



Livestock Data Innovation in Africa **BRIEF**

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A Critical Indicator: Livestock's Contribution to Gross Domestic Product

The size of livestock's contribution to agricultural value added as well as to the gross domestic product (GDP), is a commonly quoted measure of livestock's role in the national economy. In all countries, GDP is estimated at least quarterly and annually by national statistical authorities.

There are three ways of calculating GDP, which include the production approach, the expenditure approach and the income approach. All should all lead to the same result.

The production approach quantifies the difference between the value of outputs for all sectors less the value of goods and services used in producing those outputs during one year, i.e. it quantifies the so-called "value added" for all sectors in the economy. The income approach measures the incomes of all individuals living in the economy over the reference year; the expenditure approach quantifies all expenditures by all individuals living in the country in the accounting period.

Most country governments estimate GDP using the production approach. This method allows for measuring the overall performance of the economy as well as that of each productive sector (e.g. livestock) and of specific enterprises within each sector (e.g. beef and poultry). It also allows for tracking changes in the structure of the economy and within sectors. Values added at constant prices are useful to estimate growth rates / performances of the economy as a whole or of sector / sub-sectors over time; values added at current

prices are useful for analyses of structural changes in the economy and within sectors.

Livestock value added

Value added is defined as the value of the output of a sector minus the value of all intermediate inputs. It is calculated without making deductions for depreciation of fixed assets and depletion / degradation of natural resources.

Outputs from the livestock sector include the increase in the number of animals and the production of livestock products.

The increase in number of animals is represented by both fixed capital formation – i.e. animals that are inputs into the production process, such as breeding animals and adult males for breeding or animal traction – and by so-called 'work-in progress' animals, namely those reared for slaughter and young animals reared to become fixed assets.

Livestock products include meat, milk, eggs, hides and skins and other by-products, such as manure, hides and skins, fat, offal, honey, transport services, etc.

Intermediate inputs comprise animal feed / fodder and water; animal health services, vaccines, medicines and dips; fuel and electricity; repairs and maintenance, such as of fences and equipment, etc.

Outputs are valued at so-called basic prices, i.e. farm-gate prices that reflect the value of goods for the producers. Intermediate inputs are valued at purchaser's prices, i.e. the prices that are effectively paid by the producers.

Challenges to estimating livestock value added

Arriving at appropriate measure of the value added of livestock is challenging, particularly in developing countries where farm animals serve

multiple purposes: for example, they are sources of cash, food, manure, draught and hauling services, social capital.

The Value of the Livestock Sector in Ethiopia: updated estimates

Estimates by the Ministry of Finance and Economic Development (MOFED) in Ethiopia indicated the contribution of the livestock sector to the agricultural sector at 25 percent. An adjustment of the production coefficients used to calculate production yielded to an increase of about 46 percent over previously estimated values of ruminant production. The additional inclusion of the value of ploughing services by animals, used by almost four-fifths of Ethiopian farmers to till their fields, led to revised estimates of about 113 percent over estimates of the 2008-09 gross value of ruminant livestock's contribution to agriculture.

Source: Behnke R. (2010) The Contribution of Livestock to the Economics of IGAD Member States.

In general, to estimate livestock value added, data are first needed on the livestock population (by species, age and use, i.e. herd composition) as well as on trends, which are influenced by fertility and mortality, associated to different causes. In most countries, data from the agricultural census are used as a benchmark to calculate the livestock population, with fertility and mortality coefficients (to project population growth) and herd composition derived either from surveys or from inter-censuses comparisons.

To estimate production, data is required on the number of animals slaughtered with specific livestock technical conversion factors needed at least quarterly. For meat, a carcass weight is assigned for each animal slaughtered with additional technical conversion factors then used to estimate the production of meat, offal and fat and, in some cases, also hides and skins. For milk, the yield per cow is required, while for poultry the number of eggs produced over the accounting period is estimated. To each animal, some level of manure production for the reference period should be also assigned.

Ad hoc data collection and direct measurement are the most appropriate tools to estimate technical conversion factors, but in many circumstances, these coefficients are derived from the literature, from expert opinions or from neighboring countries. Production of non-food livestock products, such as that of manure, is often not estimated at all because of lack of data.

To calculate intermediate consumption, information is needed on the quantity and price of inputs used in the production process. Specialized surveys or direct measurement are used to estimate quantity and cost of inputs to raise different livestock species.

Major challenges in appropriately estimating livestock value added is the lack of census or survey data which can be used to estimate livestock population (including herd composition), production and productivity (technical coefficients). Frequently, the routine data collected monthly or quarterly by extension officers are of poor quality and cannot be used to produce official statistics. Furthermore, farm-gate prices are not readily available and market prices for outputs are often used to estimate production, with some subjective deduction for trade margins.

In general, specialized surveys are rarely undertaken with regularity for the specific purpose of collecting good quality livestock data, sufficient to generate nationally representative statistics and to properly calculate livestock value added.

Action needed

Governments need to ensure consistent estimations techniques across sectors, adhering to the internally recognized procedure described in the 2008 UN System of National Accounts. Within this framework, more accurate estimates of livestock value added would be facilitated by: (i) targeted changes in surveys which are regularly undertaken by country governments; (ii) selected improvement in the collection of routine livestock data - a major source of information to track quarterly changes in population, production and productivity; (iii) the integration between different sources of data and, if need be, (iv) the use of specialized livestock surveys.

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