

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 offtake	30.893
Subtotal animal offtake	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	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 UShs 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 UShs

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	937.963
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	5,966	17,051
	% 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 UShs 232,700 (197,500 UShs 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	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	35,859,303	0	35,859,303	46,617,094	1.52
Pig offtake	732,096	5,142	726,954	43,618,320	1.42
Total all meat	-	-	-	329,204,579	10.72
Milk offtake, litres	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