of ASTI, across years and across countries.

Although the findings from the quantitative comparisons are likely due to different methodologies employed by different DAIs, it is notable that there are often truly large discrepancies across DAIs for what would seem to a regular data user to be on the surface the same variable for the same country and year, and therefore would be expected by the user to be the same or at least highly similar. This suggests that there are significant benefits for methodological discussions among DAI leaders, either to develop a shared approach in AgPE data measurement or at least to explore ways to provide information to data users that would help them understand the reasons for differences and thus have a better understanding of what the trends or statistics mean when using the diverse DAIs.

Emerging Challenges

The review of the initiatives has highlighted a wide range of challenges, especially for each DAI to achieve its stated institutional or program objectives. From either an analytical or a policy maker perspective, the high level of aggregation of AgPE data poses a serious constraint to assessing AgPE allocation issues, given that different spending within agriculture has varying effects on agricultural performance. The following section highlights some of the more important common challenges, whose severity varies according to country. These challenges adversely affect the ability of analysts to carry out sound AgPE studies, calculate robust PSEs, and conduct cross-country comparisons as inputs for better budgetary allocation priority setting and decisions:

- Resource and capacity constraints (at various levels, including ministry of finance, ministry of agriculture, and national statistical offices)
- Unclear definition of the "agricultural sector," coupled with multiple ministries' being involved in the sector, which also complicates the scope of applying the COFOG definition at various levels
- Lack of incentives and commitment of countries (including the crucial ministries of finance, agriculture, and so on) to compile and disseminate relevant data at the desired level of disaggregation, coverage, and frequency
- Uneven quality of underlying source data across reporting countries, including accounting systems, subnational data, and off-budget expenditures (common for some development partner funds but also for certain major domestic spending projects)
- Fragmented sources of expenditure data, which sometimes are not reconciled (especially between allocations and actual expenditures)
- Failure of reporting countries and donors to follow a common classification system of donor expenditure flows (especially relevant for the two international development assistance databases)
- Deficient coding systems and capacities to facilitate classification and aggregation of AgPE data in a systematic manner—which is part of a bigger challenge: deficient ministry of finance information systems and reporting, which, if effectively addressed, can also support more effective budgetary planning and execution processes (for example, along the lines illustrated in Figure 2.1).
- Important sustainability challenges—such as the fact that several of the 13 DAIs (ASTI, BOOST, MAFAP, ReSAKSS, and SNAPE) are funded by external projects and do not have clear strategies for continuation, except for helping to build initial capacities at the country level (for ReSAKSS, at the subregional level of regional economic commissions and the continent level in relation to NEPAD)

Demand Aspects and Some Implications

An important aspect of addressing the underlying incentive issues highlighted above, which constrain availability of more disaggregated data and full use of existing AgPE data, is connected to better understanding the demand aspects for enhanced data and analytical programs to support enhanced AgPE analysis. There seems to be greater attention on the supply side and insufficient attention to addressing the demand aspects. The following points unpack and highlight some of these demand aspects that arose during the course of conducting this review, reflecting perspectives and inputs from various actors (representing ministries of finance, AgPE researchers, and development practitioners from various organizations).

Response to Demand from Key Users: It is vital that the DAIs respond to and promote demand from policy makers (especially from ministries of finance and parliamentarians) and development partner managers who influence aid allocations. The teams that manage all of the initiatives appeared to be generally aware of the importance of devising appropriate and effective strategies, mechanisms, and interventions to better link the suppliers with the users, especially those at the country, regional, and international levels who influence resource allocation decisions. The most common approach used by most of the initiatives was to develop and disseminate information through relevant websites, and to ensure they are user friendly. Not all websites were found to be fully satisfactory, even simply on this indicator. For example, some of the initiatives should ensure that data can be extracted in a proper spreadsheet by introducing a simple feature to permit selection of all (or the selected) countries or years at a single click, allowing users to avoid a time-consuming separate selection of each country. But going beyond better web accessibility, there is also scope for diversifying the approaches to strengthening ownership and reaching the key actors, which could contribute to a deeper understanding of why better and more disaggregated expenditure data are needed for the country's decision makers to effect expenditure planning and implementation.

Expenditure Information/Reporting Systems: Among AgPE practitioners there is a growing recognition that some of the above-mentioned constraints are related to weak information and reporting systems on expenditures, typically driven and managed by ministries of finance. There appears to be a lack of adequate understanding by key ministry of finance actors as to why disaggregated AgPE data (and data from others sectors, for that matter) are important for their own management and accountability requirements. Accordingly, this entrenched orientation and its attendant patterns contribute to the fact that ministries of finance do not demand such disaggregated data and supporting analysis from the sectoral ministries and the government reporting system. At the same time, most directors of budget within ministries of finance would recognize that these data can be used to better underpin budget proposals from the ministry of agriculture. Accordingly, there is a need to make ministries of finance more aware of the value-added of more greatly disaggregated data—and of using the agricultural sector as an entry point, because they would have to be convinced of the need for covering other sectors too.

Internalization of the Demand Aspects: Some of the key aspects highlighted in Section 3, 'Demand (User) Perspectives on Database and Analytical Challenges and Strategies' regarding the rationale for better AgPE data and related analysis to help underpin budget monitoring and formulation (on both a medium-term and an annual basis) are not sufficiently internalized by key actors in government (especially from the ministry of finance, which would be both a supplier and a user of the disaggregated data). In many cases, ministries of finance tend to focus on tracking expenditure rates (actuals versus allocations) rather than focusing on outcomes and value for money, which would require disaggregated data. Also, external donors generally drive public expenditure reviews, and the ministries of finance (and ministries of agriculture) are in many cases not carrying them out as part of their internal budget process. The main issue here is how to institutionalize an internal demand for AgPE analysis in which local authorities and local users are the demanders, and local actors with support from external sources provide the supply. Also, oversight committees, such as those of parliaments, are not requiring more disaggregated analysis to address value-for-money issues. In most cases, this is due to low technical capacity of the relevant committees of parliaments, as well as low de facto power of parliaments to hold executives accountable.

Focal persons managing the DAIs reviewed in this exercise appear to be aware of these aspects and patterns. Many of the AgPE workshops that have been convened to disseminate the findings from the AgPE analytical studies have invited key actors from ministries of finance and other relevant ministries to review the findings and policy implications (for example, workshops convened by ReSAKSS, MAFAP, and SNAPE). However, it appears that attending workshops is not sufficient, and the persistent data problems highlighted in this review suggest the need for more systematic follow-up and in-depth discussions to trigger specific and appropriate actions. Various practitioners interviewed during this review emphasized the importance of finding effective approaches and processes to pose the "right questions" and engaging key actors in these discussions and follow-up.

Nature and Extent of Intra- and Interagency Collaboration

This review identified the general nature and type of intra- and interagency collaboration being carried out in the 13 DAIs. Overall, the focal teams from the various initiatives demonstrated a variety of positive actions to promote enhanced collaboration within their own organization and with other relevant agencies (see item [3] above, which highlights positive complementarities).

Notwithstanding these positive actions, there is clearly scope for enhancing the effectiveness and results of more strategic and systematic collaboration. The nature and extent of collaboration and enhanced quality standards vary. Most of the collaboration occurs as a result of individual initiative rather than being mandated or institutionalized. The notable exception is OECD, which has various rigorous internal processes and mechanisms across its different departments for reviewing and validating PSE methodological issues, estimates, and policy implications. While IDB has been working on PSE-LAC for some years, it was only recently that it reached out to OECD for technical exchange and advice, especially now that OECD will be including four LAC countries in its PSEs and dialogue.

There is no technical working group among the various agencies to review common concerns regarding methodological issues and developments, formulate work plans that could include interagency collaboration, and make proposals to address some of the underlying issues highlighted in this review. Even within the same institution, the exchange of ideas and practices tends to be the result of individual initiatives, rather than being facilitated by intra-agency working groups (for example, in the World Bank, there was some informal discussion of establishing a public expenditure working group to explore good practices and strategic issues of broader interest to both macroeconomists and sector economists).

A workshop convened in 2013 by OECD and IFPRI/PIM highlighted some of these issues and the need for more systematic interagency collaboration in addressing database issues for enhanced policy measurement and tracking. This review was triggered by some of the next steps highlighted at that workshop.

Strategic Options

Based on the results from the review and the above crosscutting conclusions, this review has identified six strategic options that offer the potential for addressing some of the more critical constraints. These strategic options are intended to better inform and facilitate discussion and consensus among target audiences on the most appropriate options to pursue. This target audience includes the practitioners who participated in the agricultural policy measurement workshop held in June 2013 that triggered this review, and other practitioners who have provided substantive feedback for this review and expressed keen interest in becoming engaged in a broader and deeper discussion with other practitioners and decision makers.

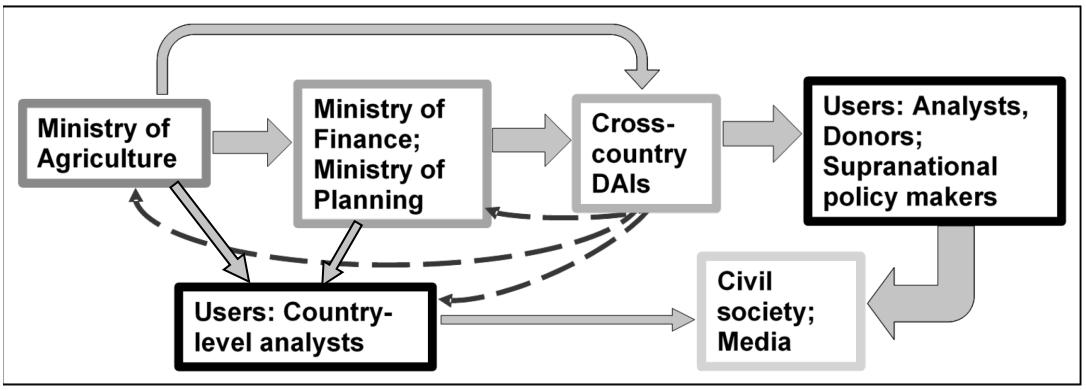
The proposed six strategy options make up a suggested framework (covering both supply and demand aspects) that could contribute to enhancing the role and effectiveness of DAIs for achieving enhanced budgetary outcomes and impacts of existing and increased AgPEs (in line with the underlying logic of Figure 2.1). The substantive details and rationale that underpin these strategic elements are highlighted in Section 3 and the above section on conclusions. It should be noted that the strategic options cover specific recommendations for individual DAIs discussed in this review, while some of the recommendations have broader implications for the DAI community as a whole.

Figure 5.1 illustrates various backward and forward linkages among key institutional actors involving both supply and demand aspects. Some of the strategic options that the DAIs should address (discussed in the following subsections) include:

- Strengthening country-level expenditure reporting systems, starting with an investigation of what ongoing support is already being provided, how it can be improved, whether agriculture-specific reporting systems or general reporting systems should be strengthened
- Providing analytical capacity support for frontline users of country-level data

- Building demand by country-level policy analysts and decision makers for cross-country databases

Figure 5.1 Strengthening backward and forward linkages between suppliers and users of data



Source: Authors' creation.
Note: DAI = data and analytical initiatives.

Strategic Options for Enhanced AgPE Databases

While the focal teams of all DAIs are carrying out sound improvements to better meet their institutional objectives, it could be useful for each team to examine the following considerations, customized to each data initiative:

- Review the COFOG guidelines with respect to the agriculture sector, including a review and updated definition of the "agricultural sector," considering both a narrow and a wide definition, which can serve as a clear international standard for developing countries. It would be important to draw on relevant technical discussions, for example, that have taken place as part of the implementation of the CAADP agenda for Africa. This review may result in refinements of the existing classification of functions for the agricultural sector, rather than in substantial changes.
- Explore the benefits of an enhanced integrated global AgPE database, which will seek to more systematically generate AgPE data disaggregated beyond level 3 of COFOG, in a phased manner, with global coverage and annual updating. The efforts of various DAIs would seem to offer a good foundation to build upon, with different DAIs providing different contributions toward such an integrated database. There are important institutional and financial challenges to doing so, which would need to be explored in greater depth. However, these do not eliminate the technical and policy merits of such a database.
- Encourage the relevant databases to update and provide more detail on their methodological user manuals where needed, and to make them accessible to the public to encourage greater and more informed use of the corresponding DAI.
- To curb the consequences of data inconsistency brought about by the difference in methodology in particular (see Section 4), put in place a more transparent and flexible system to better track public resource allocations, enable customized and consistent aggregation, promote open data access, and provide information in a timely manner. This system may include developing a well-defined expenditure coding system by adopting a chart of accounts that organizes spending data according to numeric codes, alphabetic codes, or a combination of both, together with a flexible aggregation model or program.

Such an enhanced coding system could allow more flexibility to aggregate data, in addition to easing the explicit mapping relationship between the country's government finance statistics system and COFOG or any other aggregation classification system. Such a system would make sure that the aggregate data are no longer a black box that is unlikely to be consistent across countries and hence is difficult to compare. These improvements would likely be more relevant for more detailed data at the country level, as opposed to a cross-country dataset (much of the latter are so aggregated that the lack of codes is not the problem).

- Enhance the public accessibility of the AgPE databases through ensuring user-friendly and efficient websites and tools (with built-in tutorials).

Enhanced Analytical Programs, Driven by Ministries of Finance, and Greater Focus on Expenditure Efficiencies and Outcomes

Most of the AgPE analytical studies are funded by an external project. While the analytical initiatives have sought to involve ministries of finance, it would appear that different approaches are needed to secure their stronger ownership, toward the aim of getting them to institutionalize AgPEs (and other sectoral reviews) as a requirement for the budgetary process. The growing trend toward program-based budgeting may provide an opportunity to strengthen the focus toward results and AgPEs as key inputs, which would demand more disaggregation. Therefore, each of the analytical initiatives needs to develop an explicit engagement strategy from the outset, supported by well-designed capacity-building and exit strategies to enhance the chances that the relevant countries (led by ministries of finance and agriculture) will continue to carry out periodic and well-designed AgPE studies, preferably as an input to their medium-term and annual expenditure proposals. While some of the reviewed analytical initiatives have included a training program (for example, MAFAP and SNAPE), it would appear that greater efforts and resources are needed to reach a critical mass of government ownership and capacity for the countries to sustain appropriately designed studies. There is also a need to devise "lite" methodologies that are not costly and that are more realistic considering existing and likely in-country analytical capacities. SNAPE is currently spearheading this effort. This will contribute to an exit and sustainability strategy, including a more active program of training of trainers, using existing regional and country-level institutions. For example, Africa has eight regional economic communities that could potentially play a more active role; there are regional research and training institutes with existing capacities in different regions, which can be identified and engaged in these tools.

As a specific example, the first phase of SNAPE came to a close in 2015, and the implementation experience demonstrated a high level of country demand for these AgPE studies, together with the training support provided (which was insufficient, due to limited resources). The second phase has a much stronger focus on developing a network of African and African-institution-affiliated agricultural public expenditure review experts, as well as on deploying "AgPE review lites." It would be useful for this phase to reflect the relevant lessons learned from the current phase, including the training component, the country-level studies (basic and specialized AgPE studies), data constraints, lessons, and strategies.[18]

MAFAP's first phase was completed in 2013, and a second and scaled-up phase (2014–2019) followed. Similar to SNAPE, MAFAP included an integrated approach, providing capacity development coupled with AgPE and PSE analytical studies. Although there was a relatively high cost to carry out each country-level program of activities, the second phase is seeking to lower these costs while it embarks on additional countries in Africa and Asia. MAFAP, ReSAKSS, and SNAPE would benefit from mutual peer review of their approaches as they proceed in their respective next phases of analytical studies around AgPE, especially because they all also have a continental focus.

[18] For example, in January 2013 SNAPE and ReSAKSS practitioners and team members collaborated in preparing a discussion note that highlighted some of the main AgPE data difficulties and some observations on strategic responses to these data issues.

ReSAKSS is making significant contributions to tracking the CAADP agenda at three levels, as well as to carrying out analytical studies involving AgPEs in numerous African countries. The ATOR for 2012 (Benin and Yu 2013) included some important empirical contributions to the tracking of the expenditure target of 10 percent of total budgetary allocations. It would be useful for the ReSAKSS team to update its work plan to ensure that it reflects some of the more relevant recommendations arising from this review, as well as incorporating an action plan to support recent initiatives, including support to the implementation of the CAADP results frameworks (at continent, region, and country levels). ReSAKSS convenes annually a continental workshop to review the ReSAKSS achievements and priority work program. The stakeholder feedback provides valuable inputs for enabling ReSAKSS to prioritize its portfolio of activities, such as strengthening the AgPE database for Africa, developing capacity at various levels, strengthening its network of regional and country-level nodes, and prioritizing analytical studies, including AgPEs.

The trade and agriculture team of OECD has formulated an agenda for enhancing its PSE and related indicators, which includes an increase in the number of developing countries that will require assistance to carry out the requisite country assessment reports and PSEs (for example, Colombia, Vietnam, and others). This agenda includes enhancing its expenditure classification system, GSSE. The PSE-LAC initiative is making important progress toward completing the scope of PSEs for eventually all LAC countries, with data updated to the latest year possible, based on the OECD methodology. IDB is planning to conduct region-specific workshops. Regional and international entities such as the Caribbean Agricultural Research and Development Institute and the International Center for Tropical Agriculture are very interested in supporting the dissemination of the PSE studies and database. IDB has been conducting national workshops and making PSE presentations to the governments (ministries of finance and agriculture) and public agencies at the national level each year.

Capacity Development Strategies

Many of the key issues and challenges highlighted in this paper reflect the need to strengthen institutional and technical capacities at various levels to construct and manage enhanced AgPE databases; carry out analytical studies using sound tools of AgPE analyses; and use effective approaches to dissemination of the results, coupled with implementation support, on a demand basis. Although most of the DAIs include some capacity development resources, there is a need to also (1) assess the adequacy of the resources provided (in most cases, it has not been sufficient); (2) for each initiative, revisit the identification of priority and results-focused capacity development requirements and prepare sound proposals to strengthen capacities; and (3) include strategies for strengthening the demand for improved and more disaggregated AgPE data by key country-level actors, including the promotion of requiring periodic AgPE reviews as inputs for the budgetary process (see above). This would complement the proposed supply-side enhancements cited in the subsection above.

There is a need to formulate a strategy and phased plan for improving the information and reporting systems and processes of ministries of finance, coupled with stronger country demand for AgPE information as part of the budgetary process, such that these drivers would lead to a stronger internal demand for disaggregated AgPE data. These latter aspects could include adding information-coding capacity to ministry of finance budget systems and developing training modules for budget data management staff to handle an improved, well-defined expenditure coding system with a flexible aggregation model or program that will allow public expenditure data analysis to be routinely conducted in developing countries.

A complementary strategy could be oriented to researchers and practitioners who may use data more intensively if proper incentives are present. It would be of value to have competitive funds for AgPE analysis using the available data, emphasizing potential interaction among databases and approaches. This may be an important source of future improvements in data collection, organization, and collaboration.

Intra- and Interagency Collaboration

The above conclusions section highlighted some of the current constraints on the ad hoc nature and extent of intra- and interagency collaboration to address the various challenges identified in this review. Also, all of the above strategic options will require some form of closer and more effective intra- and interagency coordination, to seek consensus on many of the proposals (and other proposals not covered here), to provide technical guidance as a good practice group of AgPE practitioners, and to help mobilize additional resources to support the priority interventions that constitute a global public good in AgPE.

The various agencies (6) hosting the covered initiatives (13 DAIs), in addition to several other relevant entities, may want to consider participating in a proposed community of practice working groups for AgPE, drawing on relevant staff members within the organization (a combination of senior and junior staff). The participating organizations should each seek to select a focal person for this working group, who in turn should formulate an agreed-upon role and framework plan. Possible first-step outputs from the coordination of the group could include (1) better and clearer data documentation across all DAIs; (2) more easily accessible data, perhaps through a joint website linking to datasets and studies in respective organizations; and (3) an easily digestible comparison of commonalities and differences in the methodologies of the DAIs, which this review provides, but which can be simplified into a shorter note posted on the joint website. In addition, given the active engagement of various DAIs in Africa and in Latin America, it could also be useful to consider such regional subgroups. The results of these (and maybe other) subgroups—for example, organized according to the typology presented in this review—could feed into the agenda and periodic exchanges of the above global working group.

The coordination of the cross-DAI working group could be conducted on a rotating basis. Most of the exchanges would take place virtually but with fixed periodicity (say, once every two years), and there could be a workshop to review substantive matters and proposals. One item on the agenda would be to review specific proposals to enhance the AgPE data global public good and to reach consensus on some priority initiatives to be supported by this interagency working group. This working group could also foster more systematic and institutionalized collaboration among related initiatives, given that thus far the collaboration has tended to be mostly ad hoc.

Other major themes have benefited from an interagency community of practice to foster enhanced collaboration, share good practices, and engage in possible joint efforts. Much can be learned from such initiatives on how to handle logistical, institutional, and financial dimensions of sustaining such an interagency and cross-DAI working group.

Strengthening Demand Aspects

Several components could strengthen the demand aspects, as discussed in the section on conclusions. Supporting capacity development activities of key decision makers and technical analysts at various levels will increase the demand for improved AgPE databases and disaggregated expenditures. This can also increase demand for improved and periodic AgPE analytical studies that can enhance agricultural policies, policy change measurement, and expenditure priorities, based on comparative returns. While such capacity development can be provided in Africa, given the various ongoing programs with such a continental focus, it is less clear how it will be achieved in other regions. Similarly, AgPE analytical programs need to be promoted in other regions through capacity development funds and technical assistance activities. Supporting the strengthening of expenditure reporting systems, as cited above, will contribute to stronger demand by key actors for more disaggregated expenditure data and analysis. These aspects need to be concretized and phased in, in different regions, building on ongoing initiatives.

Promoting the effective dissemination of AgPE databases (of disaggregated data, using a consistent classification system) and of AgPE analytical studies will ensure that the results are effectively utilized. It would be important to link this strategy to supporting the budgetary planning and implementation cycle, while requiring ministries of agriculture to underpin their budgetary submission with an expenditure assessment of the previous year(s), to be done periodically. The AgPE “mini-

reviews" should give greater attention to assessing expenditure efficiencies and value for money, rather than the traditional focus on expenditure outturns.

For all of the DAIs, there is scope for expanding the ownership and use of the data, results, and tools arising from these initiatives at the country implementation level on the part of key decision makers, including ministries of finance and parliamentary committees, such as agriculture and budget. This expanded demand and use, effectively cultivated, can enhance the value-added of DAIs for better expenditure planning and implementation. It would be useful if each of the DAIs devised a dissemination and utilization strategy, with an aim of integrating it as part of the budgetary cycle.

Sustainability Strategies

The above section highlighted that, aside from the initiatives that are part of the work plans of international organizations, one of the major concerns is that many of the initiatives are dependent on project funding, a situation that casts doubt on countries' being able to sustain any improvements that are introduced. It is of paramount importance for each data initiative to develop a concrete sustainability strategy to ensure continuity in the collection and release of AgPE data to meet its short-term and long-term objectives. At the same time, there is a need to recognize that the DAIs, which are cross-country in nature, are largely international public goods that go beyond generating knowledge relevant for specific countries. Nonetheless, efforts at the country level can contribute to sustainability of the DAIs, such as initiatives to strengthen country-level data systems as part of supporting the budgetary cycle as well as supporting explicit capacity development strategies and interventions with established organizations at the country level (the latter can also be undertaken at the regional and continent levels).

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