

Measuring Livelihoods and Environmental Dependence

Methods for Research and Fieldwork

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Designing the Household Questionnaire

Arild Angelsen and Jens Friis Lund

Differences in question design often bring results which show far greater variation than those normally found by different sampling techniques.
George Gallup (1947, cited in Foddy, 1993)

‘What was your forest income last year?’

Imagine a researcher asking a farmer in Indonesia the following question: ‘What was your forest income last year?’ This is a poor question to ask because the concepts are not clear. For example, (a) does ‘your’ hint to the person or the household? (b) Are ‘forest’ products those from a small woodlot on the farm or a deer roaming in the forest during the daytime and feeding on farmland during the night? (c) Does ‘income’ imply cash income only (as many will associate ‘income’) or cash and subsistence income combined (the economic definition of ‘income’)? And (d) does ‘last year’ refer to the past 12 months or the last calendar year (and which calendar, by the way)?

Even if the farmer understood the question to be: ‘What was the cash and subsistence income for your household from forest X over the past 12 months?’, he would probably not have a clue about what the income was. The household’s forest income might consist of 20 different products, be collected by five different household members during four different seasons, and mainly be used for family consumption (with the price unknown). In other words, the question begs of the farmer a large algebraic operation with several unknown variables! If the farmer does come up with an answer – if nothing else as a display of politeness – it is unlikely to reflect the household’s *actual* forest income last year.

This chapter gives guidance on questionnaire design and question formulations that will increase the quality of the data collected. In the case of our Indonesian farmer, it means asking carefully worded questions in an

appropriate sequence so that answers provide a measure of our farmer's forest income – and other relevant variables – that is close to reality. Our focus is on the household questionnaire. Although this has become the staple of quantitative fieldwork, designing a questionnaire is not a quick and easy way to collect empirical data. As just seen, even for well-defined quantitative concepts such as 'income', designing questions that facilitate the collection of valid data is not a simple task. Any short cuts taken in the questionnaire design phase will almost invariably have to be paid back with high interest at later stages of the research.

While this chapter focuses on the questionnaire design, it presumes that the homework has been done. The research questions, hypotheses and data needs should have been sorted out (Chapter 3), the sampling strategy elaborated (Chapter 4) and an overview of the surveys suitable to gather the different data should be available (Chapter 6). The gross list of data to be produced by a survey then needs to be reformulated into questions that can be asked in a questionnaire. The 'translation' process – from data needs to question formulation and questionnaire design – entails several risks: (a) dropping – some data needs are not translated into questions, (b) modification – questions do not reflect data needs accurately (this has serious implications for construct validity, see Box 3.2 for a definition of construct validity), (c) duplication – unnecessary costs are introduced as the same data needs are inquired about in more questions, and (d) expanded scope – questions are introduced that elicit data not needed for the analysis. Every unnecessary question in the final questionnaire will be extremely costly in terms of the time needed for design, testing, collection, entry, checking and, subsequently, analysis of data that is not needed to answer the research questions – as well as the negative effect it may have on the quality of other data collected by dragging out the interview. Thus, each question that goes into the questionnaire must pass the test: how will this information be used? Obviously, this is an iterative process, where it will be necessary to go back and forth between the research questions and hypotheses and the questionnaire to ensure alignment (see Box 7.1 for types of variables).

The basic building blocks: HAI+

Many household questionnaires follow the HAI + format, implying that they include the following four groups of questions:

- **H**ousehold composition and characteristics.
- **A**ssets owned by the household.
- **I**ncome of the household.
- **+** special sections reflecting the particular focus of the research project.

Box 7.1 *Types of variables*

Depending on how questions are formulated, the household questionnaire can generate a number of different types of variables (de Long, 1997):

- **Continuous variables** are any value within a defined range of values, such as prices, volumes and weights.
- **Censored variables** occur when all values in a certain range are reported as (or transformed to) a single value – typically the dependent variable is zero – for a large proportion of the observations. For example, households that do not harvest any forest products will necessarily have zero forest income.
- **Binary variables** have two categories and are often used to indicate that an event has occurred or some characteristic is present. For example: does the household belong to a forest user group? 0 = No; 1 = Yes.
- **Ordinal variables** have categories that can be ranked. For example: how has forest cover in the village changed during the past five years? 1 = Major decline; 2 = Minor decline; 3 = No change; 4 = Minor increase; 5 = Major increase.
- **Nominal variables** occur when there are multiple possible outcomes or responses that cannot be ordered. For example: what is the primary livelihood activity of your household? 1 = Agriculture; 2 = Livestock; 3 = Forestry; 4 = Wage labour; 5 = Business; 6 = Other.
- **Count variables** indicate the number of times an event has occurred. For example, how many days did you harvest bush meat during the past year? Possible responses range from 0 to 365.

As you formulate your questionnaire you need to think carefully about what type of quantitative data you want to collect. How you ask questions has implications for the type of analysis that you can undertake after you have collected and cleaned your data (see Chapter 13). Some types of information are clearly best collected as continuous variables – for example, the distance from the house to the edge of the forest.

For variables related to education, you could think about collecting data in a variety of ways. For example, data on education can be collected in the following ways:

- How many years of education did the household head complete? (Censored, 0 through approximately 20)
- What is the highest level of education completed by the household head? (Ordinal, 0 = None; 1 = Some primary; 2 = Completed primary; 3 = Some secondary; 4 = Completed secondary; 5 = Beyond secondary)
- Did the household head complete primary school? (Binary, 0 = No; 1 = Yes)

If you are uncertain as to how you would like to specify your variables, you might consider collecting data at the highest level of practical detail. In the education example, you would collect data on education as a continuous variable as this would allow you the flexibility to create ordinal or binary variables later.

Household composition and characteristics

Household composition and characteristics include basic information about the household members, such as age, sex, level of education, kin (relation to household head) and main occupation. A table with these characteristics as columns and individual household members as rows is typically the opening part of the questionnaire. Relatively detailed information about household composition is necessary for investigation of intra-household patterns of income earning and/or consumption, but is also relevant if household income is to be compared across households. In the latter case, data on age and sex can be used to compute an adult-equivalent household size or similar measures of household standardization (see Cavendish (2002) for an example of how to compute this).

Further, the H-section might include basic information about the household: when was it established, when did they move to the village, ethnicity/caste, religion and location relative to the village centre, rivers, forests and other points in space of interest to the research project.

Assets

Assets are productive resources that can be accumulated, sold or invested to achieve desired ends (livelihood outcomes). The assets that the household own or have access to form the basis for the generation of household income, thus the 'asset-income' pair is analogous to the 'stock-flow' of natural sciences. Assets influence households' choice of livelihood strategies and are used as indicators of wealth that are less dependent on annual fluctuations than income. They are therefore almost invariably included in livelihoods and income surveys.

The asset recording should include estimates of all of the five types of assets or capital in the Sustainable Livelihoods Framework (SLF): natural, human, physical, social and financial capital (see Chapter 5). The five types of capital assets differ along two important dimensions, ownership and tangibility, which have implications for the way they are measured.

Property rights to natural and physical assets are often ambiguous in rural areas of developing countries (see Barzel, 1989; Bromley, 1991). In general,

ownership or property rights are a bundle of rights, the two major ones being the *use* (including current income) rights and the *transfer* rights (including sell or rent). An operational definition of property rights that include the *transfer right* is appropriate in relation to financial and many physical assets, for example, cash, jewellery, house and livestock. For some physical assets (such as collectively owned agricultural machinery or irrigation systems) and natural capital (for example, grazing land) this can be too limiting. Here the main focus might be on the use rights, in other words, whether the household has access to draw on capital assets that it does not own (in the sense of having transfer rights to). There are differences between individuals in their ability to exercise uniform rights. Thus, the bundle of rights may be a poor proxy to explain household-level variation in access to capital. This problem has been alleviated through the concept of access, which focuses on individuals' ability to benefit from (through use and/or transfer) various forms of capital (see Ribot and Peluso, 2003).

Land is a key asset of many rural households, but its measurement raises problems. Besides the problem of defining 'land owned by the household', the valuation is challenging. Should the researcher try to value this land (and other assets) in order to construct an aggregate measure of tangible capital owned by the household? Unless there is a reasonably active land market, putting a value on land would be speculative. Land is then better measured in physical units. And rather than an aggregate measure, in many contexts one should distinguish between different types of land, for example, use, quality and location.

Differentiation should also be applied for other types of assets such as livestock: a cow is not merely a cow, but can be of different breed and age, and have different value. Disaggregation is key to get accurate estimates, although there is a balance between the accuracy and resource use. Collecting genealogy records to determine the breed of every chicken is not recommended!

Questions regarding financial, physical and natural capital are facilitated by their tangible nature, implying that theoretically coherent and quantifiable constructs can be developed to measure them. Questions regarding physical and financial assets are, however, often sensitive in the sense that people are reluctant to reveal their wealth (see Chapter 11 on 'threat factors'). Physical capital has the advantage that, in many cases, it can be observed by the researcher or enumerator, implying an easy check on whether the questions are answered correctly.

For social and human capital, the main problem is their definition and measurement. Membership of local associations is an often used proxy for social capital, but research indicates that the validity of this proxy is questionable (Bodin and Crona, 2008). For the purpose of livelihood research, a useful

distinction can be made between bonding and bridging social capital, where bonding is relations of reciprocity within the community that secure a minimum subsistence livelihood and bridging is relations to more resourceful external actors (Woolcock and Narayan, 2000). Bonding social capital can be elicited through questions on who households rely on in periods of food and cash shortages or other crises, whereas bridging capital can be elicited through questions on who households rely on for assistance and support in relation to investments in productive activities.

For human capital, a widely used proxy is the level of education – both formal education and adult training – of household members. This variable may, however, not capture very well those aspects of human capital of a household that are relevant to its income earning opportunities. Locally relevant skills and experience, such as being good at carpentry, blacksmith works or producing charcoal, may be equally relevant measures of human capital.

Income

Income is the immediate outcome of livelihood strategies and a central measure of household welfare (see Chapter 5). While a well-defined concept in theory, capturing household income has proven slippery and a number of things can go wrong in questionnaire design (and during the interview).

Defining income

A consistent income definition is important to ensure construct validity (see Box 3.2). In other words, incomes from different sources should be measured consistently within the study, using standard definitions. This is also important to assure comparability of the findings to those of other studies. The definition of forest income, for example, varies across studies inhibiting comparisons (Vedeld et al, 2004).

Income is generally defined as the value added during a specific time period from assets that a household owns or has access to, such as labour, land and cattle. These assets can be used in own production and income-generating activities or sold in a market (for example, wage labour). Net transfers of cash or in-kind products are also included in income. Thus rural household income includes three broad components:

- Value added from self-employment, for example, agriculture, forestry or other business.
- Wage earnings and rents from renting out land or other forms of capital.
- Transfers, for example, remittances and pensions.

The first category is often the tricky one. The basic income equation for income from self-employment (in agriculture or business) is:

$$I = \sum_{i=1}^n p_i y_i - \sum_{j=1}^m q_j v_j$$

Income (I) is gross value (price times quantities of all n products) minus total costs (price times quantities of all m purchased inputs), for example, fertilizers, seeds, tools, hired labour.¹ In our experience, there are at least four critical issues that cause confusion and mistakes.

First, total household income is the sum of cash income and subsistence (in-kind) income, the latter referring to the value of products being produced and consumed directly by the household. Many respondents (or even researchers!) may take income to mean cash income only. It is critical that the complete definition of income (= subsistence + cash) is clear to both enumerators and respondents.

Second, the costs of household or family labour should *not* be deducted to obtain household income – this is against the definition. One may want to measure the quantity and costs of household labour for other purposes, for example, comparisons of the profitability of different activities, but it is not needed for calculating household income.

Third, some products are used as inputs in other income-generating activities, for example, fodder collected from the forest for livestock, or timber for making furniture. The researcher has two options: (a) collect data on the quantity and price of these inputs, and count the fodder as forest income, but then deduct it from the gross value of sales and consumption of livestock and livestock products; or (b) ignore it because data are too hard to get, but keep in mind that – although total income is correct – the balance between livestock and forest income is skewed. A serious mistake is to count this as forest income, but not deduct it as a cost when calculating livestock income. This will exaggerate total household income.

Fourth, the distinction between income and assets is not as clear as it may appear. Consider this example: selling a cow would, by most household surveys, be counted as income. Then, purchases of livestock must be deducted when calculating livestock income, otherwise a farmer would get higher income from simply buying and selling a cow at the same price during the survey period. But, including sales and purchases of livestock may result in some households getting low income just because they are expanding the herd size through purchases, in other words, they will be income poor and asset rich. If the income definition is to include ‘changes in the value of assets’, then one should also include natural growth of the livestock (and other assets). This can become quite complicated, and our recommendations for most surveys are: (a) treat assets symmetrically in the way that both sales and purchases are included for key assets such as

Box 7.2 *The importance of recollection periods*

A total income survey in Nepal included a test of recollection periods. Households were asked about environmental incomes both within one month and within three months prior to the interview. The income estimated from one month recall is consistently higher than that from three months. As the table shows, the difference between one and three months' recollection is quite high in the aggregate figures for direct forest income (unprocessed products), forest derived income (processed products) and environmental (non-forest) income. The results are in accordance with our expectations – that longer recall leads to lower income estimates because people forget their incomes. But the magnitude of the difference is perhaps surprising. Some of the difference may be because income from rare events is generalised to three months; this suggests that data collection instruments should use three-month recall periods for infrequently collected products and one-month recall for regularly collected products.

Table 7.1 Quarterly forest and environmental income figures elicited with different recall periods (Nepalese Rupees)

Income type	Recall period*	Min	Max	Median	Mean	St.dev.
Direct Forest Income	1 month	30	327,720	3300	7152	18,877
	3 months	18	112,060	2845	4808	8229
Forest Derived Income	1 month	15	790,500	1500	10,791	51,788
	3 months	10	263,500	1000	4605	17,483
Environmental Income	1 month	15	36,165	675	1565	3198
	3 months	5	37,500	300	846	2434

*Amounts from one-month's recall were multiplied by three to yield quarterly estimates.
Source: Calculation by Santosh Rayamajhi based on PEN data from Nepal.

livestock; and (b) livelihoods and poverty has both an income and asset dimension, thus modifying the income definition in an attempt to make it capture both aspects is not a good solution.

The principle of decomposition

The introduction to this chapter illustrated the need to break down the concept of income into questions that can be answered meaningfully by respondents. This is the principle of decomposition: to break aggregate values such as total household income into units that can be remembered and estimated by

Table 7.2 Example of table to record forest income
Question: What are the quantities and values of raw-material forest products the members of your household collected for both own use and sale over **the past month**?

1. Forest product (code-product)	2. Collected by whom?	3. Land type (code-land)	4. Ownership (code-tenure)	5. Quantity collected (7 + 8)	6. Unit use (incl. gifts)	7. Own use (incl. barter)	8. Sold (incl. barter)	9. Price per unit (code-market)	10. Type of market (code-market)	11. Gross value (5*9)	12. Transport/marketing costs (total)	13. Purch. inputs & hired labour	14. Income (11-12-13)

Source: PEN (2007)

Note: the four general codes used (plus one specific for this table to column 2). Also note the logical build up in order to calculate income.

respondents. Whereas a respondent is unlikely to know what the total income from agriculture was in the just-ended season, she may, if asked questions about the quantities of each crop harvested and the prices at which they were sold, be able to give quite accurate responses. Thus disaggregating income into prices and quantities is a first step in decomposing or disaggregating income. Other common ways of further disaggregation include asking questions separately by:

- Product, for example, crops for agricultural income.
- Land area, for example, plot for agricultural income, and forest area for forest income.
- Household member, for example, for wage income.
- Season, for all incomes that show seasonal variation.

When using disaggregation it is, of course, important to make sure that the disaggregated units add up, for example, that the right income definitions are used. Decomposition, however, risks violating the principle of construct validity of the income estimate through omissions or double-counting of income components. If the data are broken down to the needed detail, double-counting can be corrected for in the analysis phase. Still, the general recommendation is to make the questionnaire design reflect correct income definitions.

Recall periods

While we clearly recommend a product-by-product approach to obtain sector income, the question of seasonality is a major headache. Most studies seek to obtain an estimate of annual income. The preferred option is to do regular surveys over one year, as done in PEN with four quarterly income surveys. The recall period is short (three months or less), and seasonal variation is captured. But often researchers do not have the resources for repeated visits, and therefore end up doing one-shot surveys. The researcher then has three options:

1. Ask about income for the last 12 months (appropriately decomposed, for example, by product).
2. Ask about income for, say, the last month or last three months, and multiply to get the annual income.
3. Divide the year into a few (normally two or three) distinct seasons, and ask about income in each of these.

The strategy depends on the income type and the local context. In many countries there are two main agricultural seasons. In some countries there are three. A survey that tries to estimate annual agricultural income should have separate tables/sections for each season. In Tanzania, these would

correspond to the *mvua* (rainy) and *kiangazi* (dry) seasons. In rice-producing areas of Bangladesh, they would refer to the *aman*, *aus* and *boro* harvests. Similarly, collection of firewood can vary by season, thus it is relevant to decompose data collection into, for example, the rainy and the dry seasons. If repeated surveys are not possible (always the first best choice), we will – as a general rule – recommend option 3 of seasonally specific questions. Exceptions should be made for incomes that do not display much seasonal variation.

The PEN surveys had a recall period of one or three months for the quarterly income surveys (Chapter 1). Small and frequent activities, such as collection of firewood for household consumption, favour short recall. Infrequent activities – be they small, such as collection of mushrooms in the rainy season for own consumption, or large, such as purchases of land or livestock – require longer recall to be sure to capture the income. Unfortunately, the choice of recall periods can have significant impacts on the resulting income estimates. This is illustrated in Box 7.2 from an experimental study in Nepal.

The ‘ + ’ in the HAI +

Finally, the ‘+’ in the HAI+ denotes all other data needed to answer the specific research questions. Here we discuss just some of the data that might be relevant to collect. For example, in research on livelihoods it may also be of interest to gather data on consumption expenditures and/or household labour allocation. These types of data allow for interesting livelihood analyses, but collecting them is also notoriously time-consuming.

Like income, getting reliable consumption data requires very careful recording of all consumption items. This is particularly true if you want to use aggregate consumption as a measure of household welfare; collecting data on just a few consumption items will not provide the full picture. Moreover, the recall period should be short for consumption expenditures (a few weeks, and not years). But it will also depend on the frequency of purchases: for rice it can be the purchase last month, while for bicycles it should be last year.

Some simple questions regarding consumption can be useful in order to check the validity of the income data. In case the enumerators suspect some income sources to be forgotten or under-reported, it can be revealed by simple calculations based on questions such as: ‘How often do you go to town to make purchases? How much on average do you have to spend?’ Depending on the answers, follow-up questions could be asked.

Household labour allocation data are useful for a number of purposes, for example, to calculate the return to labour in different activities the household engages in. But, it takes a lot of time to get reliable data (ask for each household

member, for a number of tasks, and have short recall periods). Also remember that household labour data are not needed to calculate household income.

Often one is interested in particular activities that the household members engaged in: a microcredit scheme, a forest user group, a women's association or a marketing association. The questionnaire could then include questions related to membership, why they are (not) members, perceived and/or concrete benefits and costs of participation, how active they are in terms of time spent, and so on. Such information is often useful both to provide a general background and for more direct statistical analyses, for example, to explore differences between rich and poor households in their motivation for participating in a particular programme.

Collection of data on values and attitudes are often included in household surveys, making the issue of construct validity increasingly challenging. How does one, for example, ask about the level of transparency in the allocation of grazing rights to village common pastures? If possible, such data needs should therefore be met through other data collection methods (see Chapter 6). If eliciting values and opinions through a survey cannot be avoided, the Q-sort methodology provides a widely applied approach (Gray, 2009). A Q-sort approach to elicit values and opinions would ask respondents to rank-order a set of statements about a topic on the basis of their individual points of view. By this, respondents reveal their subjective viewpoint or personal profile (van Exel and de Graaf, 2005). Using the Q-sort methodology provides a structured approach to overcome issues regarding question form, wording and context that have been shown to affect answers dramatically, in particular when eliciting values and opinions (see Schuman and Presser (1996) for a treatment of these issues).

Formulating the questions

There is plenty of evidence that even very simple questions are answered incorrectly. For example, one study found that 10 per cent of respondents in a Philadelphia, US, survey gave different answers to the question, 'What is your age in years?' when re-surveyed a week later (Foddy, 1993). Given this, one must wonder about the validity of answers to more subtle or complex questions.

Answers to questions are affected by the question format. Foddy (1993) reports on a study in Australia that found that for a particular magazine, only 7 per cent of respondents said they bought it if asked using an open question ('which magazines do you buy?') while 38 per cent did so for a closed question ('which of the following magazines do you buy?'). In the context of surveys,

writing the question so that enumerators can read them aloud directly is one way of increasing the likelihood that the same questions are posed similarly by different enumerators. It may also be necessary to specify allowed and sequenced lists of probes to avoid bias (see also Chapter 11).

In relation to more tangible issues, such as assets and incomes, the precision of the question becomes an issue in relation to wording, as reflected in the example in the introduction to this chapter. It is important to leave as little space for individual interpretation of the question as possible to minimize this source of (generally unwanted) variation.

Characteristics of good questions

Based on our experience, here are some of the characteristics of good questions.

- **KISS:** Rule number one is KISS: keep it sensibly simple.
- **Concrete and specific:** Be concrete, and avoid hypothetical questions. For behavioural studies, collect data on revealed choices rather than expressed preferences for hypothetical choices. For example, do not ask: ‘how would you respond to a food shortage?’ Instead, ask if the household has experienced a serious food shortage in the last three years and what was done in response to the shortage.
- **Short recall:** Questions should in general not require long-term, detailed memory. The rule should be, to reformulate Einstein: ‘Keep the recall period as short as possible, but not shorter.’
- **Local units:** Questions should be formulated to allow respondents to report measures in locally understood units (for example, in scotch carts, buckets, bags) rather than in unfamiliar metric units. A survey to standardize units can then be conducted later/concurrently to establish conversion factors for the local units into more standard measures if required to answer the research question.
- **Quantify answers:** If possible, answers should reveal quantities. Consider the question: ‘How often do you go fishing?’ A poor coding system would use categories such as: very often, often, sometimes, and so on. A better coding system is: more than once a week, 1–4 times per month, and so on. And, an even better formulation would be to ask ‘how many times per month do you go fishing?’. Even this formulation is not perfect for two reasons: First, be careful with the term ‘you’ if the meaning is ‘any member of the household’. Second, the fishing pattern may vary over the year. Thus, a good formulation taking all these factors into account would be: ‘How many times over the past 30 days did any member of your household go fishing?’ (Although this formulation does not factor in the variation in fishing

patterns over the year.) If recall is difficult, it may be necessary to help the respondent by asking about fishing during the last week followed by asking if this week was typical for the last month.

- **Define terms carefully:** Be careful with terms used. The question ‘how much agricultural land do you have?’ may or may not include land rented in/out, and may or may not include land that is currently not under cultivation (fallow land). Also, if asking the husband, he might only think of land that he is in charge of, and not land cultivated by the wife.
- **Avoid multipart questions:** Ask one question at the time, and avoid multipart questions. For example, do not ask: ‘Have you ever had or applied for a microcredit loan?’ It is better to first ask if they have had a loan, and – if no – ask if they have applied for and been rejected a loan.
- **Neutral formulations:** Many respondents will try to ‘please’ the enumerator and researchers, particularly if asking about preferences, perceptions or behaviour. Even a seemingly simple question such as ‘would you like to get a microcredit loan?’ may be interpreted as getting a loan being something positive. A better formulation might be (although it might be too hypothetical in some contexts): ‘If you today were offered a microcredit loan of x shillings, to be paid back over y years at an interest rate of z, would you accept the offer?’

Non-factual questions

Questions related to preference, perception and behaviour typically have a different format than more factual questions, such as ‘how many bags of rice did you produce last harvesting season?’. Consider microcredit again – this time it is necessary to find out why some respondents do not have a microcredit loan. The question might be: ‘Why have you not had any microcredit loan?’ Three main classes of reasons can be expected: (a) there is no microcredit institution offering loan in the village (supply), (b) there are but the respondent is not interested (demand), or (c) microcredit loans exist, but the respondent is not informed about it (information). To find out which category a respondent belongs to, the first question can be if microcredit is available in the village. If the answer is affirmative the questions follows as to why the respondent does not have a loan. There are then several options for asking the questions, including:

1. **Open-ended, no coding of responses:** With open-ended questions one simply writes down the responses. Although these can be coded during data entry, they are often difficult to deal with when analysing data and in many cases end up being abandoned. Open-ended questions are better in village questionnaires, focus group or key informant interviews. They are also

useful during the initial exploratory stages of research, to learn about the area and prepare a systematic questionnaire (see also Chapter 5 – contextual information).

2. **Open-ended, responses coded:** An alternative is to ask an open-ended question, with a predefined set of possible answers that are not read to respondents (including ‘Other’).
3. **Closed-ended:** Ask the question and read out the different (pre-coded) alternatives for responses.

Respondents may have more than one reason for not having had a loan in the example above, and with options 2 and 3 for asking questions one of the following three formats for recording the response may be chosen:

1. Tick the responses that apply (no ranking).
2. Give a rank 1–3 (or 5) for each possible response, depending on importance (very important – important – not important).
3. Rank the responses in terms of importance from 1 to 3.

In PEN, we opted for asking open-ended questions, with responses coded and filled in during the interview (option 2). If the options are presented verbally, respondents tend to go for the last one (this is a common example of response-order effects; see Schuman and Presser (1996) for a thorough treatment). We also ranked the responses (maximum of three), that required a follow-up question, once the different reasons had been listed on their relative importance. This was done to get information on the importance of the different alternatives. A combination of question option 3 and recording option 1 (read all responses and tick) risks yielding too many responses and failing to grasp what really matters.

Questionnaire layout

The layout of the questionnaire is concerned with the presentation of the questions to the enumerators and, subsequently, respondents. Generally speaking, the main consideration in the design of the questionnaire layout is to minimize the risk of problems when the enumerators present the questions to the respondents.

Every questionnaire should have a fully spelled out introductory paragraph that introduces the research to the respondent and asks permission to actually conduct the survey interview. Such an introduction should have the following components (Rea and Parker, 1997):

Box 7.3 *Some practical tips for questionnaire design*

- Many questions are better drafted into tables for ease of recording, coding and data entry (Table 7.2). This assumes that you have good enumerators, thus no detailed 'word for word' question formulations are needed for all questions.
- Assign an identification number to each household member to assure that each person gets a unique identification. This can be used in several sections of the questionnaire (for example, household composition, wage income and participation in savings groups).
- Pre-code as many responses as possible but leave room for other responses. Check and refine the codes during pretesting.
- Common codes can be included in a separate code list (for example, product codes) to save space.
- Leave enough space for enumerators to be able to take notes and provide explanations.
- Write key instructions for enumerators (and use, for example, *italics* to separate from text to be read out to the respondents).
- Spiral binding of (sets of) questionnaires helps in getting organized and avoiding loss of some questionnaires or questionnaire pages.
- Use major section codes for each section (for quick reference).
- Page numbers on each page of the questionnaire.
- Assign a unique code to each enumerator in case of problems later.

- The organization conducting the study should be presented. This is important to allow respondents to know who the enumerator represents and who asks the questions.
- The objectives and goals of the survey should be stated. It may be useful to explicitly state how the objectives relate to the respondents to generate as much interest as possible on behalf of the respondents.
- The basis of the sample selection should be made clear to allow the respondent to know how and why she was chosen for the research.
- It must be assured to the respondent that her participation is valued and that all information surrendered will be treated with confidentiality.
- An estimate of the duration of the interview should be stated.
- Permission to conduct the interview should be asked before the enumerator can proceed to the actual research questions.

Furthermore, every questionnaire should have a section with process information, in other words, information concerning who did the interview, checking of interview data, coding, data entry and data entry checking, and when these were done. This is valuable information for tracking down systematic errors caused by human agency.

The ordering of the questions and sections is important for several reasons. Avoid putting off respondents by having too many boring start-up questions (Gray, 2009). Asking about the H-part, the family members, can often be a soft start, and shows an interest in family life. The most important sections should also be taken early. Sensitive questions (regarding assets, debt, illegal activities, and so on) should be kept at the end. Answers to earlier questions can affect answers to later questions. If you ask Danes to rate how 'Danish' potatoes are, they rate them as more Danish if you first asked them how Danish rice is. Earlier questions can either reinforce or work against the response given.

A few practical tips on questionnaire layout are given in Box 7.3.

Conclusions

Designing a good questionnaire is both a science (clear rules to follow) and an art (skills based on experience, see Box 7.4). There are some useful general rules and experiences to draw on regarding question sequencing and formulation, but nothing can replace pretesting (see Chapter 10) and critical review by fellow researchers.

The chapter has highlighted some of the issues to be aware of when designing the survey questionnaire and formulating questions. Overall data needs need to be decomposed into questions that can be posed to respondents, without compromising construct validity in the process. One of the largest threats to construct validity of research based on questionnaire surveys is incorrect 'translation' of research questions and hypotheses into questions that go into the questionnaire. Also, the process of decomposition often runs the risk that important data needs are not reflected in the final questionnaire or that unnecessary questions are added. Even with correct 'translation' of research questions and hypotheses into questionnaire questions, poor data quality may be the result of poorly formulated questions that respondents are unable to answer.

The wording of the questions that go into a questionnaire need to follow some overall guidelines: be concrete, specific, simple and use neutral formulations and carefully defined terms. Finally, overloading the questionnaire should be avoided as it comes with high costs and an added risk to data quality

Box 7.4 Learning from the Living Standards Measurement Study

The Living Standards Measurement Study (LSMS) was established by the World Bank in 1980, with an aim to increase the accuracy and policy relevance of household survey data collected in developing countries. The programme was designed to identify how policies could be designed to positively affect social outcomes in health, education and economic sectors, and so on. Since the first LSMS survey in 1985, it has been implemented in more than 30 countries with repetitions in many of these.

A typical LSMS survey gathers detailed information at household level regarding household composition and demographics, education, health, employment, migration, housing, consumption, agriculture, enterprises, income, savings and credit. Some of the information is collected at the level of the individual household member. In addition, the LSMS gathers information at the community level and also typically includes questionnaires focusing on local prices.

All the experience gained from the LSMS project is available through the LSMS Working Paper Series that can be found on the homepage of the World Bank.² At the time of writing, there were 135 such reports. The three volumes by Grosh and Glewwe (2000) provide detailed guidance on the construction of multi-topic survey questionnaires and question formulation. Overall points from the LSMS project are:

- The starting point for designing modules and questionnaires of a multi-topic survey is a set of policy questions.
- When designing multi-topic surveys involvement of the right people in the process is a prerequisite for success.
- Designing a multi-topic survey involves a host of trade-offs.
- Collecting comprehensive household survey data in developing countries is feasible.
- Two main problems have been to measure (a) household income from agriculture and non-agricultural self-employment, and (b) savings and financial assets.
- Few LSMS surveys have collected data to examine environmental issues.

Source: Grosh and Glewwe (2000)

because of respondent fatigue. The process of questionnaire development often involves ‘shaving’ the questionnaire. The aim should be to bring the average interview time (not testing as it will take longer) down to a maximum of one hour.

Key messages

- Ensure that research questions and hypotheses are translated into questions that can be meaningfully answered by respondents without losing construct validity.
- The wording of the questions that go into a questionnaire should be concrete, specific, simple and use neutral formulations and carefully defined terms.
- Use the principle of decomposition to collect data on household income (disaggregate by product, land area, household member and season).
- When checking the question formulation, try actively to misunderstand each question.

Notes

- 1 Maintenance of capital stock (or depreciations) should also be included, but this will have limited applicability for most households.
- 2 <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:21555770-menuPK:4196843-pagePK:64168445-piPK:64168309-theSitePK:3358997-isCURL:Y,00.html>

References

- Barzel, Y. (1989) *Economic Analysis of Property Rights*, Cambridge University Press, Cambridge
- Bodin, Ö. and Crona, B. I. (2008) 'Management of natural resources at the community level: Exploring the role of social capital and leadership in a rural fishing community', *World Development*, vol 36, no 12, pp2763–2779
- Bromley, D. W. (1991) *Environment and Economy: Property Rights and Public Policy*, Blackwell, Oxford and Cambridge
- Cavendish, W. (2002) 'Quantitative methods for estimating the economic value of resource use to rural households', in Campbell, B. M. and Luckert, M. K. (eds) *Uncovering the Hidden Harvest: Valuation Methods for Woodland and Forest Products*, Earthscan, London, pp17–66
- de Long, S. J. (1997) *Regression Models for Categorical and Limited Dependent Variables*, Sage, Thousand Oaks, CA
- Foddy, W. (1993) *Constructing Questions for Interviews and Questionnaires: Theory and Practice in Social Research*, Cambridge University Press, Cambridge
- Gray, D. E. (2009) *Doing Research in the Real World*, Sage, London
- Grosh, M. and Glewwe, P. (2000) *Designing Household Survey Questionnaires for Developing Countries: Lessons from 15 Years of the Living Standards Measurement*

- Study*, vols 1–3, World Bank, Washington, DC, <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:21556161~pagePK:64168445~piPK:64168309~theSitePK:3358997,00.html>, last accessed 5 February 2011
- PEN (Poverty Environment Network) (2007) *PEN Technical Guidelines*, Centre for International Forestry Research, www.cifor.cgiar.org/pen/_ref/tools/guidelines.htm, last accessed 5 February 2011
- Rea, L. M. and Parker, R. A. (1997) *Designing and Conducting Survey Research: A Comprehensive Guide*, Jossey-Bass Inc, San Francisco, CA
- Ribot, J. C. and Peluso, N. L. (2003) 'A theory of access', *Rural Sociology*, vol 68, no 2, pp153–181
- Schuman, H. and Presser, S. (1996) *Questions and Answers in Attitude Surveys: Experiments on Question Form, Wording and Context*, Sage, London
- van Exel, N. J. A. and de Graaf, G. (2005) *Q Methodology: A Sneak Preview*, www.qmethod.org/articles/vanExel.pdf, accessed 1 September 2010
- Vedeld, P., Angelsen, A., Sjaastad, E. and Berg, G. K. (2004) 'Counting on the environment: Forest income and the rural poor', *Environmental Economics Series*, no 98, World Bank, Washington, DC
- Woolcock, M. and Narayan, D. (2000) 'Social capital: Implications for development theory, research, and policy', *The World Bank Research Observer*, vol 15, no 2, pp225–249