



The Contribution of Livestock to the Ugandan Economy

This briefing paper assesses the contribution of livestock to Uganda's national economy. Conventional GDP accounting may ignore some of the benefits that people derive from livestock in subsistence-oriented economies, when households directly provision themselves, when economic exchanges are not calculated in monetary terms or when these exchanges go unrecorded. The present study assigns monetary values to the non-marketed goods and services provided by livestock, and estimates the contribution of livestock to the wider national economy – as exports, as inputs into manufacturing industries, and as a component of household consumption.

Aside from work done since the 1990s on dairying, little recent field research has been conducted on the performance of Ugandan livestock production systems, probably as a result of decades of insecurity and civil war. The analysis of the national economic importance of livestock summarized in this briefing paper is, therefore, heavily dependent on data produced by government monitoring and statistical services. The results of this reassessment nonetheless conflict with official figures, estimating an increase of 87% above official estimates of the contribution of livestock to agricultural GDP in 2009, the year selected to make this comparison.

According to previous official estimates, livestock contributed 1.7% to total national GDP in 2009; our revised estimates would now place this contribution at about 3.2% of the national total. To put the revised livestock contribution into perspective, it is larger than the GDP derived from either cash crops or fishing, marginally smaller than the contribution from forestry, but still only about a quarter of the value of food crop production. While livestock are vitally important to household welfare and in certain regions of the country, Uganda is not a pastoral nation on the scale of IGAD member states such as Sudan, Ethiopia or Kenya.

The informal financial services provided by livestock – as a source of credit and insurance protection, and as a means of spreading risk – are unusually valuable in Uganda because formal sector financial services are unavailable or expensive

in rural areas. At nearly half of total livestock output, the imputed value of the financial services provided by livestock in Uganda is a larger component of overall livestock output than in any of the other countries reviewed in this series of briefing papers. According to international conventions, the value of this self-servicing is not separately itemized in national accounts and therefore cannot be identified as part of the economic benefits that livestock provide, which compromises the usefulness of these accounts for understanding the actual contribution of livestock to the economy. In Uganda in particular, conventional definitions of value added exclude from national accounts a large proportion of the economic benefits that motivate many rural people to own livestock.

Because they provide a source of affordable credit and insurance, rural Ugandans may choose to hold animals that are durable and likely to retain their value, but are relatively unproductive in other, more conventional ways. By overlooking the financial motives for keeping livestock, conventional GDP accounting may promote a misinterpretation of the factors that motivate rural people to retain certain kinds of animals and obscure the circumstances that will induce them to engage in new kinds of livestock production.

The estimation of agricultural GDP in Uganda

The study summarized in this briefing paper employed a production approach to estimating the livestock contribution to GDP. This approach involved four stages. First, national livestock populations were estimated. Second, production coefficients were applied to the livestock population estimates to generate estimates of the total output of goods such as meat, milk, butter, dung for fuel etc. Third, based on market surveys, a monetary value expressed in Uganda shillings – the gross value of output – was ascribed to the total output of each kind of livestock product. Finally, input costs (intermediate costs) were deducted from the gross value of output to derive value added, the measure of GDP.

Using this approach, no distinction needs to be made between production destined for commercial sale, for immediate consumption by producers, or for export. This

is an advantage in a semi-commercialized economy, such as Uganda's livestock sector, in which livestock owners consume a significant portion of what their herds produce. Home production for home consumption (or for informal local exchange and consumption) is frequently unrecorded in official marketing statistics. By basing estimates on total product output, production-based GDP estimates do not rely on incomplete marketing data and should, in principle, include subsistence production.

Official national accounts estimates are produced by the Uganda Bureau of Statistics (UBoS). UBoS's estimation techniques do not at present correspond to IGAD's production approach. Since changes to their methodology in 2007, UBOS does not estimate the volume of output for different livestock products, does not collect farm gate prices on the sale of livestock products, and does not collect information on the intermediate costs specific to different livestock enterprises (such as cattle, sheep or goat raising). UBOS methodology was, however, closer to that of IGAD prior to 2007, and is likely in the next couple of years to evolve to again resemble the production approach employed in this study.

Unlike Ethiopia and Kenya, and to a lesser extent Sudan, there is in Uganda no substantial, independent body of scientific or project-based research that can be used to cross-check official data on livestock production. It is therefore fortunate that government data is both up-to-date and reasonably comprehensive. Of the IGAD countries thus far reviewed in this series (Ethiopia, Kenya, Sudan and Uganda), only Uganda has recently undertaken a national livestock census that includes pastoral livestock. Of the countries reviewed here, only Uganda will in future be attempting to base its annual livestock GDP estimates on data from regular national field surveys that include pastoral areas of the country, the twice yearly Uganda National Panel Survey (UNPS) undertaken by UBOS.

The contribution of livestock to GDP

Using 2009 as a basis for comparison, this study re-estimated the contribution of livestock to agricultural GDP. Both the original official and re-estimated figures are based in large measure on official data, but the two calculations produce substantially different results. The re-estimated livestock value added in 2009 - 1,069.407 billion Uganda Shillings (UShs) (or about \$526 million US dollars at 2009 exchange rates) – is nearly double the original official estimate of 573 billion UShs (roughly \$282 million US dollars), an increase of 86.6% over official estimates for that year.

Table 1 summarizes the unpublished calculations that lie behind the official 2009 estimate of the livestock contribution to agricultural GDP.

Table 1 Official estimates of livestock production in 2009: gross value and value added, billion Uganda Shillings (UShs)

Product group	Gross value of output	Value added
Cattle	482	185
Goats and other animals	1227	343
Poultry	89	45
Total	1789	573

Table 2 summarizes our re-estimation for 2009 of the livestock contribution to agricultural GDP.

Table 2: Livestock production in 2009: gross value, input costs and value added, billion Uganda Shillings (UShs)

Product	Billion UShs
Cattle milk	350.152
Goat milk	12.978
Camel milk	3.778
Subtotal milk	366.908
Cattle offtake	627.374
Goat offtake	181.913
Sheep offtake	35.380
Camel offtake	0.484
Pig offake	30.893
Subtotal animal offtake ¹	876.044
Poultry production	89.000
Manure for fertilizer	No estimate
Animal power	No estimate
Blood	1.355
Honey production	No estimate
Change in stocks	No estimate
TOTAL LIVESTOCK OUTPUT	1,333.307
Cost of livestock inputs ²	263.900
Value added by livestock production	1,069.407

The disparity between the official and our revised assessment is due both to previously unavailable statistical data on livestock production and to the alternative computational methods used in this report to estimate the value of individual livestock products. The revised figures are based on an attempt to estimate the quantity and value of individual animal products, and these individual values are then combined to provide an overall picture of livestock output. The official figures are, in contrast, based on indexed values ascribed to bundles of livestock products derived from individual livestock species (such as cattle) or the aggregated output of several species (as in 'goats and other animals'). In terms of data, both the 2008 livestock census results and a preliminary analysis of the livestock data in the first round of the UNPS survey were available for our revised estimates. Official estimates will not utilize these data sources until the national accounts are officially rebased.

According to previous official estimates, livestock contributed 1.7% to total national GDP in 2009; our revised estimates would now place this contribution at about 3.2% of the national total.

The value of livestock services

Table 3 summarizes our estimates of the direct economic benefits obtained both from livestock products (as a portion of agricultural GDP) and from livestock services (normally not part of GDP estimates). In 2009 just under half – about 47% – of the direct benefits derived by livestock owners from their animals were attributable to the financially related livelihood services provided by livestock. According to conventional national accounting procedures, these financial services may support the livelihoods of farming or pastoral households and thereby enhance agricultural output, but the increases in economic productivity that arise from these services are not identified as part of the contribution by livestock to the economy. Including financial benefits, total direct use benefits derived from livestock were 2007.390 billion US\$ or about \$989,000,000 US dollars in 2009. This figure would have been higher if we had been able to estimate the economic value of livestock ploughing and transport services, but there was insufficient evidence to quantify the importance of these aspects of livestock production.

Table 3: Direct use benefits derived from livestock in 2009, billion US\$

Type of benefit	Value added from livestock products	Services not currently in GDP estimates
Value added livestock products	1,069.407	
Benefit from financing/credit		55.191
Benefit from self-insurance		528.876
Benefit from risk pooling/stock sharing		353.916
Transport and traction power from equines		No estimate
Ruminant animal power		No estimate
Sub-totals	1,069.407	937.983
Total direct economic benefits	2007.390	

The financial component of livestock output is high in Uganda because formal sector financial services are unavailable or expensive in rural areas. When the coverage provided by formal financial institutions increases and these services become more affordable, the financial component of livestock production diminishes in importance relative to the value of more tangible goods and services – milk, meat, manure, animal traction etc. – as has happened in Kenya (IGAD LPI Working Paper 03-11). In sum, increasing ‘normal’ forms of livestock production, which are recognized in GDP accounting, is dependent, to some extent, on the provision of affordable credit and insurance for livestock owners, which

permits animal owners to re-focus their production objectives on conventional types of livestock output. Until this happens, the apparent low output of Ugandan livestock will reflect, in part, the diverse and unaccounted array of services that these animals currently provide for their owners.

The contribution of livestock to the wider economy

Livestock and livestock products constitute a small portion of Uganda’s official export trade, in the period from 2006 to 2010 never amounting to more than 1.5% of all exports by value (Table 4). Informal cross-border livestock trade does take place but is unlikely to significantly increase the share that livestock contribute to national exports.

Table 4: Formal exports of livestock products – quantity, value and percentage of all export value

Commodity	unit	2006	2007	2008	2009	2010
Cattle hides	Tonne	22,214	20,942	13,042	5,160	120,869
	'000 US \$	8,032	18,114	12,518	5,996	17,061
	% value	0.8	1.4	0.7	0.4	1.1
Live animals	'000 head	0	23	95	198	7
	'000 US \$	28	1,551	1822	3,908	3,985
	% value	0.0	0.1	0.1	0.2	0.2

In 2009-10 the average monthly expenditure for a household in Uganda was US\$ 232,700 (197,500 US\$ in rural and 384,350 in urban areas); food, drink and tobacco were the largest category of household expenditure, accounting on average for 45% of all expenditures (51% in rural and 32% in urban areas). Livestock food products (meat, milk, dairy products and eggs) constituted about 43% of household expenditures on food and beverages; 72% of these expenditures were in cash.

The production of meat and milk for domestic consumption is low in Uganda, averaging less than 11 kg of meat and about 23 litres of milk per capita per year for all Ugandans (Table 5).

Table 5: Meat and milk for domestic consumption, 2009

	Total offtake	Official exports	Offtake for domestic consumption	Total meat and offal or milk, tons for domestic consumption ¹	Per capita, kg or litres /Year
Cattle offtake, head	1,192,726	10,912	1,181,814	177,272,100	5.77
Camel offtake, head	575	0	575	89,125	0
Sheep offtake, head	779,886	0	779,886	10,918,404	0.36
Goat offtake, head	4,289,293	65,165	4,224,128	50,689,536	1.65
Ruminant total	-	-	-	238,969,165	7.78
Poultry offtake ²	35,859,303	0	35,859,303	46,617,094	1.52
Pig offtake	732,096	5,142	726,972	43,618,320	1.42
Total all meat	-	-	-	329,204,579	10.72
Milk offtake, litres ³	719,130,352	0	719,130,352	719,130,352	23.42

These figures compare with an estimated availability of 41 kg of meat and 26 litres of milk per person in Sudan, and approximately 15 kg of meat and 198 litres of milk per person in Kenya.

In 2009 food processing accounted for 40.3% of Uganda’s

manufacturing value added (UBOS unpublished) and meat preparation and dairy processing accounted for 3% of all food processing. In 2009 animal feed production constituted 0.9% and leather and footwear production made up 0.6% of total industrial production.

In sum, livestock make a modest contribution to the non-agricultural sectors of Uganda's economy. In comparison to the other IGAD countries reviewed in this report series, livestock and their products make up a small part of Uganda's exports, the per capita production of meat and milk for domestic consumption is low, as is the role of animal production in manufacturing, and Ugandans spend a moderate proportion of their household food budget on livestock-derived foods.

While livestock are essential to the livelihoods of people in certain parts of the country, Uganda's overall economy does not depend on livestock production to the same extent as that of Sudan, Ethiopia and Kenya.

Recommendations

Official statistics are more than usually important in Uganda because there are few alternative sources of quantified information on livestock production. The following recommendations focus on areas of concern regarding gaps in the current, official system for the collection of data and the analysis of livestock production.

- **Livestock offtake rates:** The calculation of offtake rates in Uganda is complicated by the retrieval and consumption of dead animals by some livestock owners. By transforming a certain percentage of dead animals from an economic loss into an economic benefit, the consumption of fallen animals potentially has a significant impact on offtake rates, especially when livestock mortality rates are high, as they are for almost all types of livestock in Uganda. As well as asking about sales, slaughter and gifting of animals, future versions of the UNPS should enquire about the retrieval and consumption of dead livestock.
- **Animal power:** UBoS should consider introducing a region-wide programme of work on the prevalence and economic value of animal power usage in Uganda, a subject that is chronically neglected by both academic research and government agricultural monitoring systems. We also recommend that future versions of the UNPS include questions on the cost of ploughing services, the area ploughed by animal power on a rental basis, and the area ploughed by oxen owners for themselves.
- **Karamoja Sub-Region:** In Karamoja, 2.4% of the nation's population produces a fifth of the nation's livestock wealth. Attempts to estimate national livestock output are therefore highly sensitive to any defects in the data on Karamoja. Aside from insecurity in the region, two

other issues complicate the estimation of Karamoja livestock production. UNPS is a household not a livestock survey and uses households rather than livestock numbers as a basis for selecting its sample. Under these circumstances, caution must be taken to ensure that Karamoja households are adequately represented since these households – though few in number – hold a disproportionate percentage of the nation's livestock. Lost or stolen livestock present another challenge. There is increasing evidence of the commercialization of livestock raiding in Karamoja, with animals being stolen in order to be marketed and transported outside the region for domestic consumption or unofficial export. Although difficult to document, these animals are part of regional livestock offtake for national accounting purposes.

- We recommend a specialized study of livestock production in Karamoja designed to quantify the region's contribution to national livestock output. It has been shown that returns per hectare of land in pastoral systems were 6.8 times higher than returns to ranching systems in south-western Uganda. In light of these findings, both Karamoja regional development and national livestock policy would benefit from an authoritative, evidence-based re-assessment of the value of that region's pastoral production.
- In estimating the livestock contribution to agricultural sector GDP we recommend that UBOS consider adopting a production-based approach to calculating the gross value of individual animal products. As demonstrated in this report, the methods used in such calculations are transparent and can be readily adjusted to accommodate fluctuations in UNPS survey data.

Note: Data sources that substantiate the calculations in this briefing paper are given in the original report: *The Contribution of Livestock to the Ugandan Economy* (IGAD LPI Working Paper No. 02 – 12) 2012, by Roy Behnke and Margaret Nakirya.

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