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SDG INDICATOR 2.a.1 –THE AGRICULTURE ORIENTATION INDEX FOR GOVERNMENT EXPENDITURES

I. Introduction

The SDG indicator 2.a.1 - the Agriculture Orientation Index (AOI) for government expenditures - contributes to the monitoring of the Sustainable Development Goal 2, to “End hunger, achieve food security and improved nutrition and promote sustainable agriculture.” Indicator 2.a.1 helps monitor Target 2.a which aims to “increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.”

The AOI is measured by the ratio of the Agriculture Share of Government Expenditures, divided by the Agriculture Share of GDP. The term “Agriculture” includes forestry, fisheries and aquaculture. The measure is a currency-free index, calculated as the ratio of two shares.

II. Methodology

a. Rationale for the SDG Indicator 2.a.1

Government expenditure on Agriculture includes spending on sector policies and programs; soil improvement and soil degradation control; irrigation and reservoirs for agricultural use; animal health management, livestock research and training in animal husbandry; marine/freshwater biological research; afforestation and other forestry projects; etc.

Spending in these agricultural activities helps to increase sector efficiency, productivity and income growth by increasing physical or human capital and /or reducing inter-temporal budget constraints. However, the private sector typically under-invests in these activities due to the presence of market failure (e.g. the public good nature of research and development; the positive externalities from improved soil and water conditions; lack of access to competitive credit due to asymmetric information between producers and financial institutions, etc.). Similarly, the high risk faced by

agricultural producers, particular smallholders unable to hedge against risk, often requires government intervention in terms of income redistribution to support smallholders in distress following crop failures and livestock loss from pests, droughts, floods, infrastructure failure, or severe price changes.

Government spending in agriculture is essential to address these market failures and the periodic need for income redistribution. This leads to several potential indicators for the SDGs, which include: a) the level of Government Expenditures in Agriculture (GEA); b) the Agriculture share of Government Expenditures, and c) the AOI for Government Expenditures.

An indicator that measures GEA levels fails to take into account the size of an economy. If two countries, A and B, have the same level of GEA, and the same agriculture contribution to GDP, but country A's economy is 10 times that of country B, setting the same target levels for GEA fails to take economic size into account.

An indicator that measures the Agriculture share of Government Expenditures fails to take into account the relative contributions of the agricultural sector to a country's GDP. Consider two countries with the same economic size, C and D, where agriculture contributes 2 per cent to C's GDP, and 10 per cent to country D's GDP. If total Government Expenditures were equal in both countries, C would experience greater relative investment in Agriculture than D. If total Government Expenditures differed, the result could be magnified or diluted.

The AOI takes into account a country's economic size, the agriculture contribution to GDP, and the total amount of Government Expenditures. Government Expenditures are compiled according to the international Classification of the Functions of Government (COFOG) and the Government Finance Statistics (GFS) methodology, while Agriculture Value Added Share of GDP is measured using the International Standard Industrial Classification of all Economic Activities (ISIC) and the System of National Accounts (SNA) methodology.

b. Classification systems

Agriculture refers to the agriculture, forestry, fishing and hunting sector, or Division A of ISIC Rev.4 (equal to Division A+B of ISIC Rev.3.2). Government Expenditures are based on the Classification of the Functions of Government (COFOG) developed by the OECD and published by the United Nations Statistics Division (UNSD)¹.

Government Expenditures are all outlays associated with supporting a particular sector, including compensation of employees, and subsidies and grants paid as transfers to individuals or corporations in that sector. For a full description, see the Government Finance Statistics Manual (GFSM) 2014, developed by the International Monetary Fund (IMF)².

The Agriculture Value Added Share of GDP is measured by the ratio of Agriculture Value Added over GDP, based on official data reported by countries to the United Nations Statistics Division.

c. Computation method

$$AOI = \frac{\text{Agriculture Share of Government Expenditure}}{\text{Agriculture Value Added Share of GDP}}$$

¹ <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=4&Top=1&Lg=1>

² <http://www.imf.org/external/pubs/ft/gfs/manual/>

Where:

$$\frac{\text{Agriculture Share of}}{\text{Government Expenditure}} = \frac{\text{Government Expenditures on Agriculture}}{\text{Total Government Expenditure}}$$

$$\frac{\text{Agriculture Value Added}}{\text{Share of GDP}} = \frac{\text{Agriculture Value Added}}{\text{GDP}}$$

Agriculture refers to the Division A of ISIC Rev.4 (Agriculture, forestry, fishing and hunting), equal to Division A+B of ISIC Rev.3.2.

d. Interpretation

An Agriculture Orientation Index (AOI) greater than 1 reflects a higher orientation towards the agriculture sector, which receives a higher share of government spending relative to its contribution to economic value-added. An AOI less than 1 reflects a lower orientation to agriculture, while an AOI equal to 1 reflects neutrality in a government's orientation to the agriculture sector.

e. Treatment of missing values

At country level, there is currently no treatment of missing values.

At regional and global levels, there is currently no treatment of missing values, so regional and global aggregates are based solely on those countries for which data are available. This may result in users interpreting these aggregates as pertaining to all countries in the region, which is the equivalent of treating countries with missing data as if they were the same as those for which data are available.

f. Regional aggregates

Global and regional estimates are compiled by first separately summing across countries the four individual components of the index: government expenditures on agriculture, total government expenditures, agriculture value-added, and GDP. These are added only for those countries in a region (or globally) for which all components are available, and the index then calculated for this larger region.

g. Sources of discrepancies

Since FAO does not alter government expenditure data reported by countries, and uses the national accounts estimates published by the UN Statistics Division (where some national data may be imputed), there should be no difference between data reported by FAO and national figures.

h. Quality assurance

Since the numerator of this data is based on administrative sources, there is no confidence interval or standard error associated with government expenditure data. For the denominator, national accounts data typically do not provide any standard error or confidence interval information.

i. Limitations

The key limitation with this indicator is that it takes into account only central government expenditures. To the extent that some countries may have heavier intervention in Agriculture by sub-national governments, this will not be taken into account.

In addition, AOI equal to 1 may not be the right target for a country, due to different degrees of decentralization, and different degrees of market failure and income redistribution policies. Additionally, comparing an AOI within a country over time should be done along with its two components (the Agriculture share of Government Expenditures and the Agriculture Value Added Share of GDP), and in the context of the severity of market failure and agriculture sector income inequalities.

III. Data Sources

a. Description

Data on government expenditures are collected from countries (Department of Finance or other central planning agency, National Statistics Office, and/or Ministry of Agriculture), using an annual questionnaire administered by FAO. For some countries that do not report such data to FAO, data may be obtained from the IMF Government Finance Statistics (GFS) database (the IMF also collects data on Government Expenditure by COFOG, but with less disaggregation of ISIC Rev.4 Division A) or from official national governmental websites.

Data on agriculture value-added and GDP are based on the system of national accounts, which is an analytical framework that compiles national data from a mix of survey, census and administrative (e.g. tax) sources. This data is obtained from the UN Statistics Division, which provides national accounts estimates for 220 countries and territories.

b. Collection process

FAO collects data on government expenditures (total and on agriculture) using a questionnaire annually dispatched to countries, developed in collaboration with the IMF. Data from countries may be supplemented, for missing countries, with data collected by the IMF, or published on official national governmental websites. The official counterpart(s) at country level are, depending on the country, from the national statistics office, the ministry of finance (or other central planning agency), or the ministry of agriculture.

Validation and consultation were conducted through various FAO commissions and committees, including its two agricultural statistics commissions in Africa and the Asia and Pacific, its Committee on Agriculture and Livestock Statistics in Latin America and the Caribbean, and its Committee on Agriculture.

IV. Conclusion

Data are available for about 130 countries on a regular basis. However, differences in timeliness of data collection, compilation and reporting mean that this coverage is rarely available for year T-1 or T-2 where T is the current year. The time coverage is 1991 to 2015.

The 2017 data collection of Government Expenditures in Agriculture is currently underway, with data release planned for October 2017. Due to time required to collect, compile and publish national data, very few countries will be able to provide 2016 reference year data for the FAO Spring 2017 data collection cycle.