

Questions that Count:

A Livestock Module for Multi-topic Household Surveys

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Abstract

The adequate inclusion of the major dimensions and determinants of livelihoods in multi-topic household surveys is essential for deriving appropriate measures of wellbeing and for effective investment design, implementation and evaluation. A review of existing Living Standards Measurement Study (LSMS) questionnaires reveals that livestock is largely neglected: this challenges the design and implementation of effective investments in the sector, despite about 60 percent of rural households in developing countries being fully or partly dependent on livestock for their livelihoods. This paper presents a short, a standard and an expanded version of a livestock module for multi-topic household surveys, jointly elaborated by the FAO, the ILRI (International Livestock Research Institute) and the World Bank. The standard version of the module consists of a set of questions that help quantify both livestock herds and the various contributions of farm animals to household livelihoods, including cash income, food, manure, draft power and hauling services, savings and insurance, and social capital. The expanded version provides additional details which, depending on the country, may or may not be included in the survey questionnaire. The short version consists of a minimum set of livestock-related questions which is recommended to be included in all multi-topic household surveys. Survey designers can adapt any of the three versions of the module to design a questionnaire that best suits their needs. The paper also draws preliminary lessons from experience in Niger, Tanzania and Uganda, where the livestock modules have been used to enhance the content of LSMS-type survey questionnaires.

Keywords: livestock, sub-Saharan Africa, household survey design

1. Introduction

There is consensus that livestock sector development can contribute to poverty reduction and economic growth, as about 60 percent of rural households in developing countries are estimated to depend on livestock for all or part of their livelihoods. Increases in population growth, urbanization and gains in real per capita income are fuelling growing demand for high-value foods, including meat and dairy products (FAO, 2009) and these trends imply good business opportunities for livestock producers. However, available household livestock data are hardly sufficient to appreciate the role of animals in the household economy, and the incentives and disincentives that guide households' livestock production and consumption decisions. These data gaps make it difficult to design and implement livestock investments that are both efficient and equitable (LDIP, 2012).

This paper presents a short, a medium and a standard version of a livestock module for multi-topic household surveys. The module aims to enhance the quantity and quality of livestock data available to decision makers, thereby facilitating the formulation and realization of successful interventions in the sector. It was jointly developed by the FAO, the ILRI and the World Bank as part of the implementation of the Livestock Data Innovation in Africa Project and the Living Standards Measurement Study - Integrated Surveys on Agriculture Project. The next section provides the rationale for expanding the

livestock content of existing multi-topic household surveys. Section three highlights the salient features of the livestock module for multi-topic household surveys, while section four presents lessons out of the implementation of the module in Niger, Tanzania and Uganda. Section five provides conclusions.

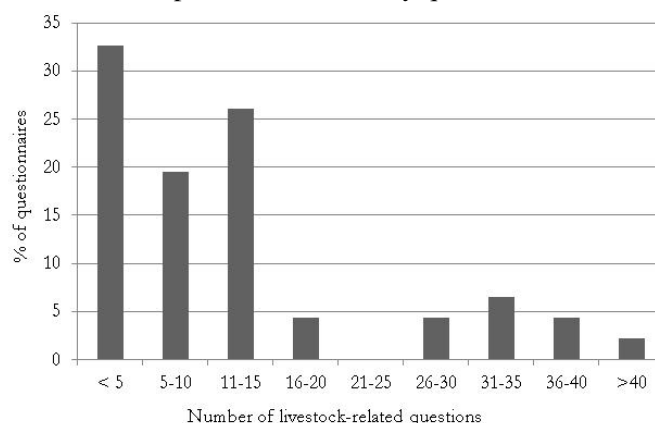
2. Why livestock multi-topic household surveys?

Reliable and up-to-date data from multi-topic household surveys are critical for governments to measure poverty, assess household wellbeing, and model household behaviour to evaluate ex-ante and ex-post outputs and impacts of public and private sector investments. The adequate inclusion of all dimensions and determinants of livelihoods in multi-topic household surveys is thus essential for deriving appropriate measures of wellbeing, and for effective investment design, implementation and evaluation.

Livestock keeping is a multi-purpose activity in developing countries: farm animals generate food and income, are a store of wealth and act as a safety net in times of crisis. They provide draught power and hauling services, manure, fuel and building material; transform crop residues and food wastes in valuable protein and contribute to social capital (FAO, 2009). Rural households have thus a variety of incentives for keeping livestock and, indeed, data from 12 developing countries in Africa, Asia and Latin America show that between 46 to 85 percent of rural households keep farm animals, with a country average of about 60 percent (FAO, 2009). Many of these households are poor, which implies that increasing the contribution of livestock to their livelihoods can directly contribute to the goal of reducing poverty worldwide.

A review of existing multi-topic household survey questionnaires, however, reveal that livestock is inadequately represented. The number of livestock-related questions (excluding those targeting consumption of animal-sourced foods) in a sample of 42 multi-topic household survey questionnaires available on the website of the International Household Survey Network (IHSN, www.ihsn.org) is a crude, yet revealing, indicator of the limited availability of data to fully appreciate the role of livestock in the household economy. In almost 80 percent of the sample countries, the survey questionnaires include less than 15 livestock-related questions. Insights into investment opportunities are thus challenged by lack of adequate information on the role and use of livestock in the household economy.

Figure 1. Number of livestock-related question in ‘IHSN’ multi-topic household survey questionnaires



Source: elaborated from www.ihsn.org

3. A livestock module for multi-topic household surveys

With the objective to assist decision makers in formulating effective policies and investments in the livestock sector, the FAO-World Bank-ILRI Livestock Data Innovation in Africa Project (LDIP) and the Living Standards Measurement Study - Integrated Surveys on Agriculture Project of the World Bank (LSMS-ISA) developed a short, a standard and an expanded version of a livestock module for multi-topic household surveys. This builds on a variety of livestock survey questionnaires conducted in developing and transition countries, many of which were compiled by the International Livestock Research Institute (ILRI), as well on interviews with expert informants and livestock practitioners. The three versions of the module vary by size, but have four common overarching goals:

- Generate basic statistics on key livestock-related variables, such as on livestock ownership and access to animal health services;
- Measure the value of household’s livestock, which are an important economic asset;
- Measure the cash and in-kind income from livestock;
- Model household’s livestock husbandry and production practices.

The module targets information in three major domains, including livestock ownership; livestock inputs, i.e. husbandry practices, veterinary services; and livestock outputs, i.e. meat and dairy production, manure, contribution to agricultural production, etc. Processing is omitted (but for one question) as it is generally a nonfarm enterprise activity that is typically included in other modules of the survey, or addressed in other types of surveys.

Table 2. Content of livestock module for multi-topic household surveys

Livestock domain	Sections	Remarks
Livestock ownership	Number of animals	Questions are asked for individual animals, often differentiated by age, gender and breeds (local/indigenous and improved/exotic), which helps to appreciate herd structure and inter-species composition.
	Change in stock in past 12 months	
Inputs and husbandry practices	Breeding	Questions are asked for major groups of animals (e.g. large ruminants, small ruminants, pigs, poultry birds, equines, other), as management practices usually do not differ between animals of the same species
	Feeding	
	Watering	
	Animal health	
Monetary and non monetary outputs	Housing	Questions are asked for major groups of animals, including both the monetary and non-monetary value of production
	Meat production	
	Egg production	
	Milk production	
	Animal power	
	Dung	

Short version

The short version of the module includes questions on livestock ownership by species (e.g. cattle) and type of animals within species (e.g. bulls, steers, cows, etc.), as well a question on the major purposes for keeping animals. It inquires about sales of animals by species over the reference period, which is 12 months for large and medium animals (e.g. cattle, sheep and goats) and 3 months for small animals, namely short cycle animals (e.g. chicken, ducks and rabbits). It includes some questions on meat, milk and egg production, and one only question on husbandry practices. The latter targets animal vaccination, which in most countries is provided for free or subsidized by the public sector.

The short version of the module allows quantifying with accuracy household's livestock wealth, and hence classifying households into different types; it also provides a rough measure of the cash income derived from livestock. This version comprises about 30 questions and is intended for use in surveys for which livestock is of minor interest.

Standard version

The standard version of the module, comprising about 95 questions, collects a large amount of livestock-related information, including on ownership of animals, inputs and husbandry practices, and on livestock outputs by product, by-product and service, such as on milk, manure and draft power. As in the short version, questions on livestock ownership target species and types of animals; while all other questions only inquire about animal species, such as large ruminants, small ruminants and equines. Questions on change in animal stock over the reference period solicit information on the causes of herd reduction / expansion, including purchases, sales, slaughtering, gifts and loss of animals for different reasons (e.g. death due to disease; theft; etc.). Questions on inputs and husbandry practices target housing and breeding practices; access to and use of water and forage/feed; and animal health, including vaccination, deworming and treatment of sick animals. Finally, questions on outputs inquire not only about meat, milk and egg production, but also about the use of animal power (draft and transport services) and the production of dung, mainly but not only used as manure. Most sub-sections include questions on the use of family labour by gender, and on the non-family labour hired for raising animals.

The standard version of the module allows generating descriptive statistics for key livestock-related variables, for which nationally representative indicators are often unavailable. Examples include ownership of exotic breeds; prevailing breeding practices; and access to veterinary services. It also allows quantifying with accuracy not only household's livestock wealth, but also the contribution of livestock to household livelihoods, including both their monetary and non-monetary value. In addition, depending on the sample size and the species at hand, it can be used to estimate production functions using the animals as unit of observation, though specialized agricultural and livestock surveys better serve this purpose.

Expanded version

The expanded version of the livestock module includes all the questions in the standard version and adds information in all sub-sections of the module. In particular, it allows differentiating between animal ownership and animal keeping, as not all households owning livestock raise them on the farm, nor manage them personally. It includes questions on the providers of goods and services, such as the public and private sector, and NGOs; it asks more details about the role of family members in selling animals and livestock products, including about the control of the earnings.

The expanded version of the module allows generating key livestock statistics and undertaking analyses as with data from the standard version, but with higher accuracy. It's a long (over 200 questions) and heavy version and, as such, it should be seen as a rotational module that country governments implement only when they need comprehensive and detailed information on livestock, most likely for a specific sub-sample of the population (e.g. the cow keepers). In response to specific information needs, however, survey designers may wish to include only one or selected sub-sections of the expanded version of the module in their multi-topic survey questionnaires, such as those on breeding and animal health.

4. Implementing the livestock module: lessons

The three versions of the livestock module for multi-topic household surveys are the starting points for developing a module that responds to the needs of a specific country. Survey designers are expected to build their own module that adapts the country livestock sector, including its structural and transitory features. Three sub-Saharan African countries have so far used the livestock module to improve the livestock content of their multi-topic survey questionnaires, including Niger (Enquête Nationale sur Les Conditions de Vie des Ménages 2011/12), Tanzania (National Panel Survey 2011/12) and Uganda (National Panel Survey 2011/12). Data from the Niger survey has been just released, while those from the Uganda and Tanzania surveys have not been yet officially released. Preliminary lessons from questionnaire administration can be however drawn.

- The types of animals vary depending on the country. Survey designers should thus adjust the suggested list in the module, which is comprehensive, to be consistent with prevailing livestock production systems. This could be done at three levels. First, some animals are simply not present in the country, such as yaks in sub-Saharan African countries, and should not be included in the survey questionnaire. Second, while the module allows separating local / indigenous from improved / exotic breeds, in many countries the diffusion of the latter is so minimal that it does make sense differentiating animals by breed only in the section on animal ownership. In the same vein, there are animals which are known not to be widely held by households, such as pigs in Niger. Again, in these circumstances, it could make sense to get only information on ownership of pigs to generate some basic statistics, but there's little value in asking details about inputs and outputs, as the sub-sample of pig producers is not large enough to generate data for robust descriptive statistics or causal analysis.
- Animal health / disease information is critical for country governments, particularly that pertaining to trans-boundary and zoonotic diseases. Following a standard approach, the module suggests asking direct questions about animal diseases, such as on brucellosis, ovine rinderpest (Peste des petits ruminants) and Newcastle disease in poultry. However, not all farmers are fully aware of the types of disease that affect their animals. Alternative options to collect information on animal health could be designed and tested. One possibility is to use a syndromic approach, which would imply asking questions on symptoms on the basis of clinical features (e.g. neurological, respiratory, dermatological and diarrhoeal syndromes). The collated data should be then interpreted jointly with local animal health authorities. A second possibility is to include questions on animal diseases not only in the household but also in the community questionnaire of the multi-topic surveys, along the lines of participatory epidemiology.
- Measuring labour in a multi-topic survey is particularly challenging, and for two reasons. The first is that in many circumstances, with the possible exception of milking, the labour force performs the same task (e.g. feeding) simultaneously for all animals in the herd, and in particular for large and small ruminants (e.g. cattle and sheep). The second is that watering and feeding animals are often joint activities, with livestock taken to pastures where water sources are available. The implication is that attaching labour to a specific task or an individual animal is challenging, which yet could be important as most households just keep few animals and of different species. The module presents one way to address the labour issue: it suggests first asking whether animals of different species are fed and watered jointly; and then questions on the time allocated to feed/water animals by family and non-family labour. Other options should be designed and tested.
- When collecting information on livestock production, the module proposes a different approach with respect to standard multi-topic household surveys. In particular, rather

than directly asking information on meat, milk and egg production, the module asks a sequence of questions that link animals with production levels. This apparently helps the interviewee to provide accurate information on production levels. For milk, for instance, questions are included about the number of milked animals over a reference period; the number of months during which the animals were milked; whether suckling by calves was allowed when the animals were milked; and on the average quantity of milk produced per day during the milking period. Similar flows of questions are suggested to get information on meat and egg production.

The above are some of the key lessons emerging from the administration of the livestock module for multi-topic household surveys in Niger, Tanzania and Uganda. Additional insights on strengths and weaknesses of the module will become clear as the country data are available for analysis. In any case, the Niger, Uganda and Tanzania surveys are expected to generate the most comprehensive household-level livestock datasets available in sub-Saharan Africa, thus facilitating the analysis and documentation of the many connections between livestock and livelihoods. These insights are expected to significantly enhance our understanding of the role of livestock in the household economy.

5. Conclusions

Traditional multi-topic household surveys inadequately represent livestock, which presents a major data gap since livestock is a widely owned asset among rural households in developing countries, including the less well-off. This challenges the design and implementation of equitable and efficient interventions in the sector.

This paper presents a short, a medium and a standard version of a livestock module for multi-topic household surveys, jointly developed by the FAO, the ILRI and the World Bank. The three versions of the module, with different level of details, aim at collecting data for the generation of statistics on key livestock-related variables; for measuring the value of household's livestock; measuring cash and in-kind income from livestock; and modelling household's livestock husbandry and production practices.

The three versions of the livestock module for multi-topic household surveys are starting points for developing country modules that fit the needs of the country at hand. Three sub-Saharan African countries have so far used the module to improve the livestock content of their multi-topic survey questionnaires, including Niger, for the *Enquête Nationale sur Les Conditions de Vie des Ménages 2011/12*, Uganda, for the *National Panel Survey 2011/12*, and Tanzania, for the *National Panel Survey 2010/11*. Lessons drawn out of the administration of the survey questionnaires indicate that major challenges relate to measuring labour and animal health/diseases. These represent areas for further research.

The short, standard and expanded versions of the livestock module for multi-topic household surveys are available from download from the website of the FAO-WB-ILRI Livestock Data Innovation in Africa Project, while the survey questionnaires for Niger, Tanzania and Uganda are available with the authors. The data from the livestock module implemented in Niger, Tanzania and Uganda will be freely available from download and use as soon as officially released by the statistical authorities in the countries.

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